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(54) NEW COMPOUND AND ORGANIC LIGHT EMITTING DEVICE USING THE SAME

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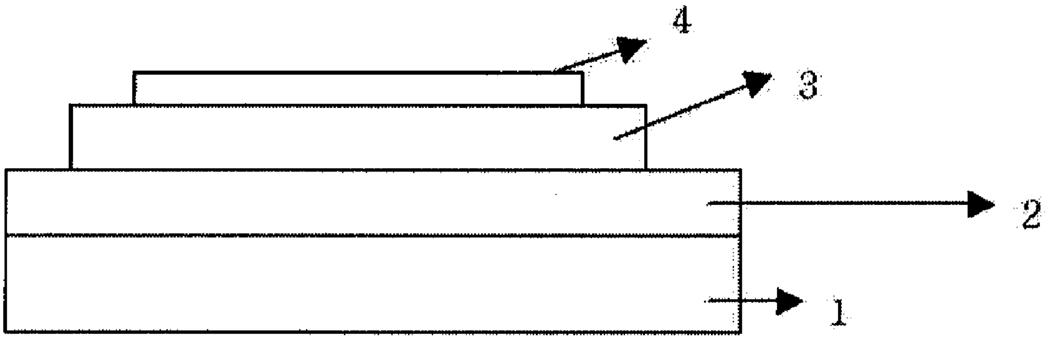
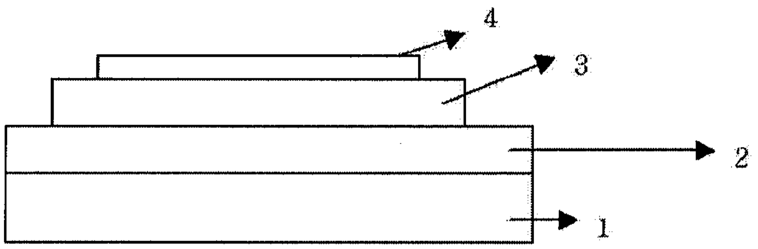
(57) ABSTRACT

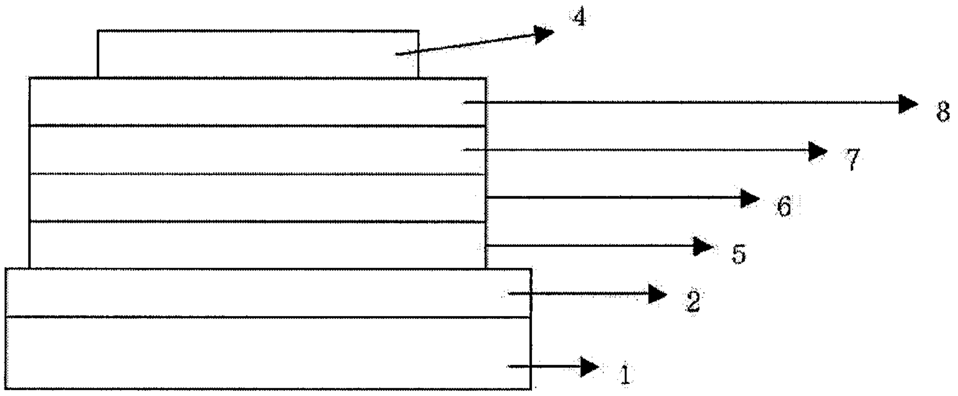
The present invention provides a novel compound that is capable of largely improving life span, efficiency, electrochemical stability and thermal stability of the organic light emitting device, and an organic light emitting device in which said compound is included in an organic compound layer.



[Fig. 1]



[Fig. 2]



NEW COMPOUND AND ORGANIC LIGHT EMITTING DEVICE USING THE SAME

TECHNICAL FIELD

[0001] The present invention relates to an organic light emitting device in which a novel compound that is capable of largely improving a life span, efficiency, electrochemical stability and thermal stability of the organic light emitting device is included in an organic compound layer. This application claims priority from Korean Patent Application No. 10-2007-0113852 filed on Nov. 18, 2007, in the KIPO, the disclosure of which is incorporated herein by reference in its entirety.

BACKGROUND ART

[0002] An organic light emission phenomenon is an example of a conversion of current into visible rays through an internal process of a specific organic molecule. The organic light emission phenomenon is based on the following mechanism. When organic material layers are interposed between an anode and a cathode, if voltage is applied between the two electrodes, electrons and holes are injected from the cathode and the anode into the organic material layer. The electrons and the holes which are injected into the organic material layer are recombined to form an exciton, and the exciton is reduced to a bottom state to emit light. An organic light emitting device which is based on the above mechanism typiccollectivelyy comprises a cathode, an anode, and organic material layer(s), for example, organic material layers including a hole injection layer, a hole transport layer, a light emitting layer, and an electron transport layer, interposed therebetween.

[0003] The materials used in the organic light emitting device are mostly pure organic materials or complexes of organic material and metal. The material used in the organic light emitting device may be classified as a hole injection material, a hole transport material, a light emitting material, an electron transport material, or an electron injection material, according to its use. In connection with this, an organic material having a p-type property, which is easily oxidized and is electrochemiccollectivelyy stable when it is oxidized, is mostly used as the hole injection material or the hole transport material. Meanwhile, an organic material having an n-type property, which is easily reduced and is electrochemiccollectivelyy stable when it is reduced, is used as the electron injection material or the electron transport material. As the light emitting layer material, an organic material having both p-type and n-type properties is preferable, which is stable when it is oxidized and when it is reduced. Also a material having high light emission efficiency for conversion of the exciton into light when the exciton is formed is preferable.

[0004] In addition, it is preferable that the material used in the organic light emitting device further have the following properties.

[0005] First, it is preferable that the material used in the organic light emitting device have excellent thermal stability. The reason is that joule heat is generated by movement of electric charges in the organic light emitting device. NPB, which has recently been used as the hole transport layer material, has a glass transition temperature of 100° C. or lower, thus it is difficult to apply to an organic light emitting device requiring a high current.

[0006] Second, in order to produce an organic light emitting device that is capable of being actuated at low voltage and has high efficiency, holes and electrons which are injected into the organic light emitting device must be smoothly transported to a light emitting layer, and must not be released out of the light emitting layer. To achieve this, a material used in the organic light emitting device must have a proper band gap and a proper HOMO or LUMO energy levels. A LUMO energy level of PEDOT:PSS, which is currently used as a hole transport material of an organic light emitting device produced using a solution coating method, is lower than that of an organic material used as a light emitting layer material, thus it is difficult to produce an organic light emitting device having high efficiency and a long lifespan.

[0007] Moreover, the material used in the organic light emitting device must have excellent chemical stability, electric charge mobility, and interfacial characteristic with an electrode or an adjacent layer. That is to say, the material used in the organic light emitting device must be little deformed by moisture or oxygen. Furthermore, proper hole or electron mobility must be assured so as to balance densities of the holes and of the electrons in the light emitting layer of the organic light emitting device to maximize the formation of excitons. Additionally, it has to be able to have a good interface with an electrode including metal or metal oxides so as to assure stability of the device.

[0008] Accordingly, there is a need to develop an organic material having the above-mentioned requirements in the art.

DISCLOSURE

Technical Problem

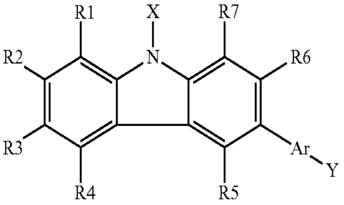
[0009] Therefore, the present inventors aim to provide an organic light emitting device that includes a hetero compound derivative which is capable of satisfying conditions required of a material which may be used for an organic light emitting device, for example, a proper energy level, electrochemical stability, and thermal stability, and which has a chemical structure capable of playing various roles required for the organic light emitting device, depending on a substituent group.

Technical Solution

[0010] The present invention provides a compound of the following Formula 1.

[0011] In addition, the present invention provides an organic light emitting device which comprises a first electrode, organic material layer(s) having one or more layers and comprising a light emitting layer, and a second electrode, wherein the first electrode, the organic material layer(s), and the second electrode form a layered structure and at least one layer of the organic material layer(s) includes a compound of the following Formula 1 or a compound of Formula 1 into which a thermosetting or photo-crosslinkable functional group is introduced.

[Formula 1]



[0012] wherein X is -$(A)_m$-$(B)_n$,

[0013] Y is -$(B)_p$,

[0014] Ar is an arylene group having 6 to 40 carbon atoms, which is substituted or unsubstituted with one or more substituent groups selected from the group consisting of nitro, nitrile, halogen, an alkyl group, an alkoxy group and an amino group; or a divalent hetero ring group, which is substituted or unsubstituted with one or more substituent groups selected from the group consisting of nitro, nitrile, halogen, an alkyl group, an alkoxy group and an amino group;

[0015] A is an aryl group, which is substituted or unsubstituted with one or more substituent groups selected from the group consisting of a halogen group, an alkyl group, an alkenyl group, an alkoxy group, a substituted or unsubstituted arylamine group, a substituted or unsubstituted aryl group, a substituted or unsubstituted arylalkyl group, a substituted or unsubstituted arylalkenyl group, a substituted or unsubstituted hetero ring group, a nitrile group and an acetylene group,

[0016] B is an arylamine group, which is substituted or unsubstituted with one or more substituent groups selected from the group consisting of a halogen group, an alkyl group, an alkenyl group, an alkoxy group, a substituted or unsubstituted arylamine group, a substituted or unsubstituted aryl group, a substituted or unsubstituted arylalkyl group, a substituted or unsubstituted arylalkenyl group, a substituted or unsubstituted hetero ring group, a nitrile group and an acetylene group; or a hetero ring group including O, N or S as a heteroatom, which is substituted or unsubstituted with one or more substituent groups selected from the group consisting of a halogen group, an alkyl group, an alkenyl group, an alkoxy group, a substituted or unsubstituted arylamine group, a substituted or unsubstituted aryl group, a substituted or unsubstituted arylalkyl group, a substituted or unsubstituted arylalkenyl group, a substituted or unsubstituted hetero ring group, a nitrile group and an acetylene group,

[0017] m and n are an integer in the range of 1 to 10 and an integer in the range of 0 to 10, respectively, p is an integer in the range of 1 to 10, and

[0018] R1 to R7 are each independently selected from the group consisting of hydrogen; an alkyl group, which is substituted or unsubstituted with one or more substituent groups selected from the group consisting of a halogen group, an alkyl group, an alkenyl group, an alkoxy group, a substituted or unsubstituted aryl group, a substituted or unsubstituted arylalkyl group, a substituted or unsubstituted arylalkenyl group, a substituted or unsubstituted hetero ring group, a nitrile group and an acetylene group; an alkoxy group, which is substituted or unsubstituted with one or more substituent groups selected from the group consisting of a halogen group, an alkyl group, an alkenyl group, an alkoxy group, a substituted or unsubstituted aryl group, a substituted or unsubstituted arylalkyl group, a substituted or unsubstituted arylalkenyl group, a substituted or unsubstituted hetero ring group, a nitrile group and an acetylene group; an aryl group, which is substituted or unsubstituted with one or more substituent groups selected from the group consisting of a halogen group, an alkyl group, an alkenyl group, an alkoxy group, a substituted or unsubstituted aryl group, a substituted or unsubstituted arylalkyl group, a substituted or unsubstituted arylalkenyl group, a substituted or unsubstituted hetero ring group, a nitrile group and an acetylene group; an amino group, which is substituted with one or more substituent groups selected from the group consisting of an alkyl group, an alkenyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted arylalkyl group, and a substituted or unsubstituted arylalkenyl group; a nitro group; and a halogen group, and said R1 to R7 may form an aliphatic or hetero condensation ring in conjunction with adjacent groups.

Advantageous Effects

[0019] A compound according to the present invention may be used as an organic material layer material, particularly, a hole injection material and/or a hole transport material in an organic light emitting device, and in the case of when it is used in the organic light emitting device, a driving voltage of the device may be reduced, light efficiency may be improved, and a life span property of the device may be improved because of thermal stability of the compound.

DESCRIPTION OF DRAWINGS

[0020] FIG. **1** illustrates an organic light emitting device comprising a substrate **1**, an anode **2**, a light emitting layer **3**, and a cathode **4**; and

[0021] FIG. **2** illustrates an organic light emitting device comprising a substrate **1**, an anode **2**, a hole injection layer **5**, a hole transport layer **6**, a light emitting layer **7**, an electron transport layer **8**, and a cathode **4**.

BEST MODE

[0022] A substituent group of Formula 1 will be described in detail below.

[0023] In R1 to R7 of Formula 1, the number of carbon atoms of the alkyl group, the alkoxy group, and the alkenyl group is not particularly limited, but it is preferable that it is in the range of 1 to 20.

[0024] The length of the alkyl group that is included in the compound does not affect the conjugation length of the compound, but may auxiliarily affect an application method of the compound to the organic light emitting device, for example, the application of a vacuum deposition method or a solution coating method.

[0025] Illustrative, but non-limiting, examples of the aryl group of R1 to R7 of Formula 1 include monocyclic aromatic rings, such as a phenyl group, a biphenyl group, a terphenyl group, and a stilbene group, and multicyclic aromatic rings, such as a naphthyl group, an anthracenyl group, a phenanthrene group, a pyrenyl group, and a perylenyl group.

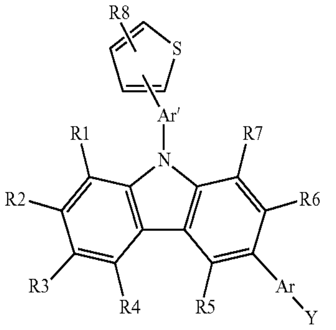
[0026] Illustrative, but non-limiting, examples of the hetero ring group of R1 to R7 of Formula 1 include a thiophenyl group, a furan group, a pyrrolyl group, an imidazolyl group, a thiazolyl group, an oxazolyl group, an oxadiazolyl group, a triazolyl group, a pyridyl group, a pyradazine group, a quinolinyl group, an isoquinoline group, and an acridyl group.

[0027] A of Formula 1 is an aryl group, and preferably, illustrative, but non-limiting, examples thereof include monocyclic aromatic rings, such as a phenyl group, a biphenyl group, a terphenyl group, and a stilbene group, and multicyclic aromatic rings, such as a naphthyl group, an anthracenyl group, a phenanthrene group, a pyrenyl group, and a perylenyl group.

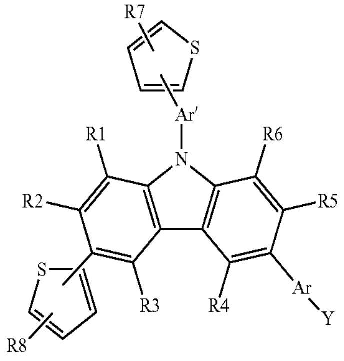
[0028] In the case of when B of Formula 1 is a hetero ring, preferably, illustrative, but non-limiting, examples thereof include a thiophenyl group, a furan group, a pyrrolyl group, an imidazolyl group, a thiazolyl group, an oxazolyl group, an oxadiazolyl group, a triazolyl group, a pyridyl group, a pyradazine group, a quinolinyl group, an isoquinoline group, and an acridyl group.

[0029] The compound that is represented by Formula 1 may be preferably a compound that is represented by any one of the following Formula 2 and Formula 3.

[Formula 2]



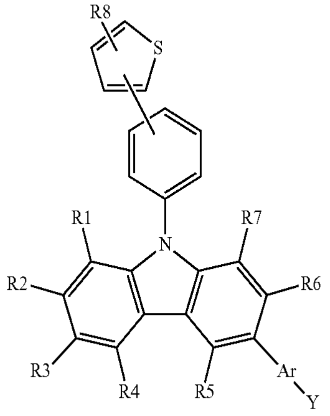
[Formula 3]



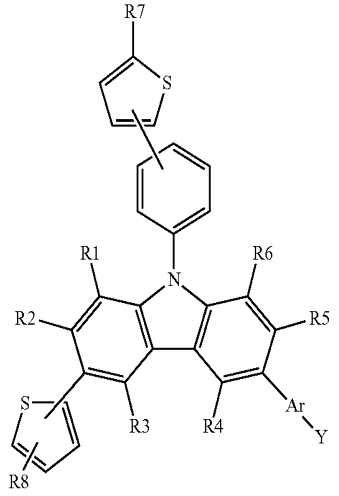
[0030] In Formula 2 and Formula 3, Ar's are each independently selected from the group consisting of a phenyl group, a biphenyl group, a terphenyl group, a stilbene group, a naphthyl group, an anthracenyl group, a phenanthrene group, a pyrenyl group, a perylenyl group, and Ar, Y and R1 to R8 are the same as definitions in respects to Ar, Y and R1 to R7 of Formula 1.

[0031] In addition, the compound that is represented by Formula 1 may be preferably a compound that is represented by any one of the following Formula 2-1 and Formula 3-1.

[Formula 2-1]



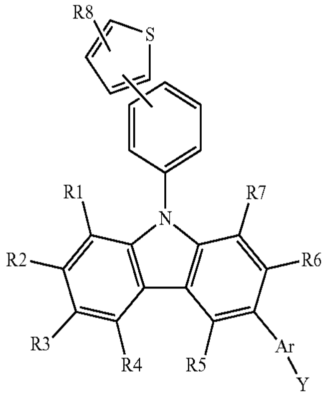
[Formula 3-1]



[0032] In Formula 2-1 and Formula 3-1, Ar, Y and R1 to R8 are the same as definitions in respects to Ar, Y and R1 to R7 of Formula 1.

[0033] In addition, the compound that is represented by Formula 1 may be preferably a compound that is represented by any one of the following Formula 2-2 and Formula 3-2.

[Formula 2-2]



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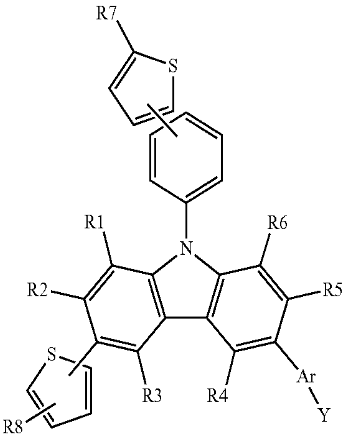
[Formula 3-2]



[0034] In Formula 2-2 and Formula 3-2, Ar, Y and R1 to R8 are the same as definitions in respects to Ar, Y and R1 to R7 of Formula 1.

[0035] In addition, in the case of arylamine, illustrative, but non-limiting examples thereof may preferably include the following groups.

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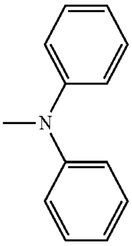

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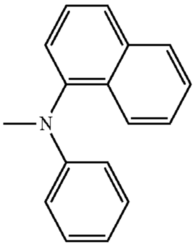

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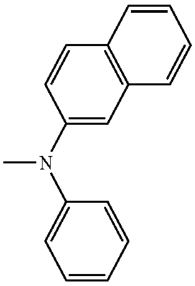

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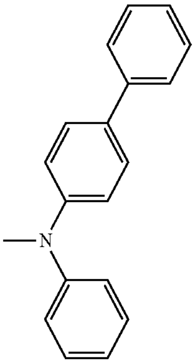

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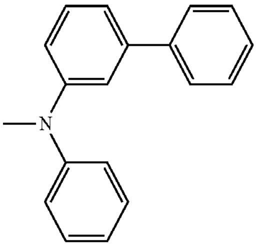

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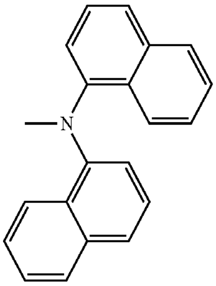

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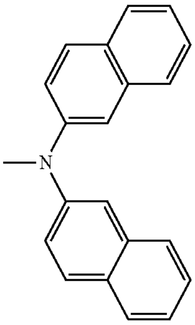

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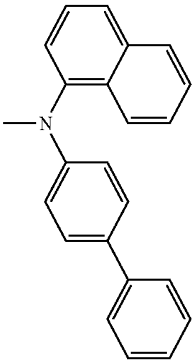

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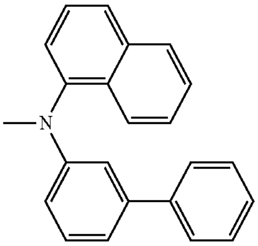

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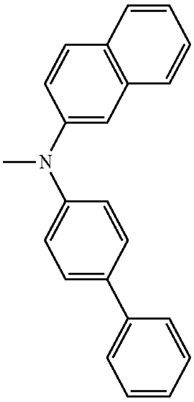

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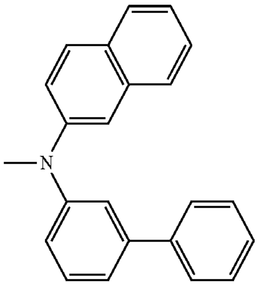

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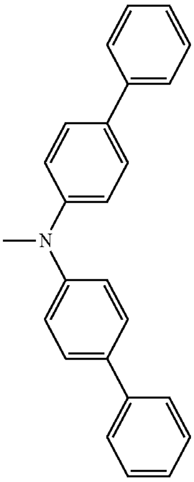

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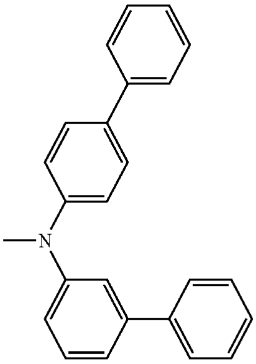

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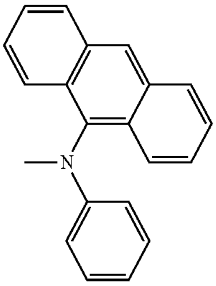

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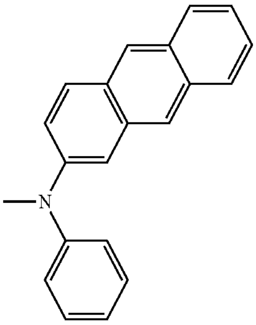

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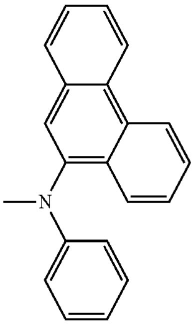

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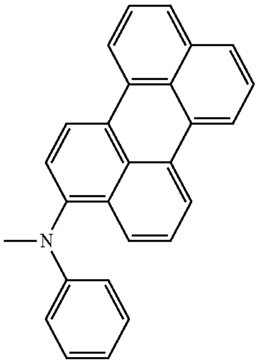

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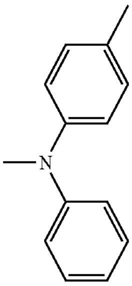

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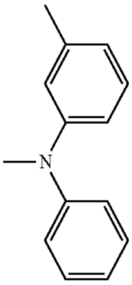

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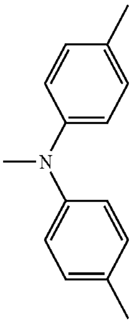

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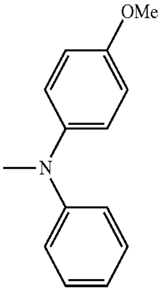

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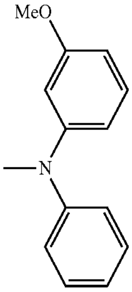

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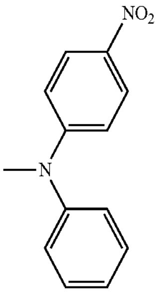

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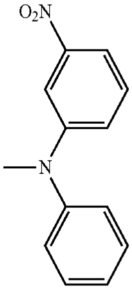

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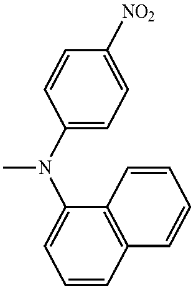

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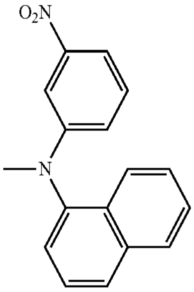

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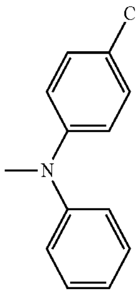

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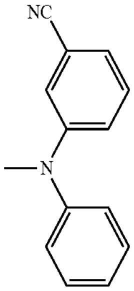

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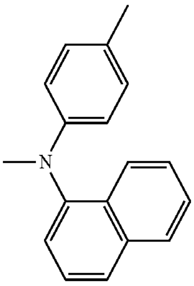

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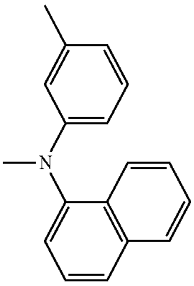

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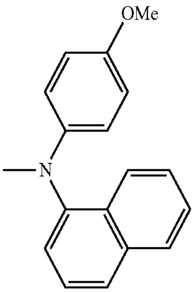

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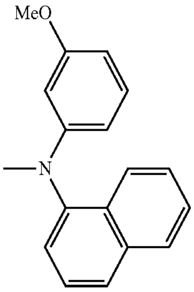

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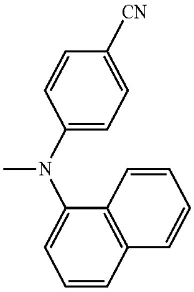

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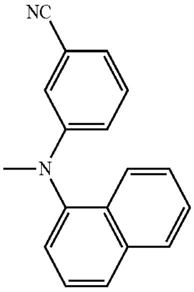

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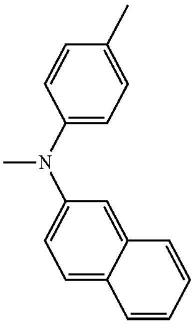

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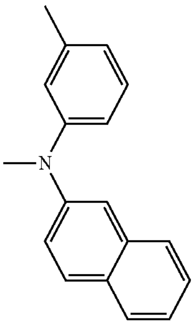

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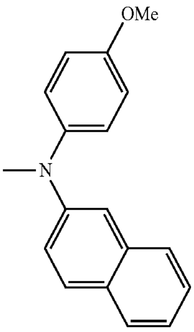

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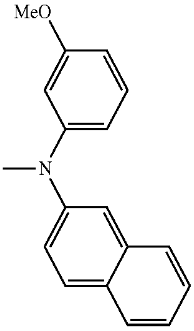

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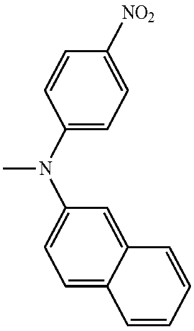

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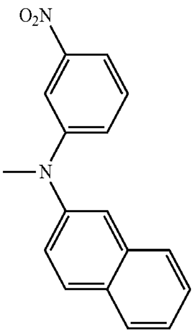

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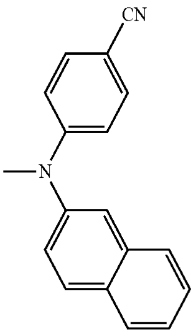

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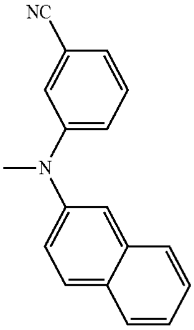

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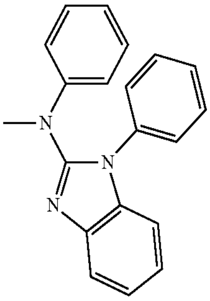

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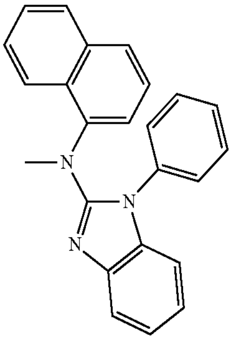

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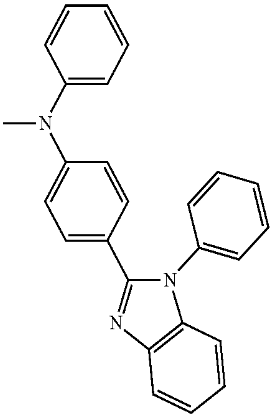

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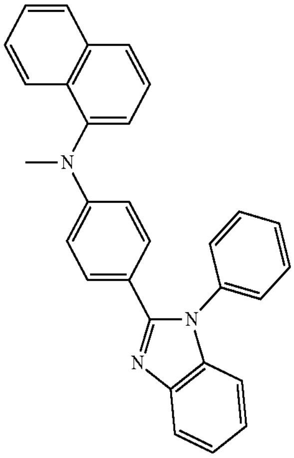

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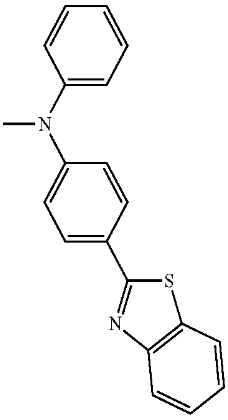

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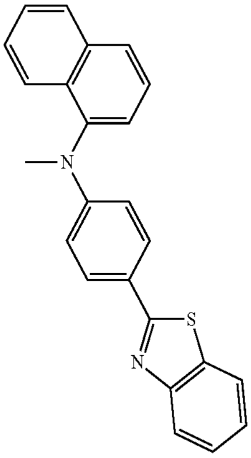

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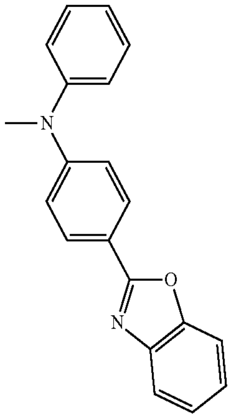

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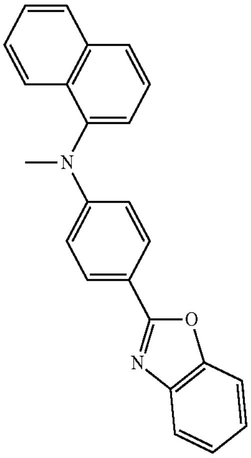

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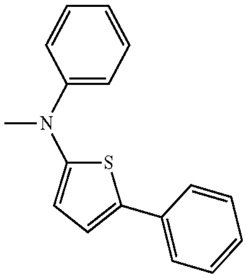

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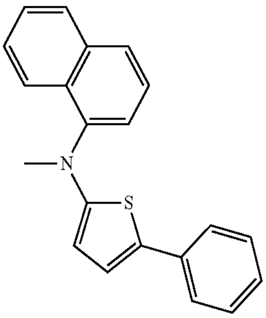

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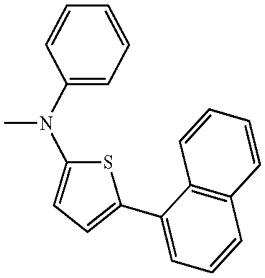

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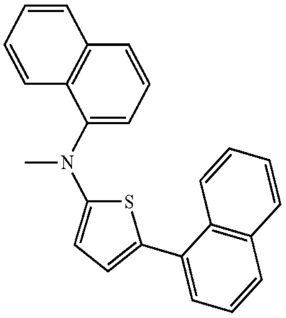

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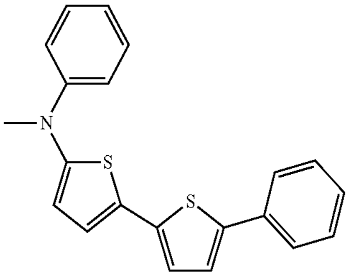

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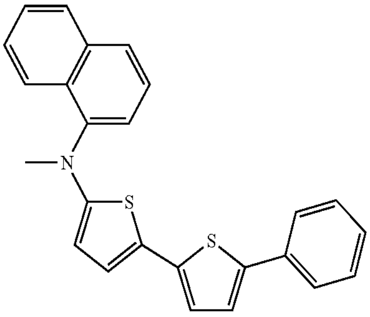

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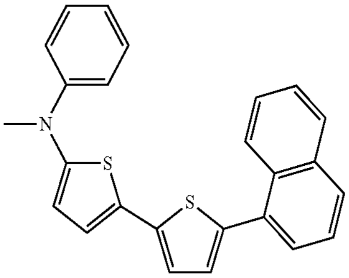

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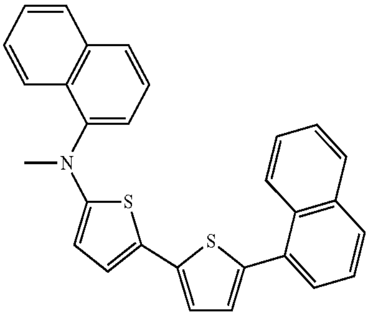

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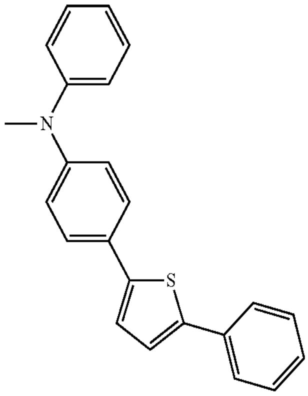

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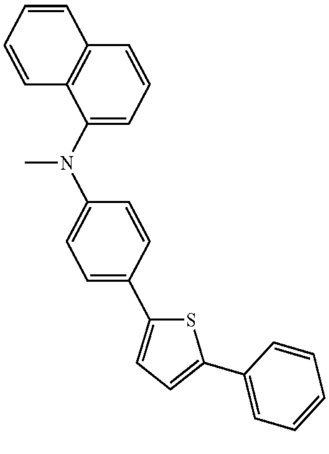

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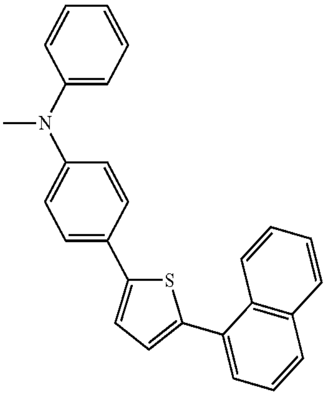

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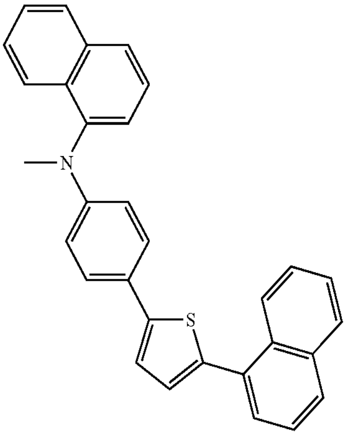

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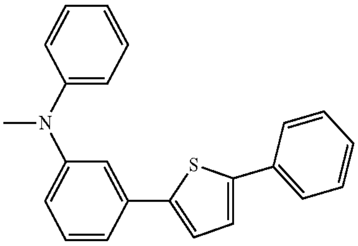

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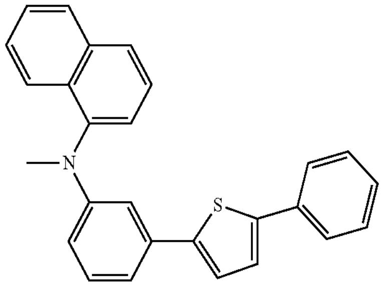

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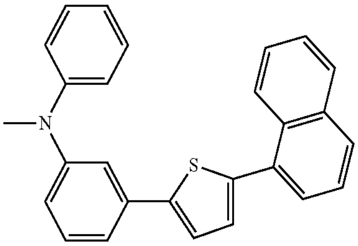

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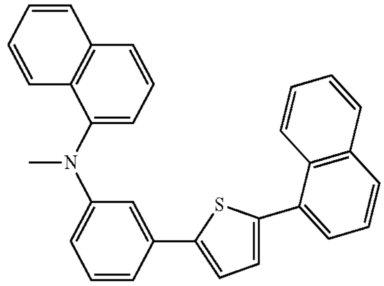

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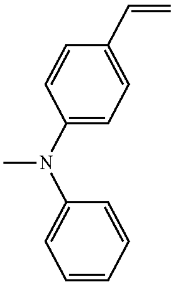

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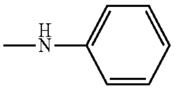

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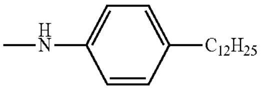

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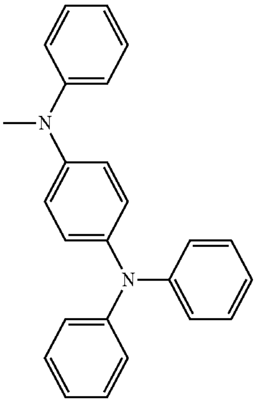

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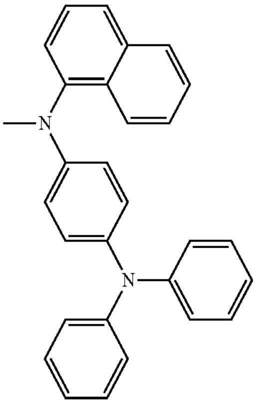

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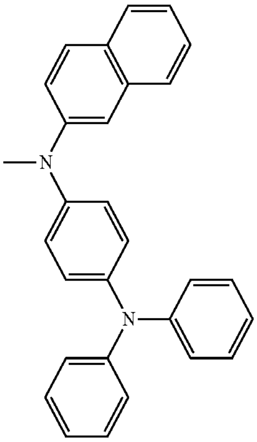

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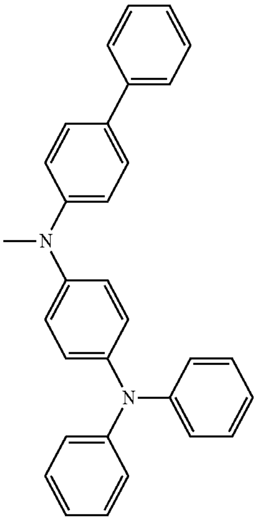

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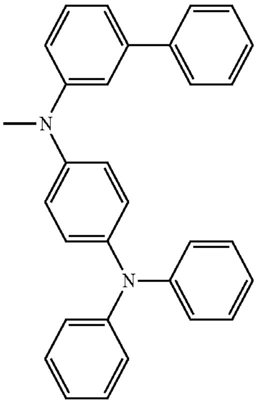

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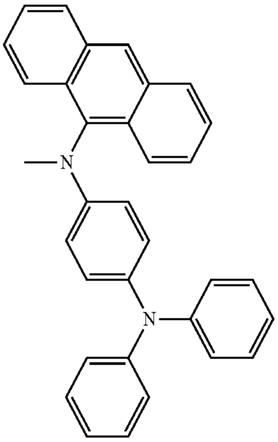

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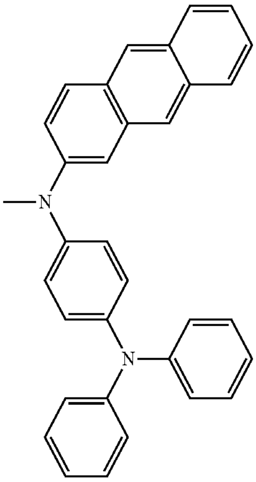

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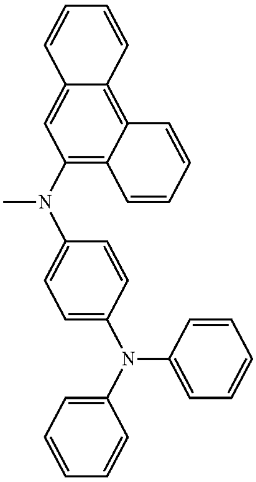

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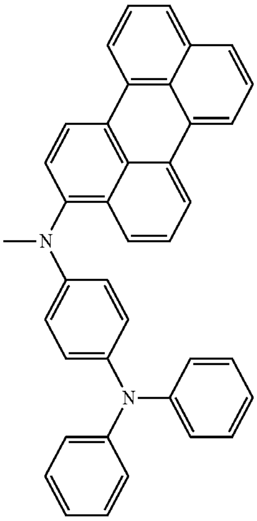

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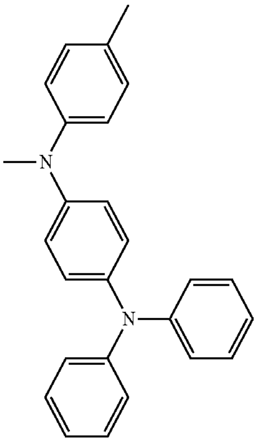

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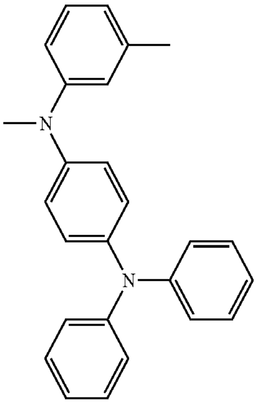

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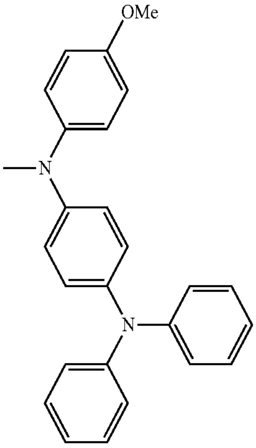

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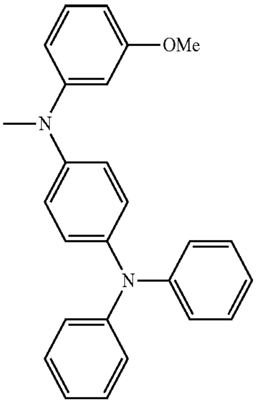

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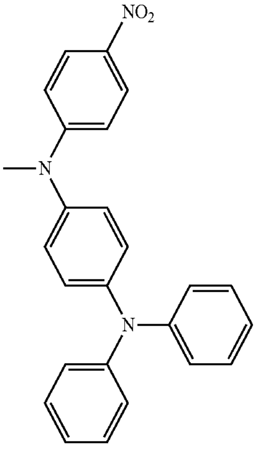

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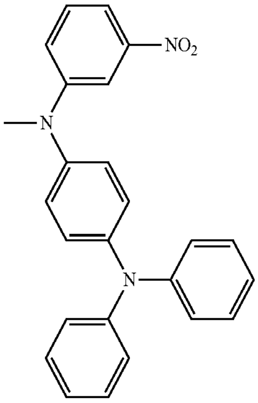

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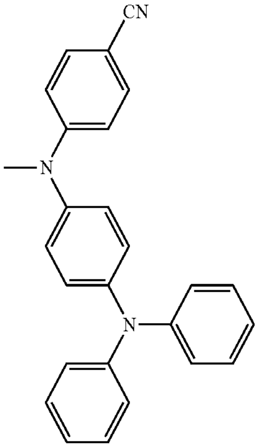

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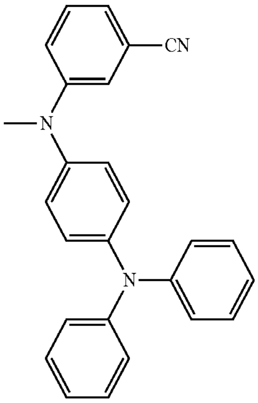

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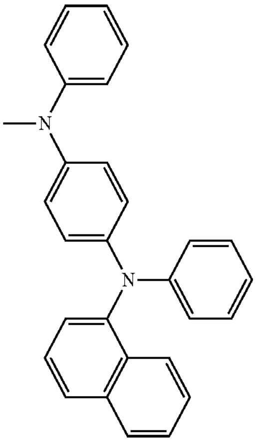

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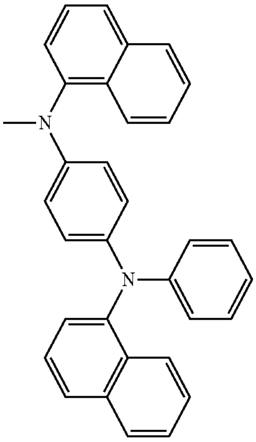

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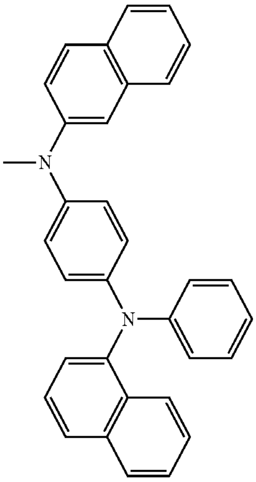

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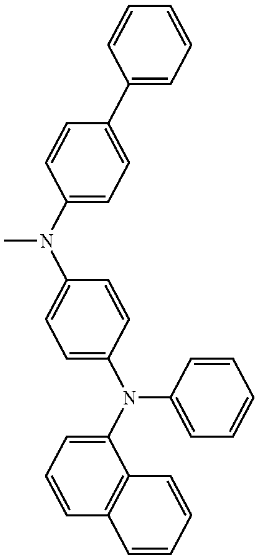

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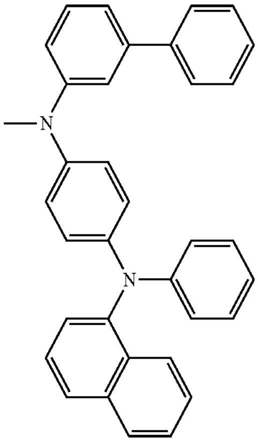

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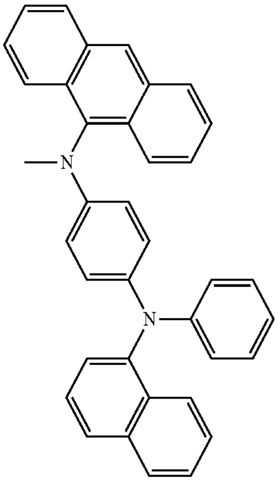

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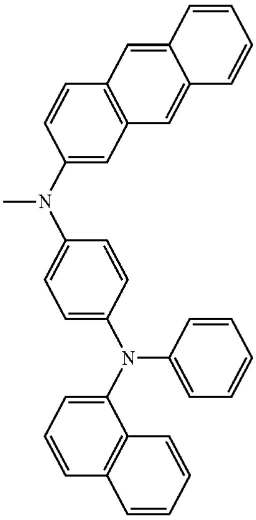

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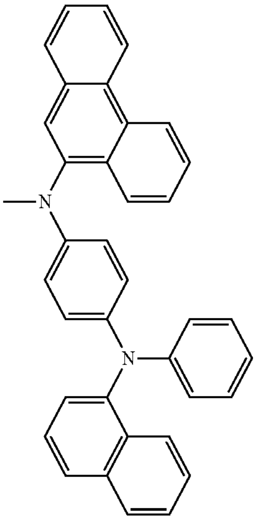

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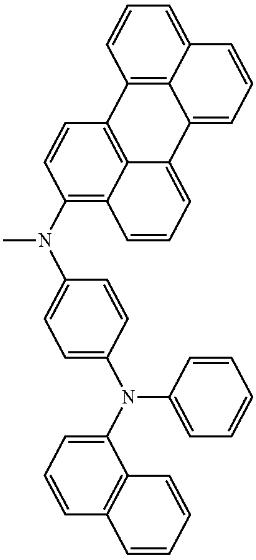

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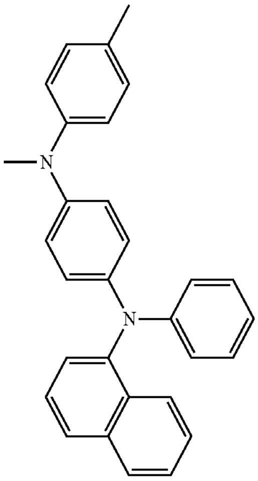

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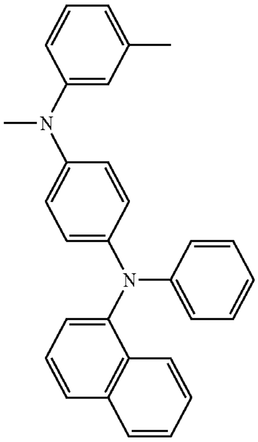

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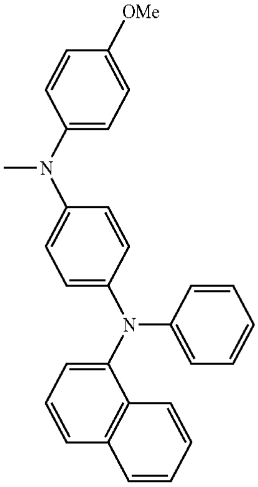

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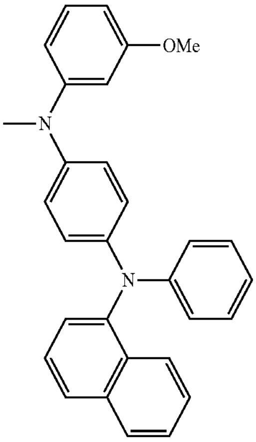

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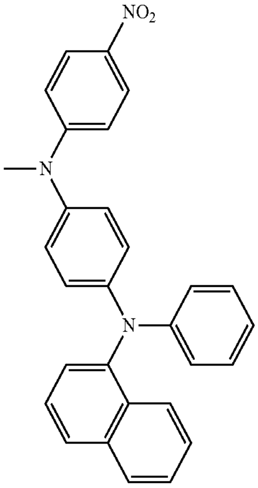

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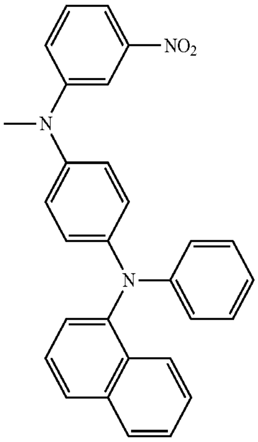

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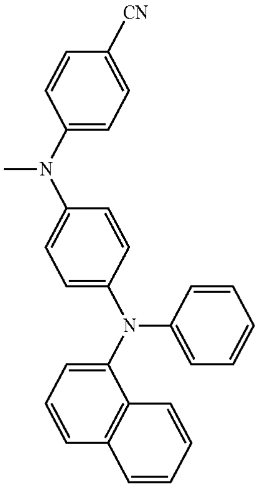

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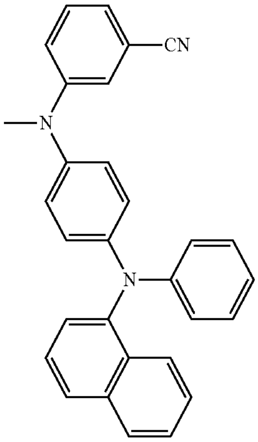

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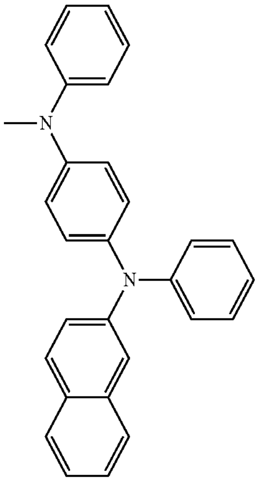

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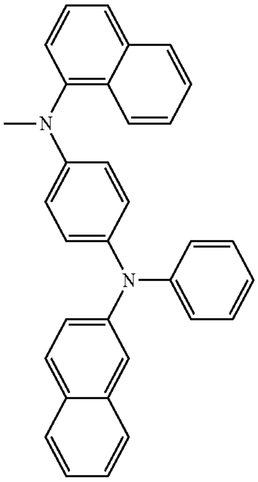

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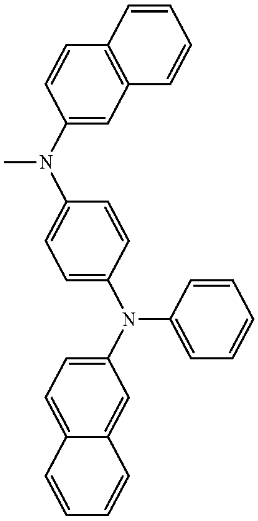

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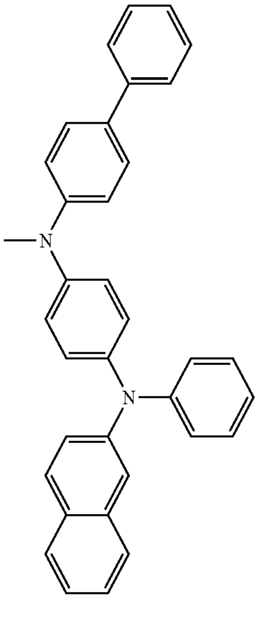

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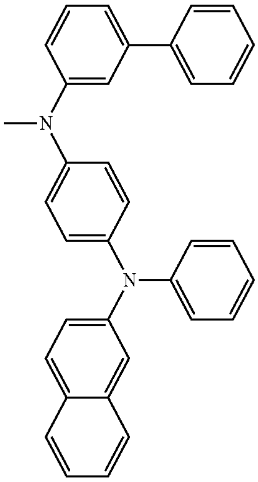

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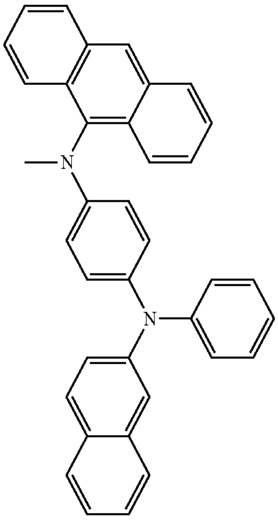

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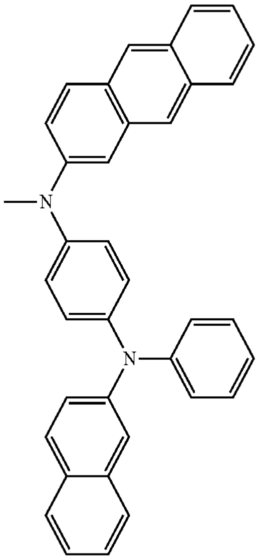

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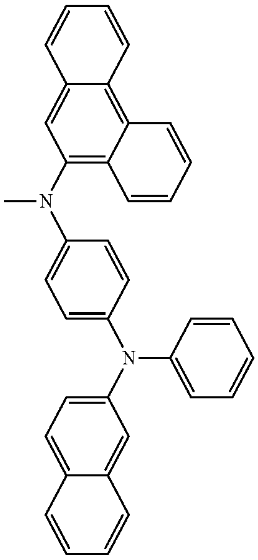

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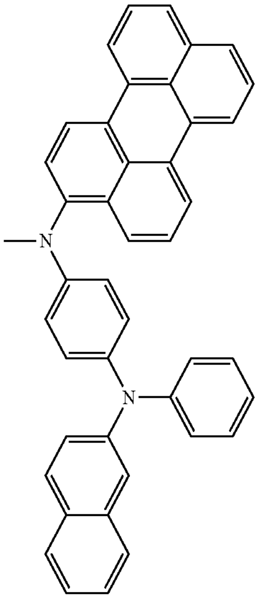

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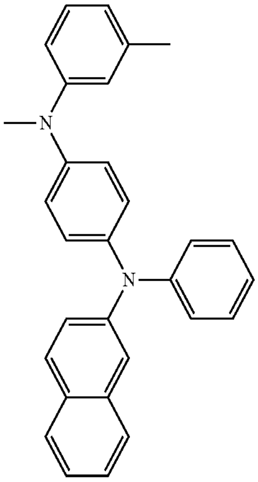

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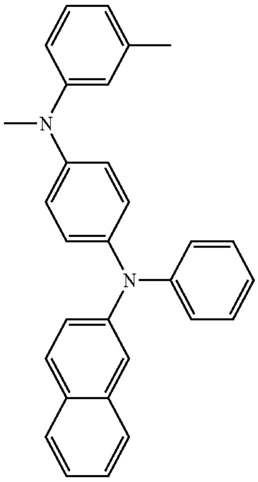

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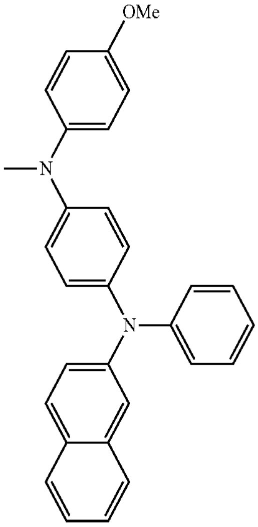

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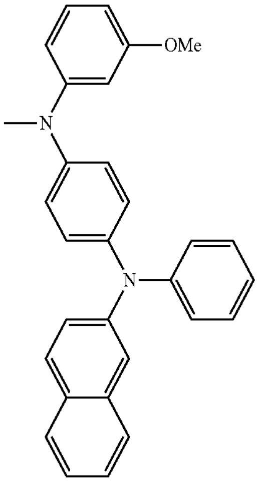

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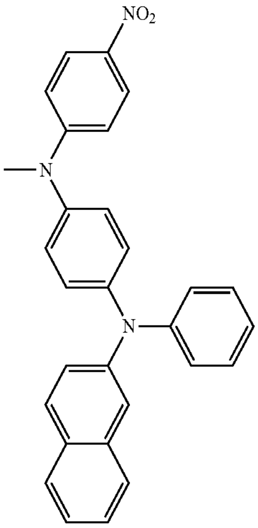

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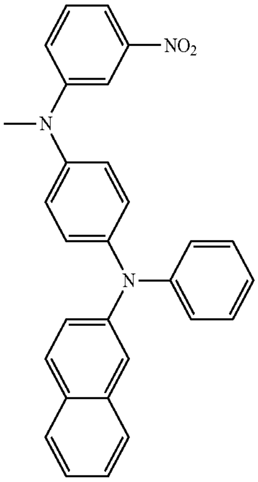

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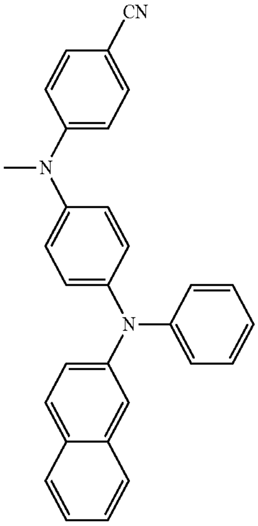

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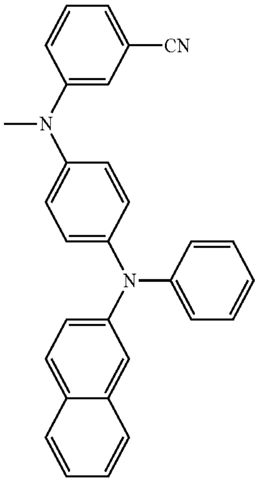

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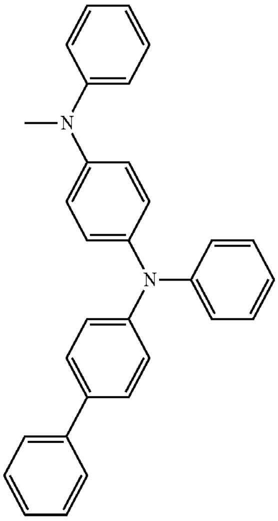

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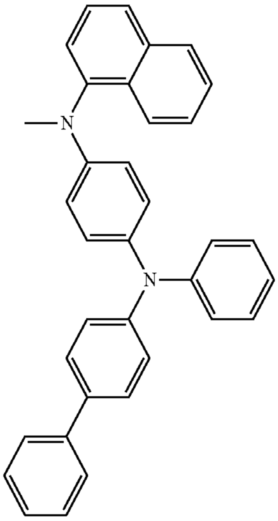

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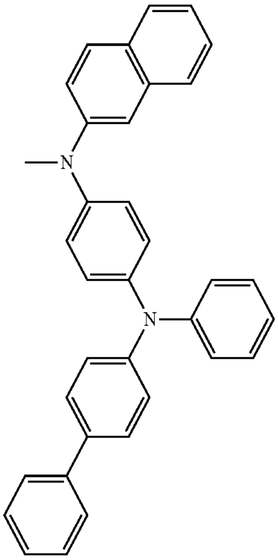

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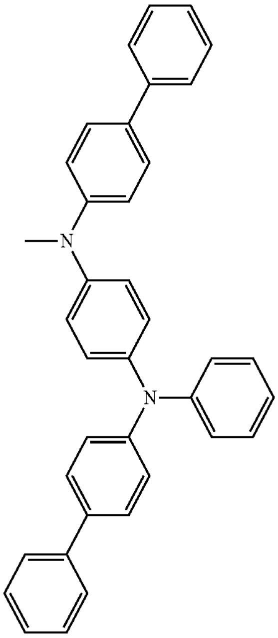

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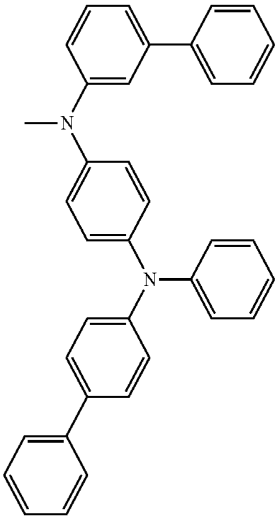

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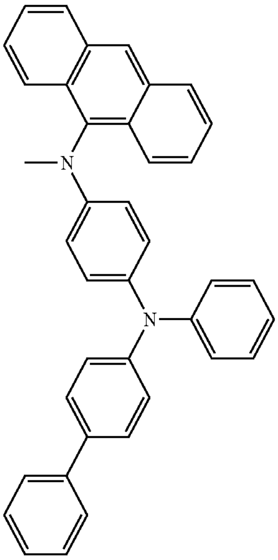

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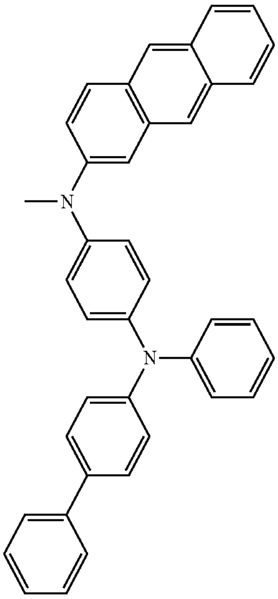

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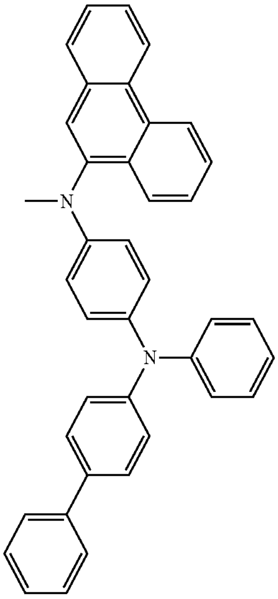

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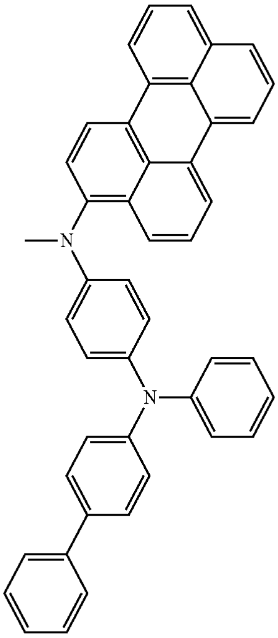

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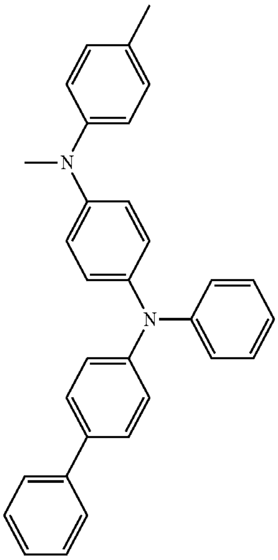

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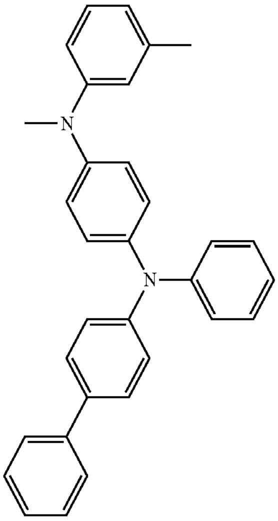

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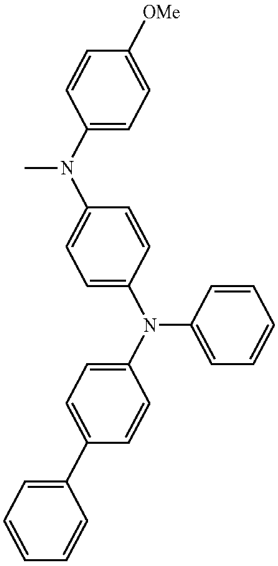

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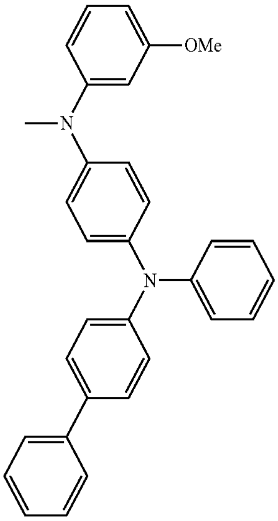

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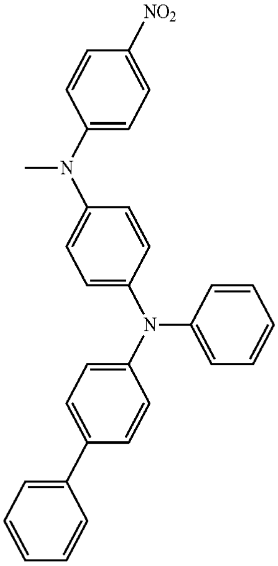

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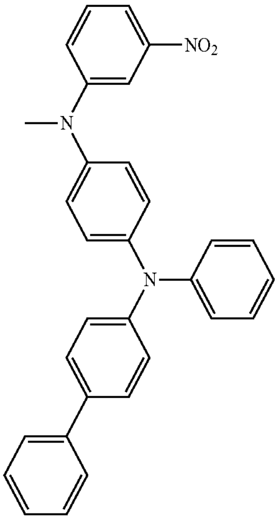

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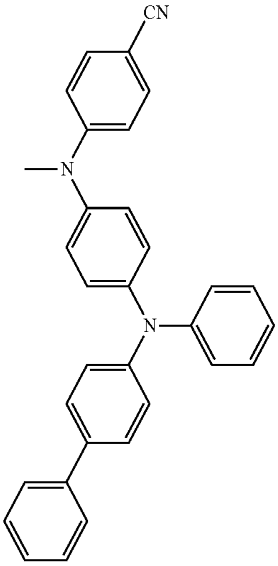

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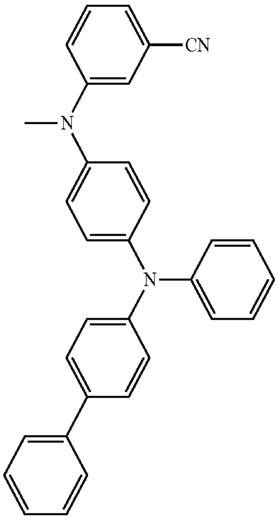

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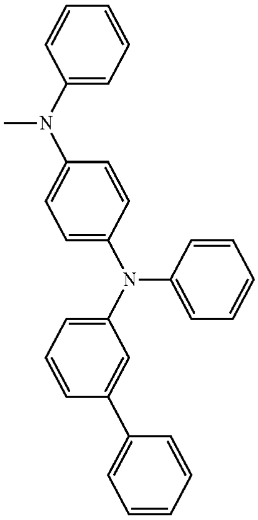

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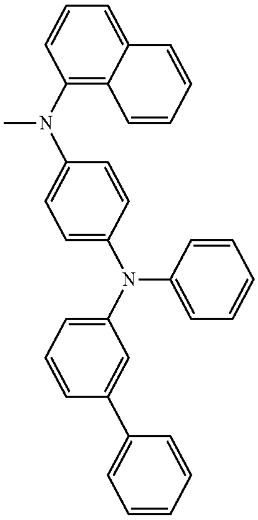

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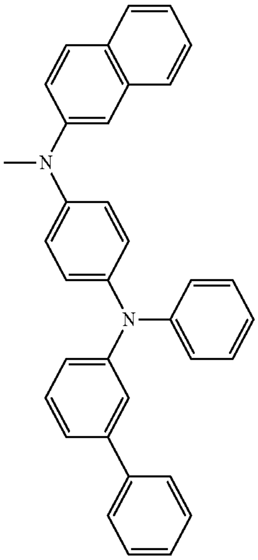

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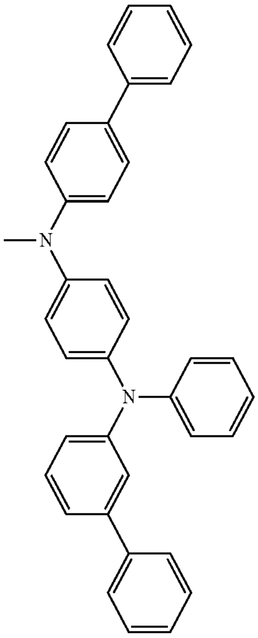

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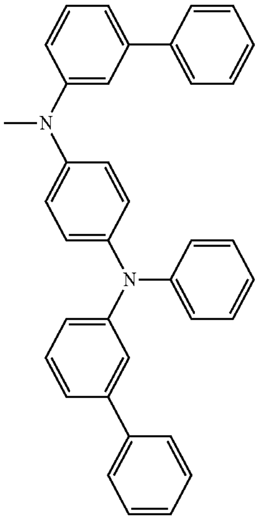

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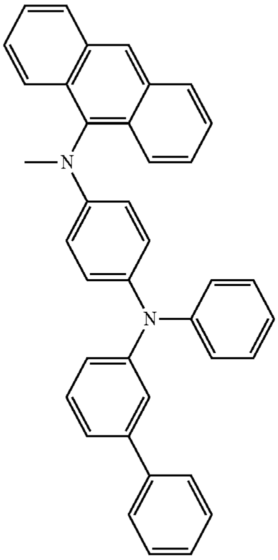

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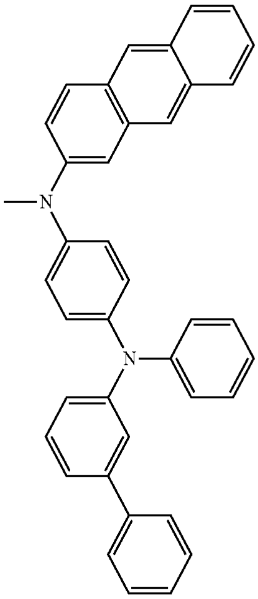

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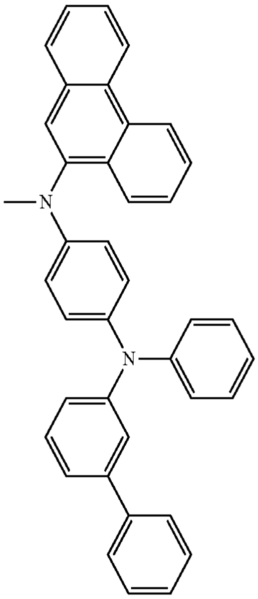

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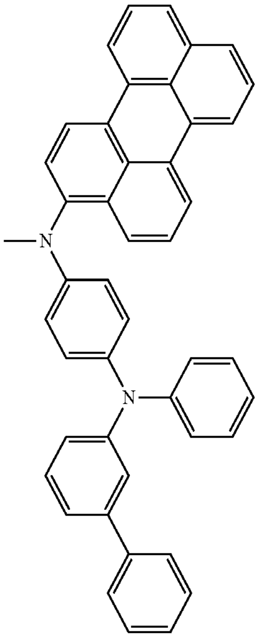

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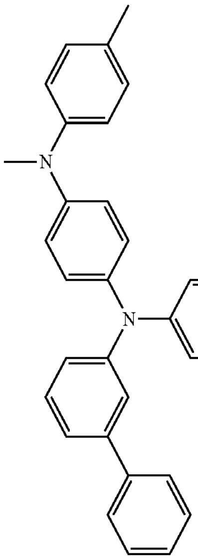

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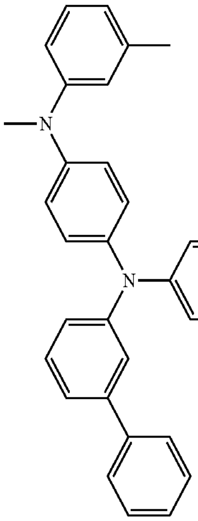

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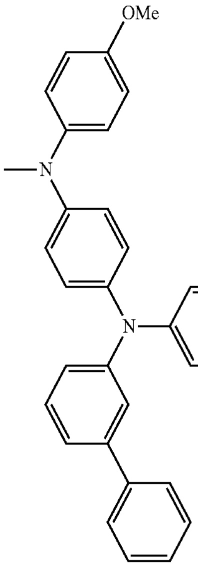

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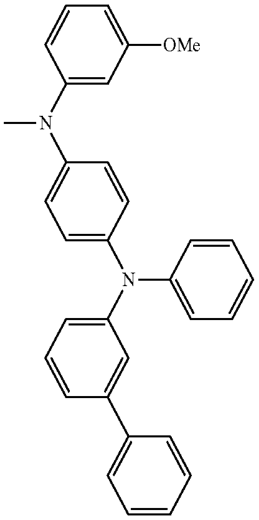

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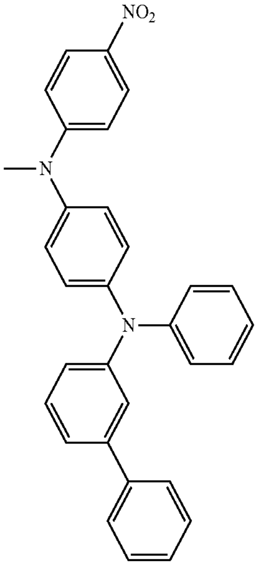

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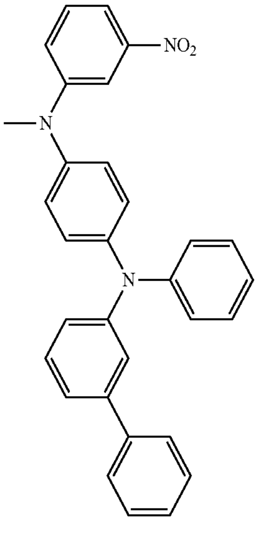

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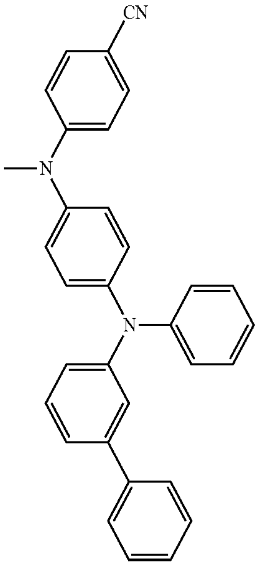

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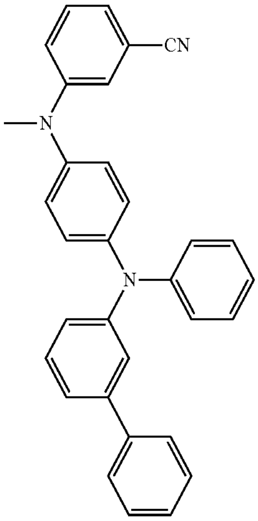

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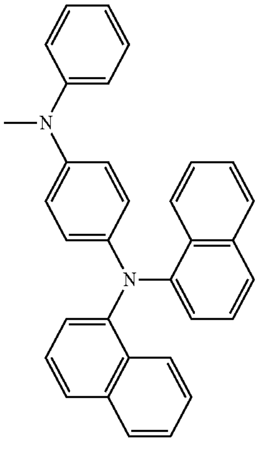

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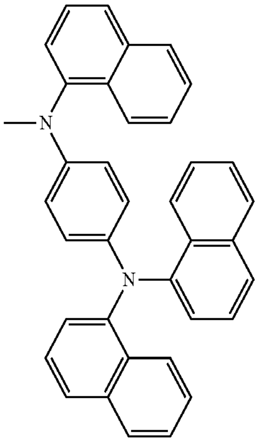

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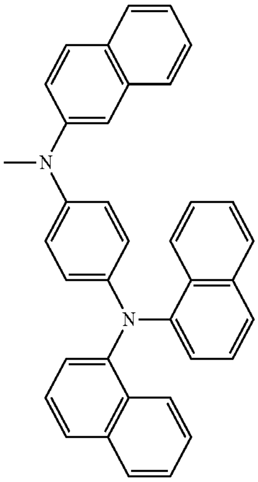

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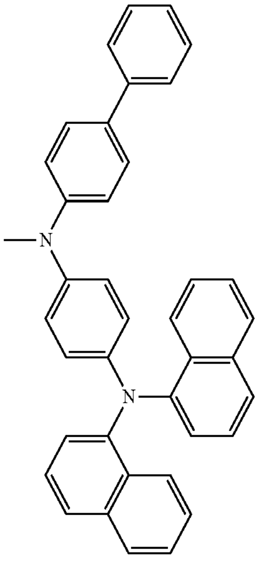

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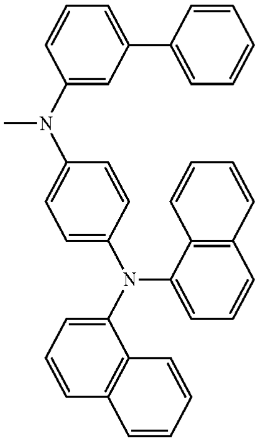

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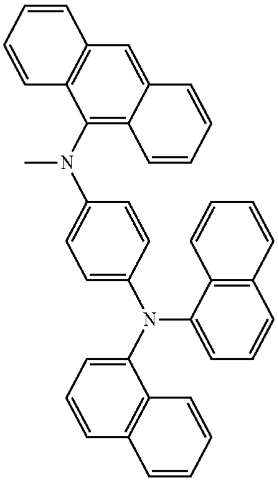

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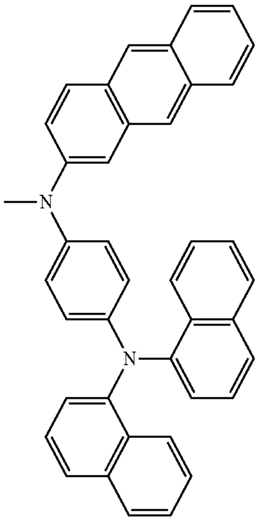

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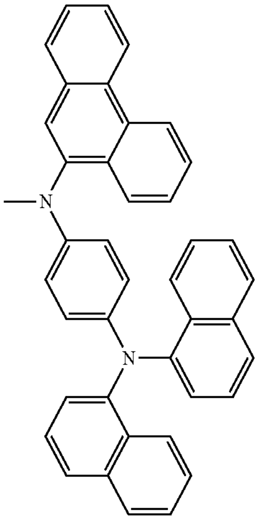

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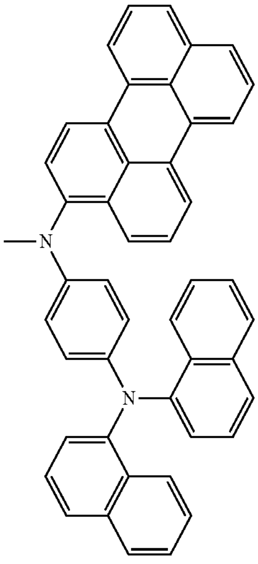

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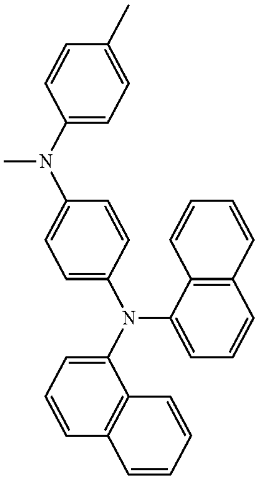

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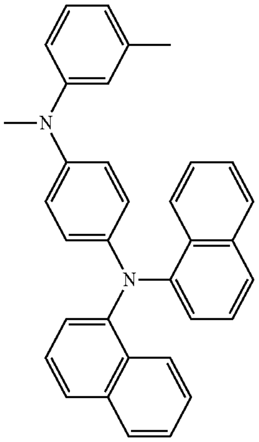

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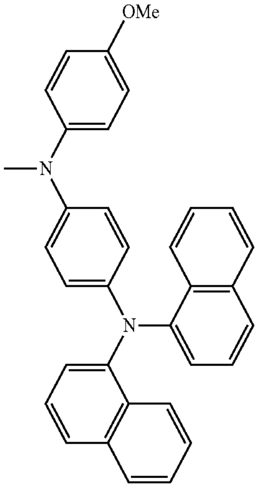

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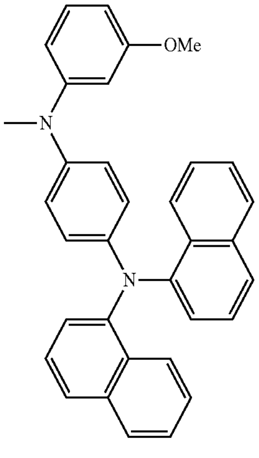

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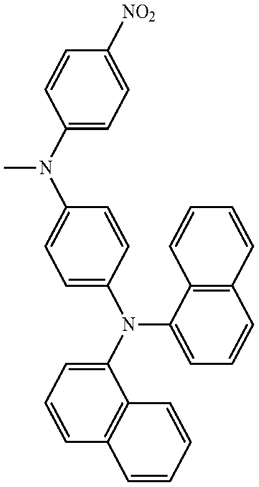

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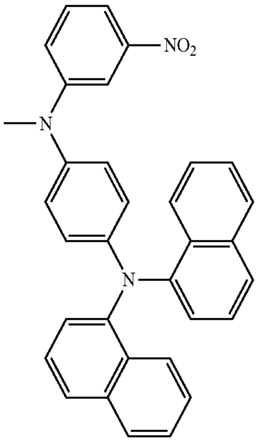

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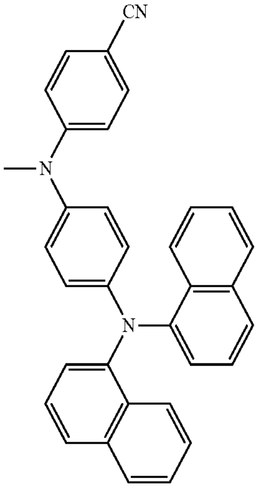

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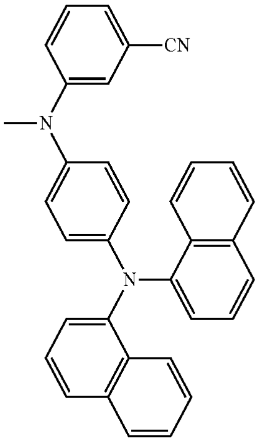

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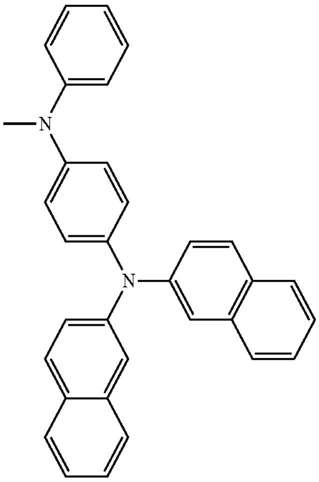

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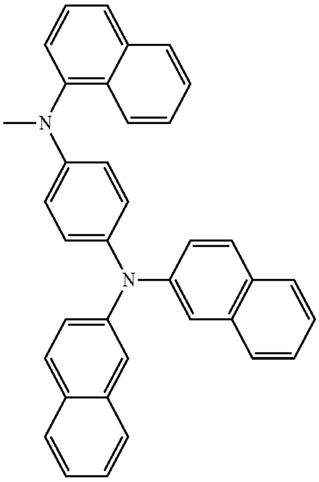

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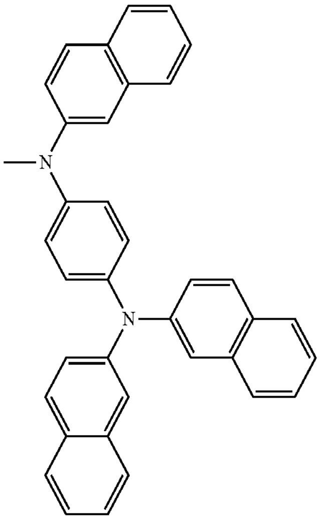

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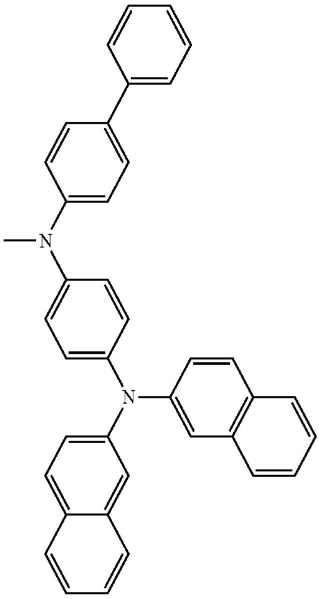

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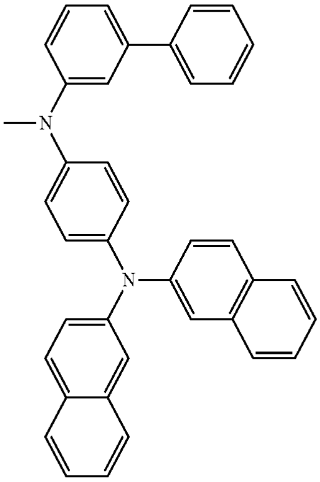

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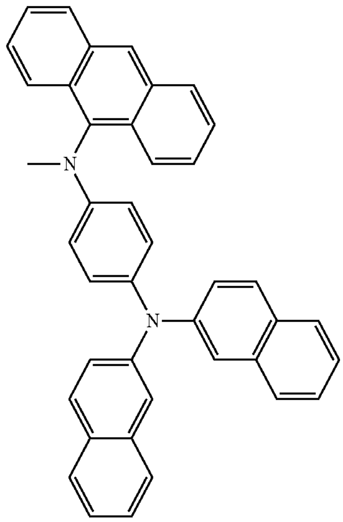

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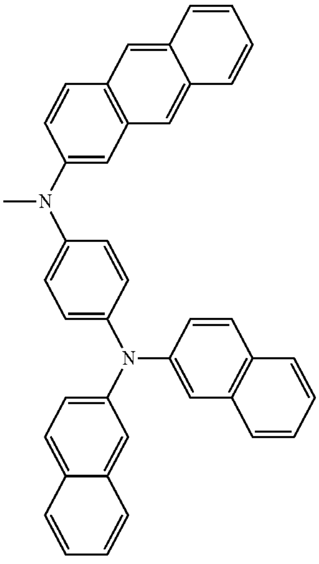

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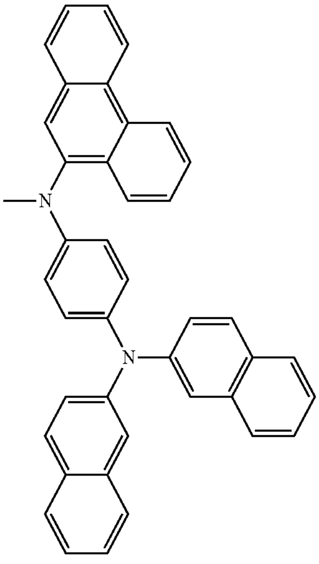

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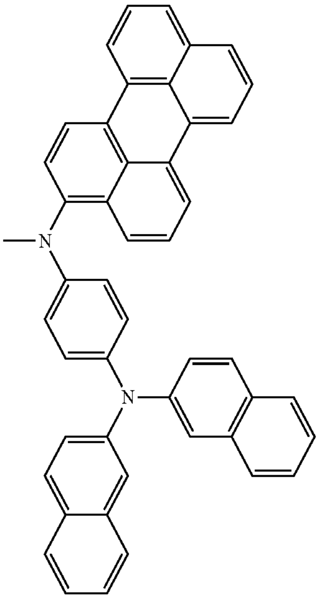

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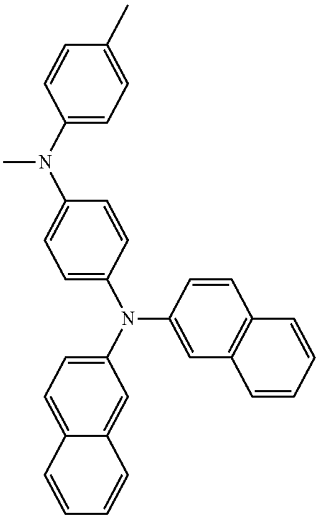

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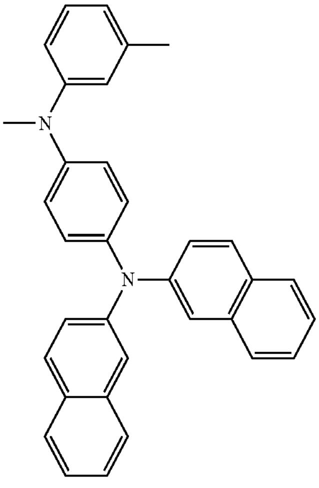

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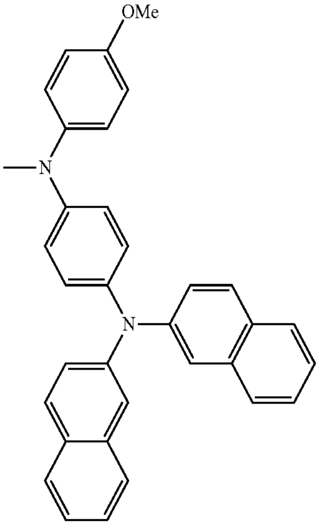

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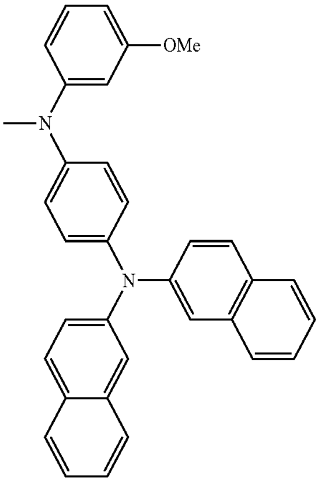

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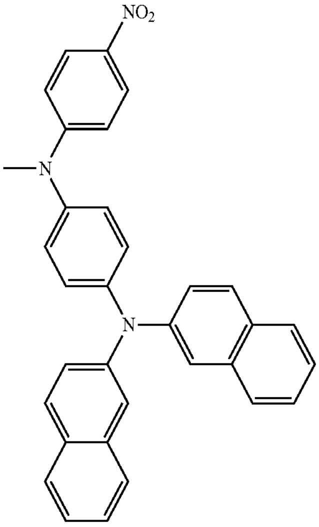

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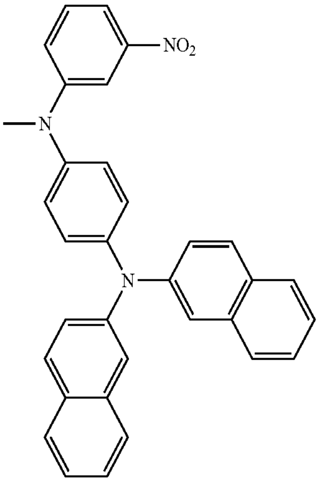

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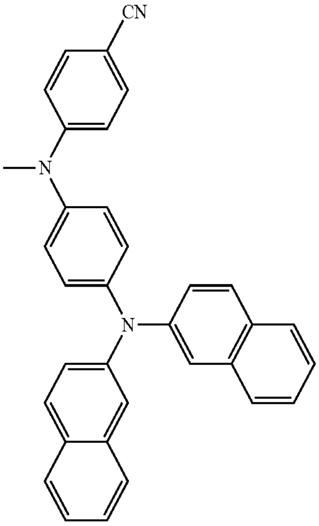

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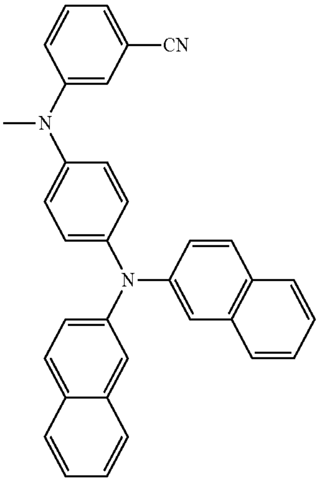

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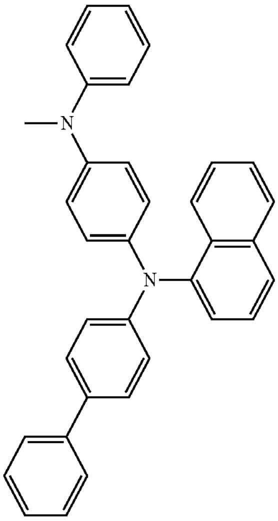

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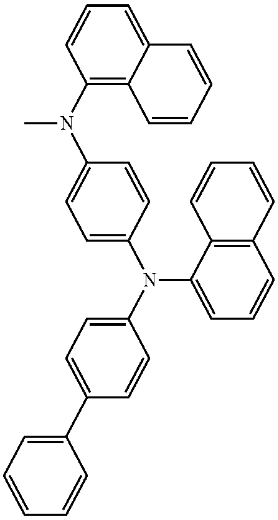

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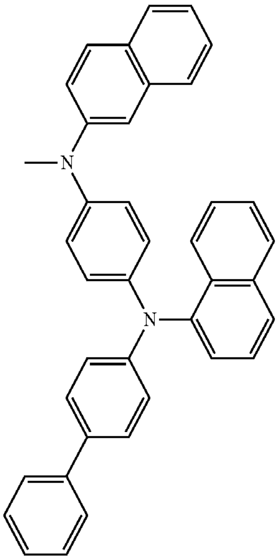

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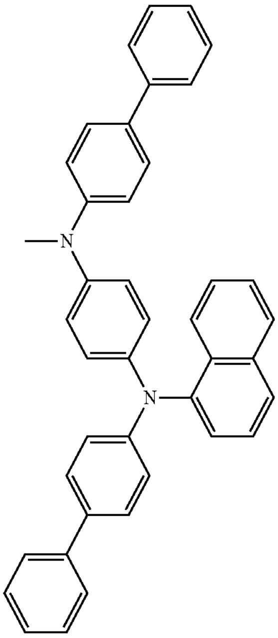

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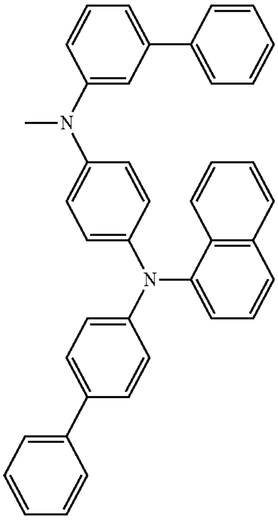

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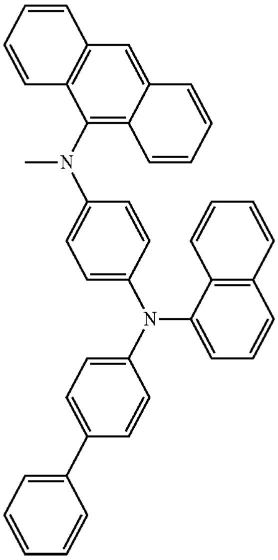

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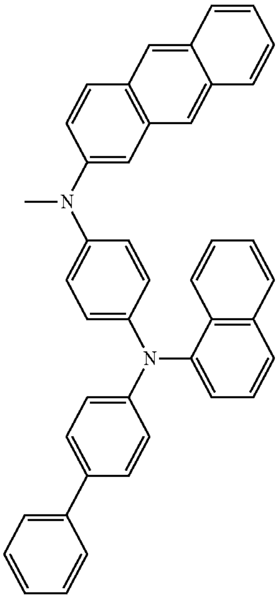

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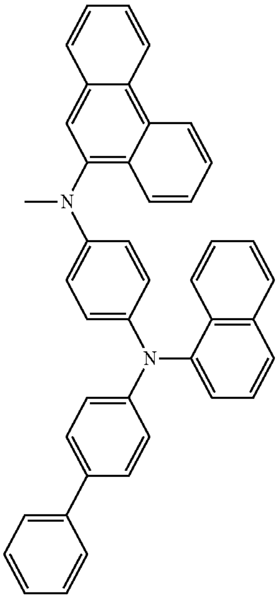

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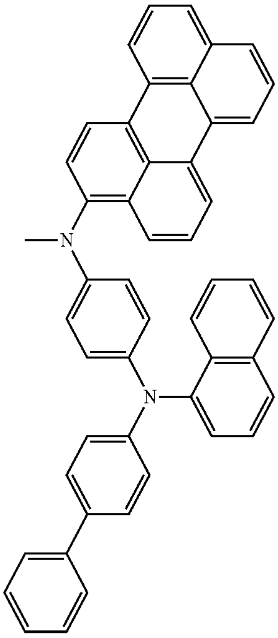

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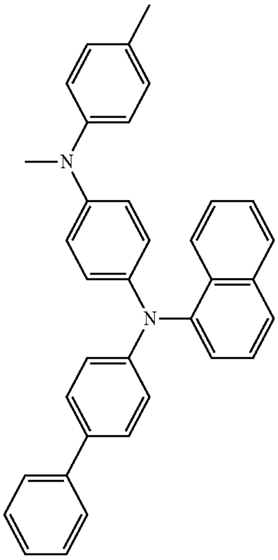

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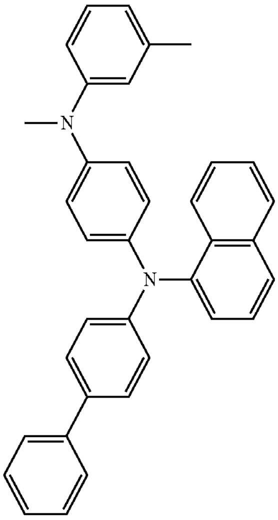

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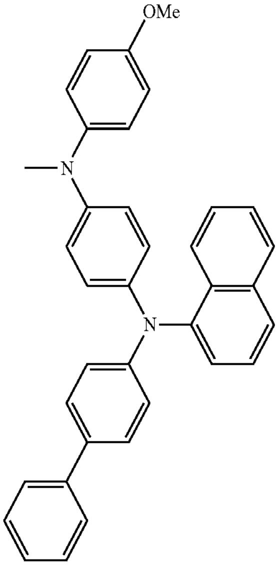

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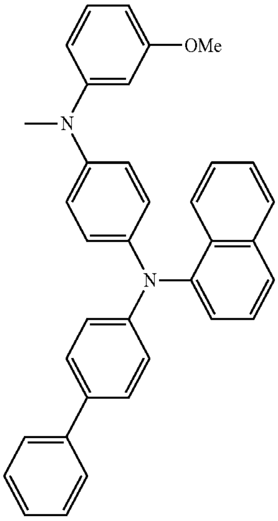

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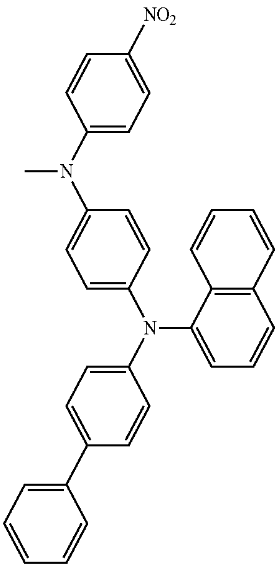

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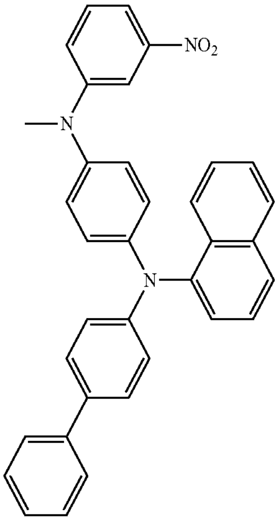

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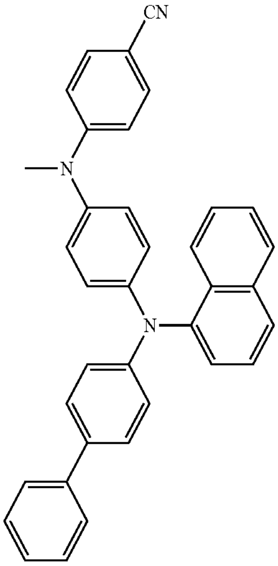

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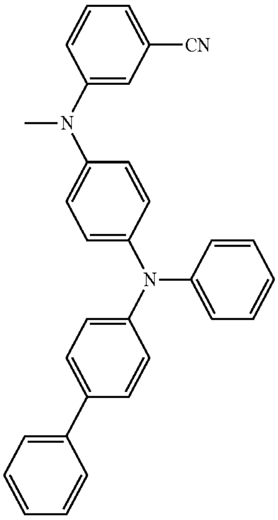

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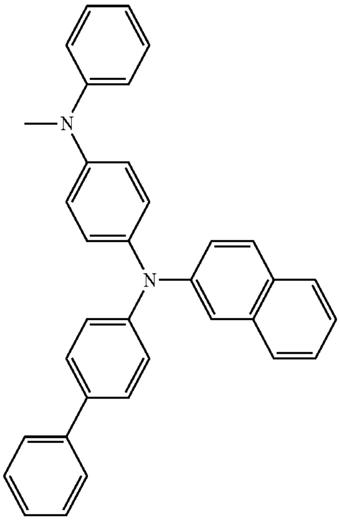

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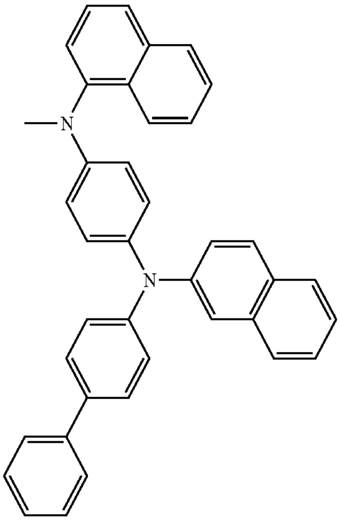

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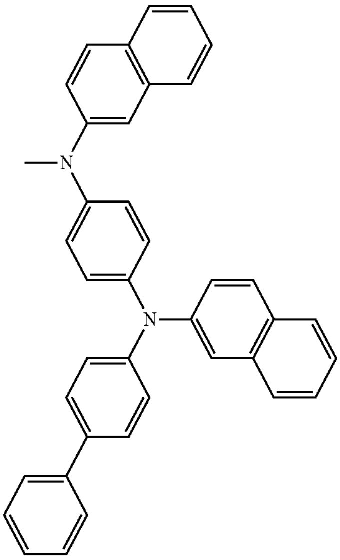

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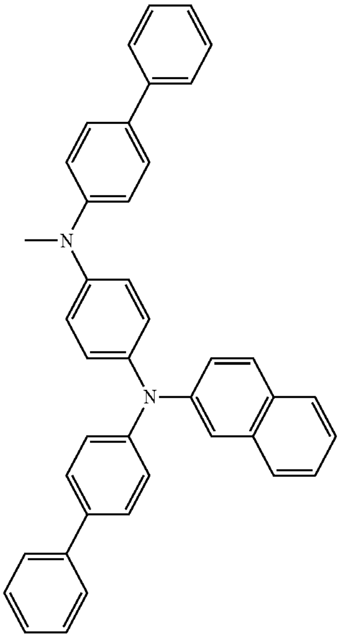

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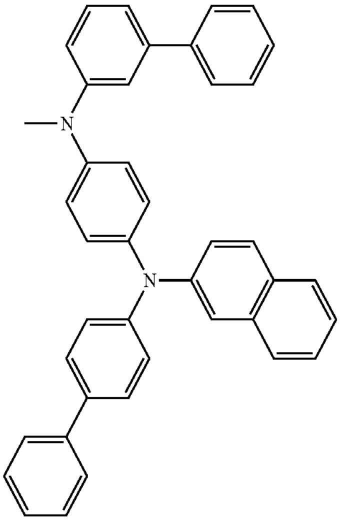

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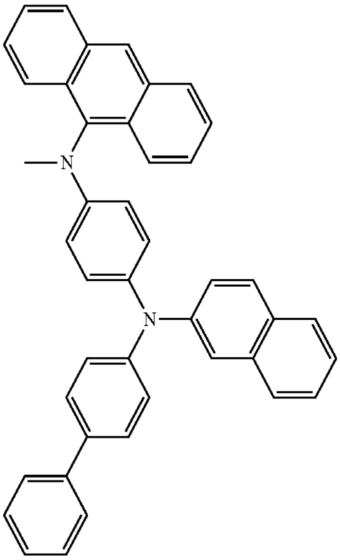

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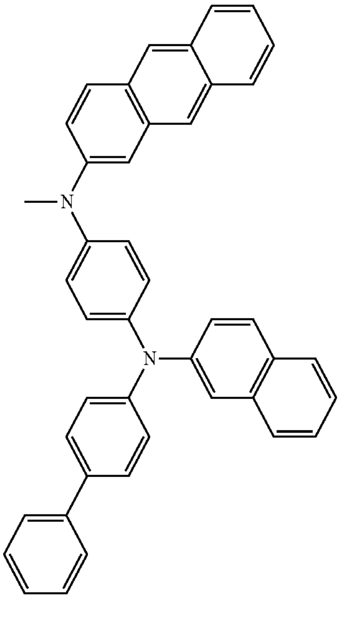

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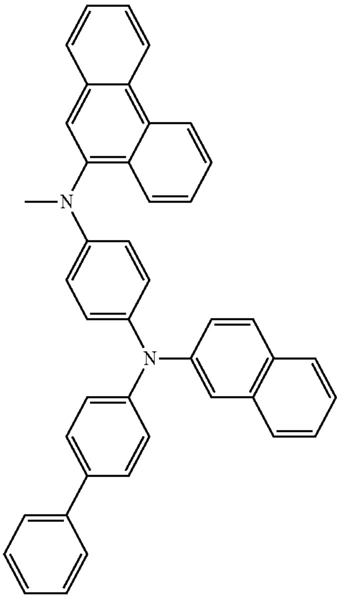

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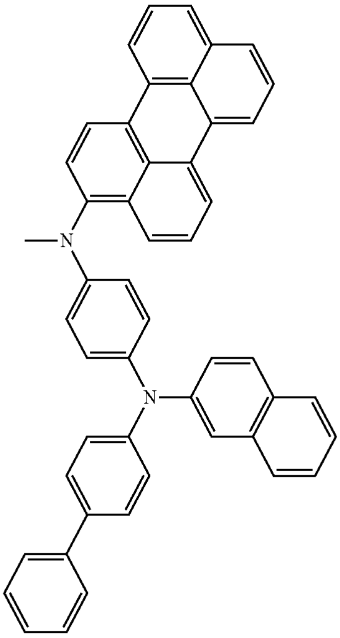

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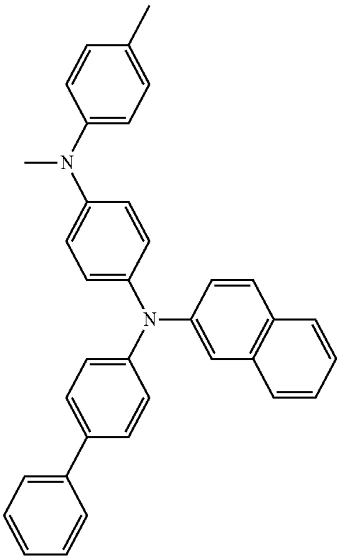

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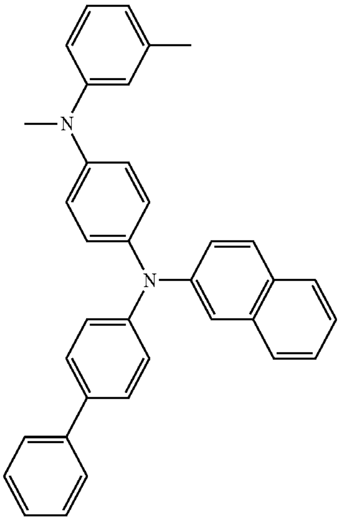

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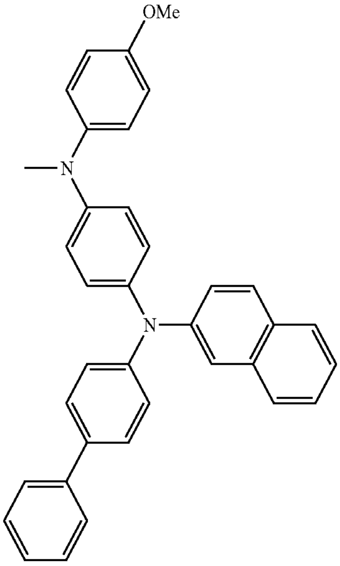

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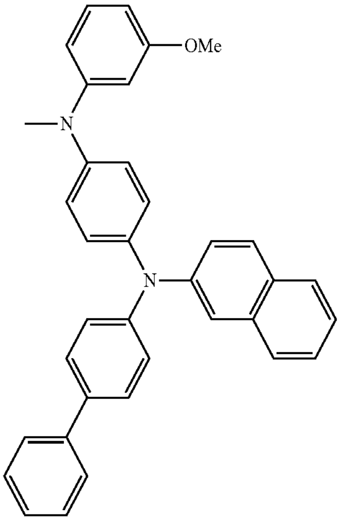

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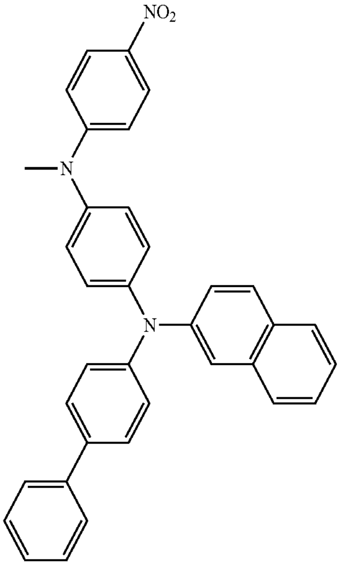

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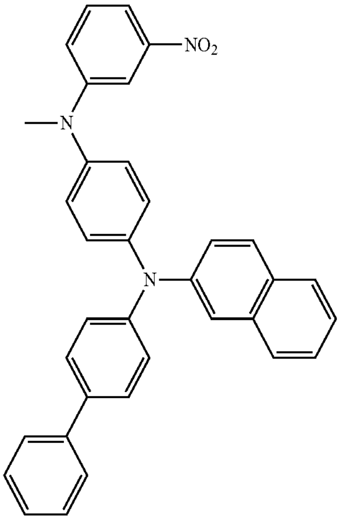

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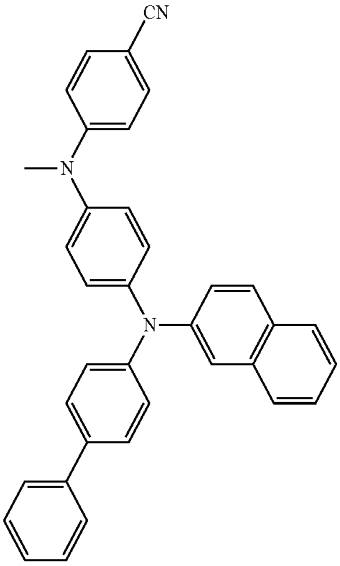

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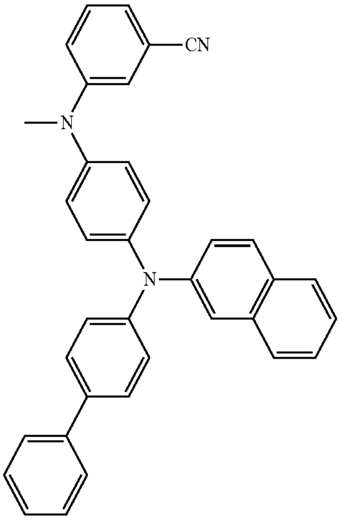

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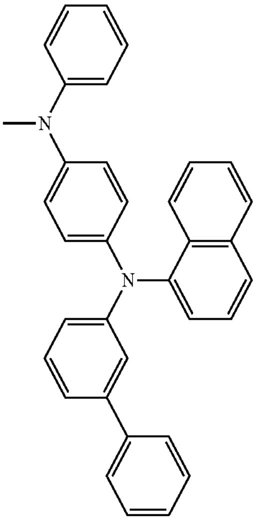

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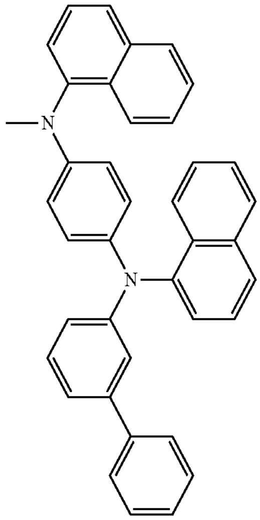

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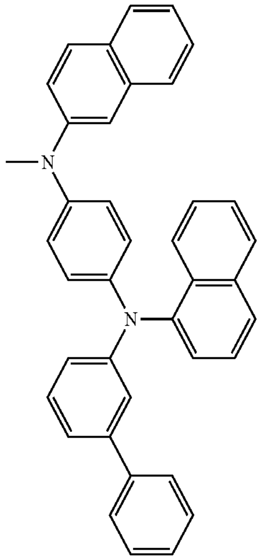

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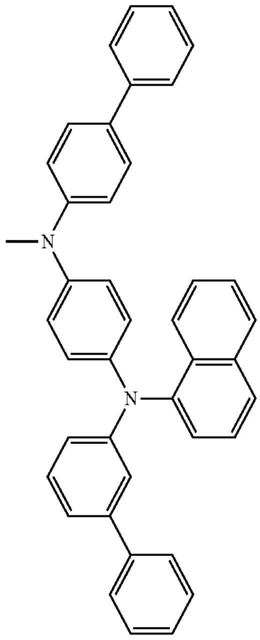

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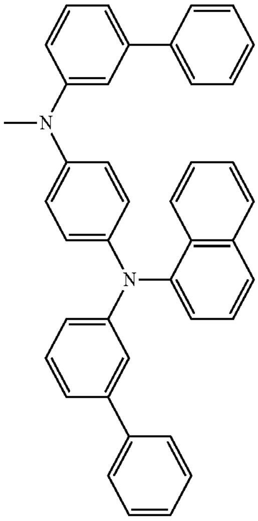

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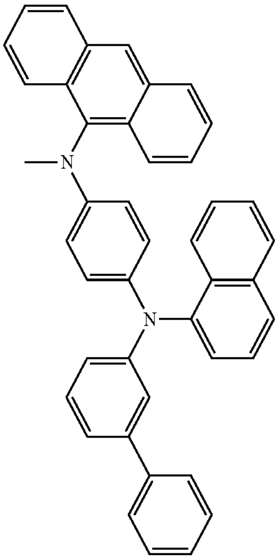

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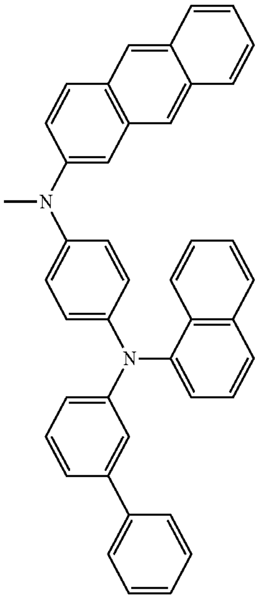

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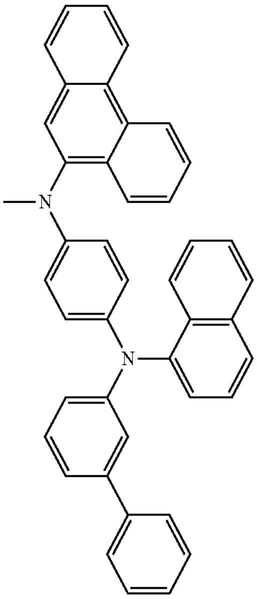

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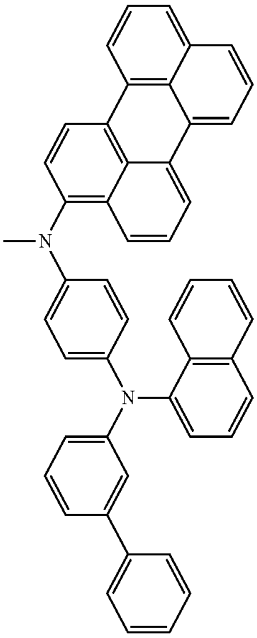

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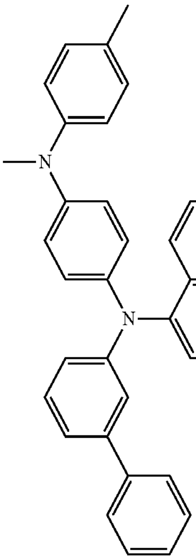

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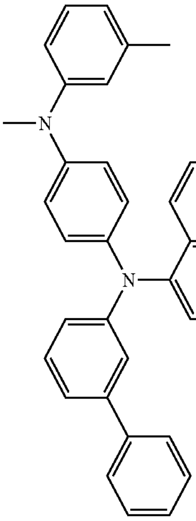

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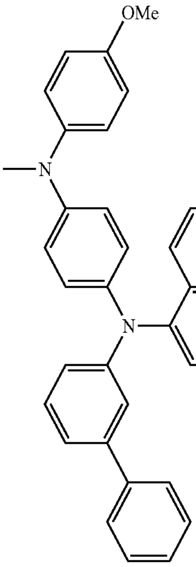

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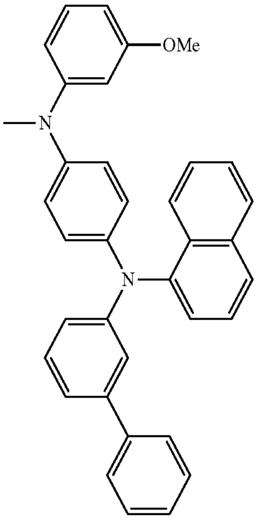

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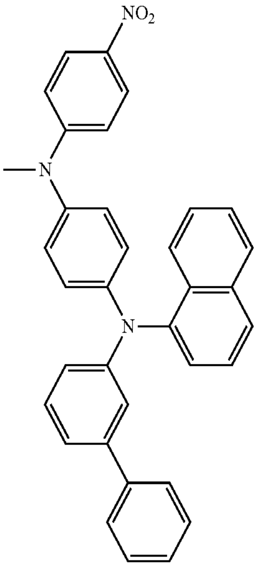

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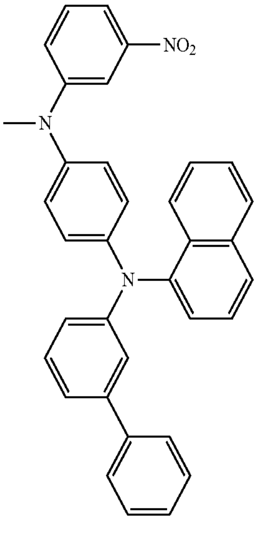

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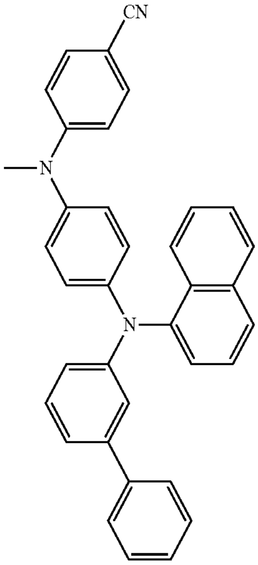

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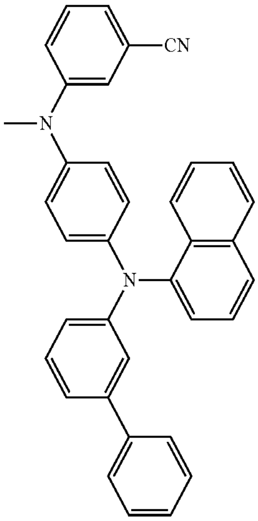

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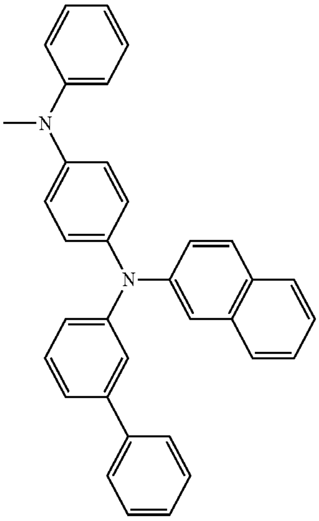

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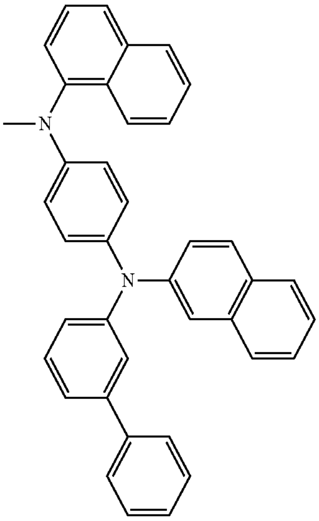

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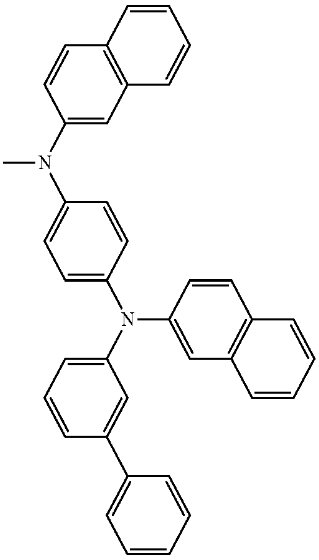

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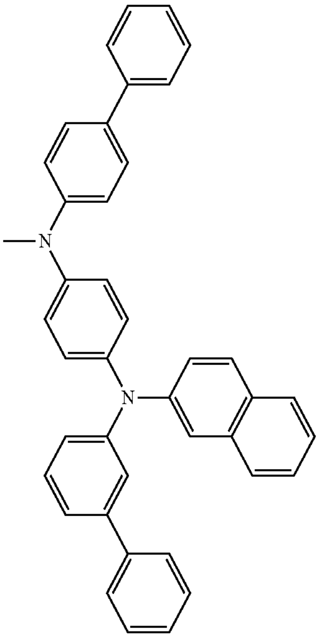

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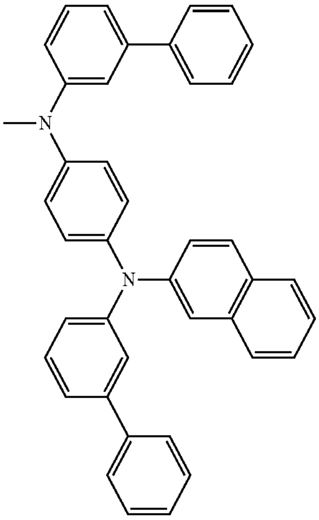

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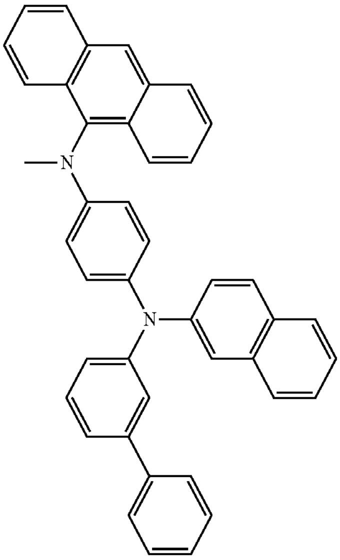

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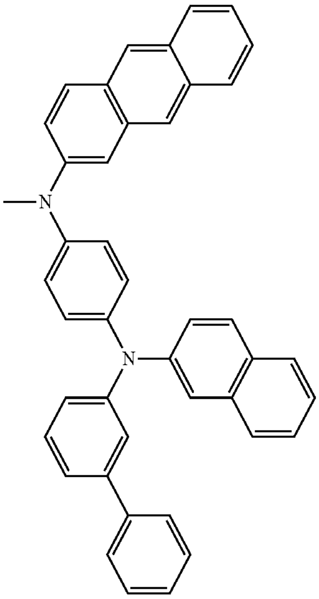

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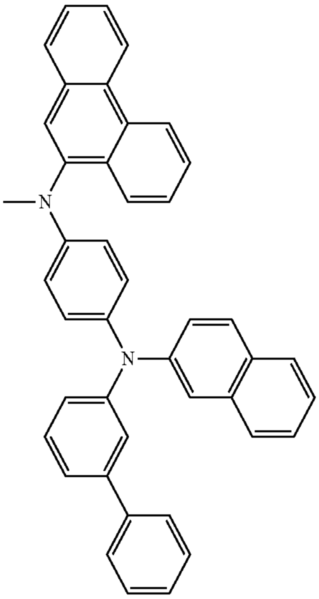

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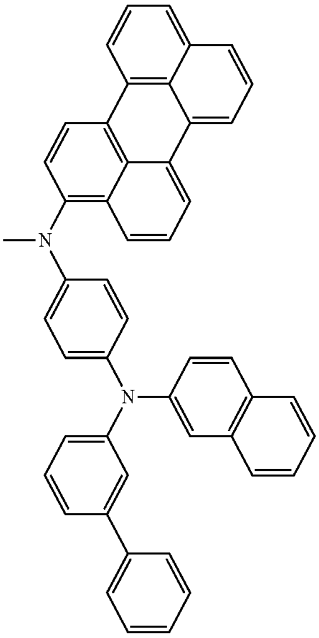

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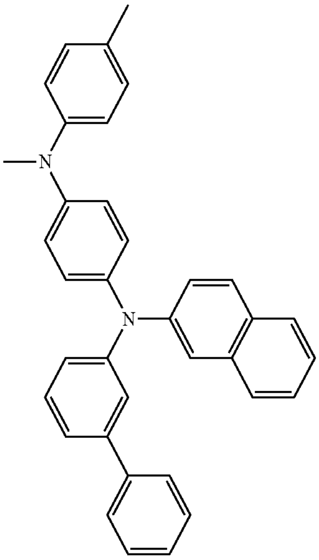

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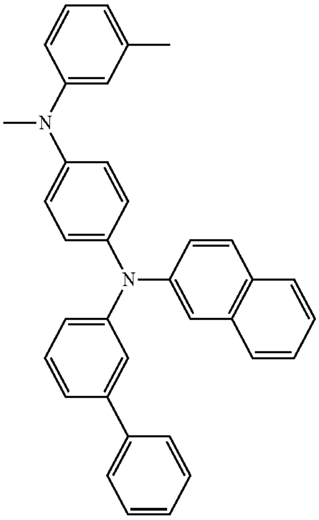

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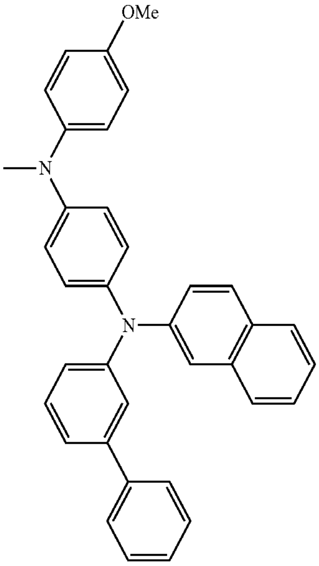

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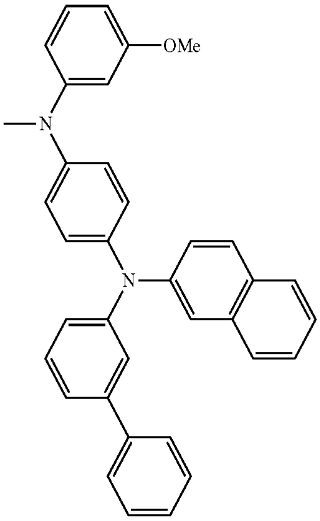

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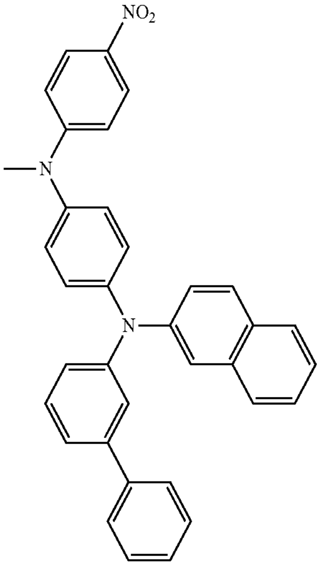

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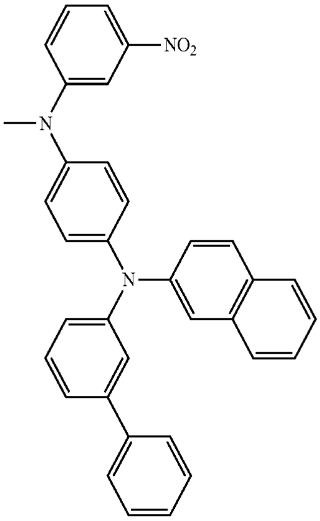

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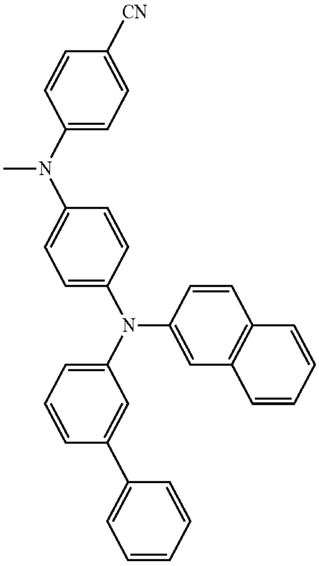

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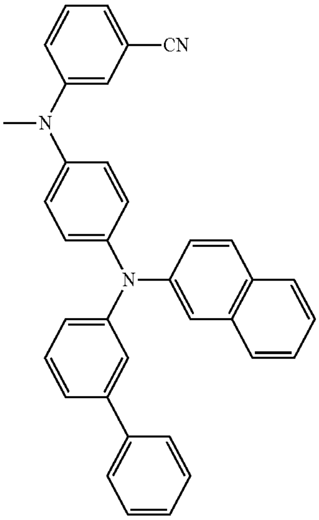

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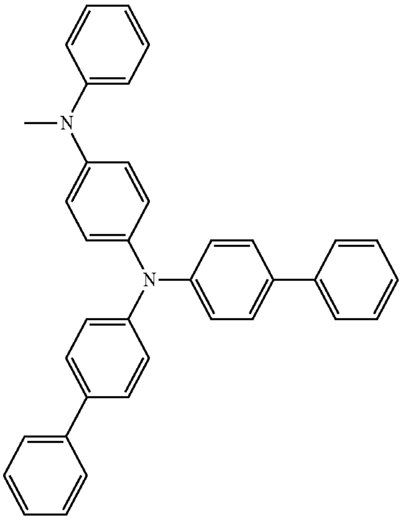

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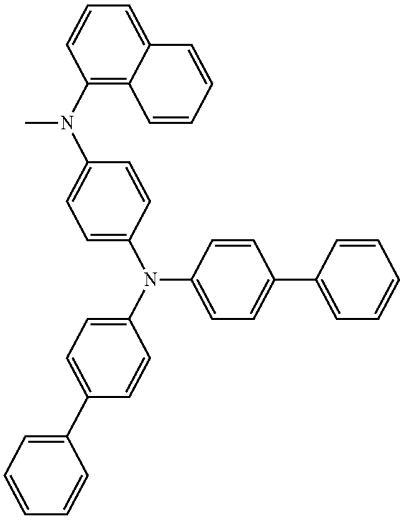

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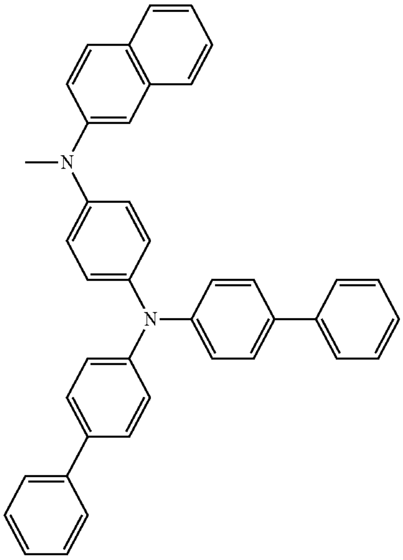

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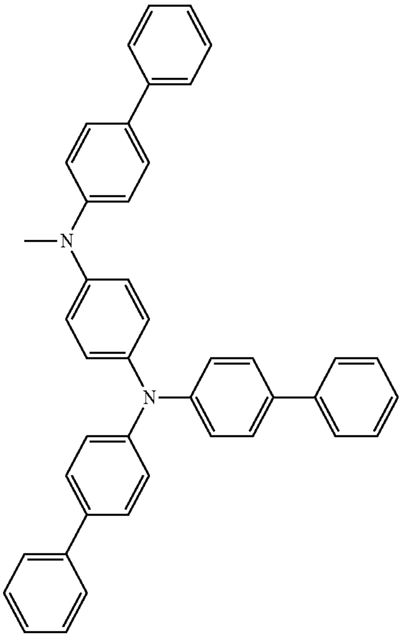

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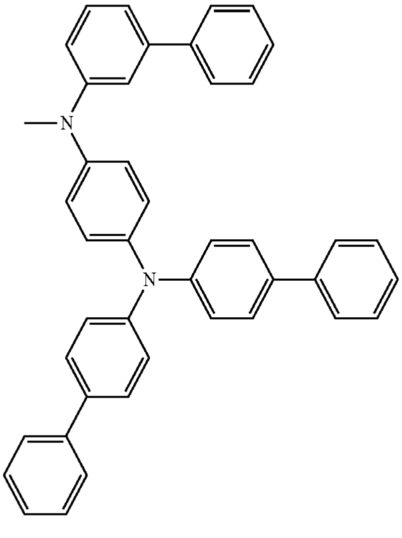

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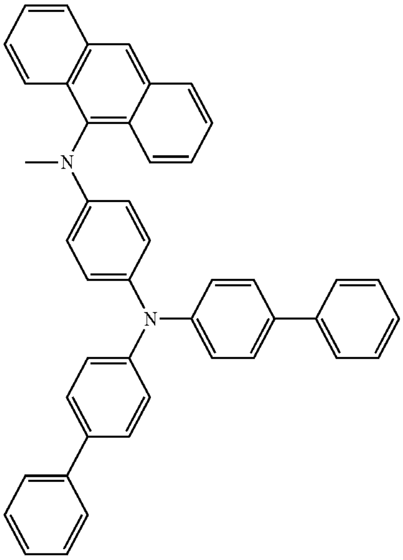

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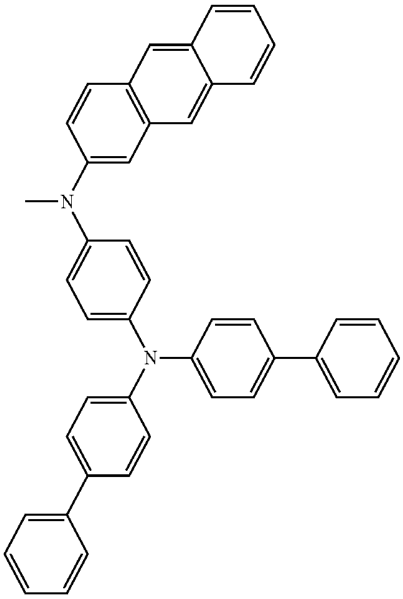

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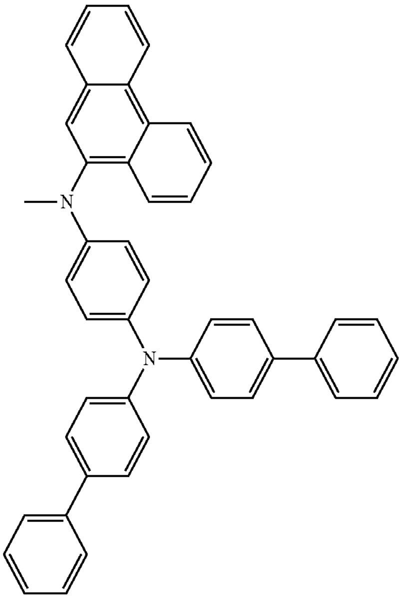

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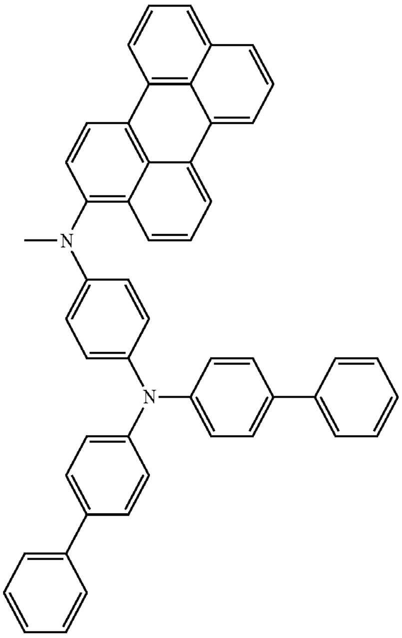

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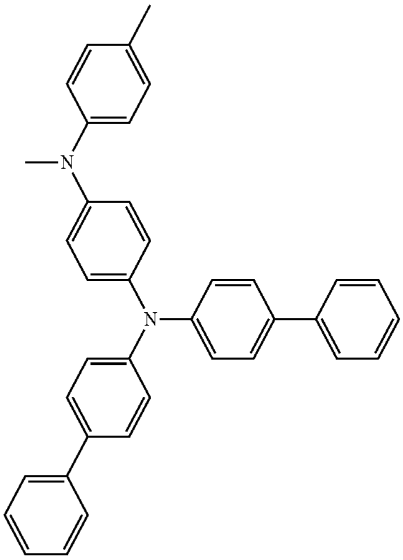

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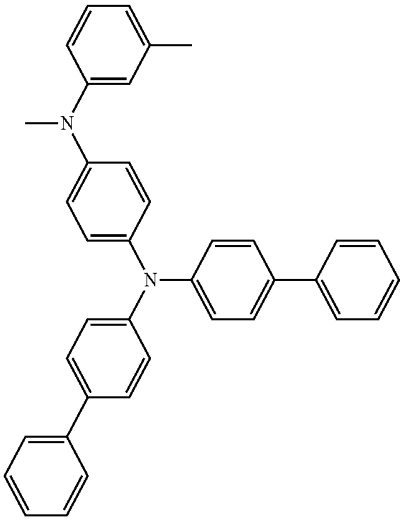

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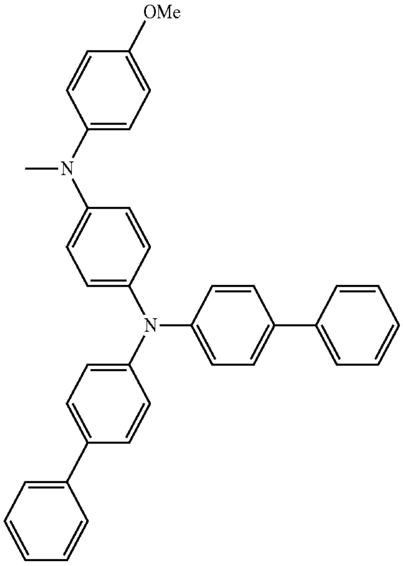

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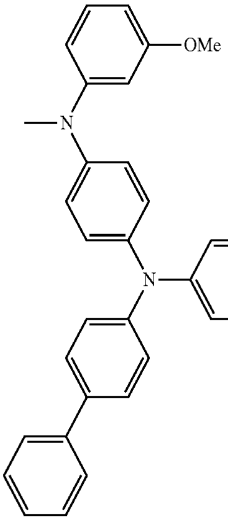

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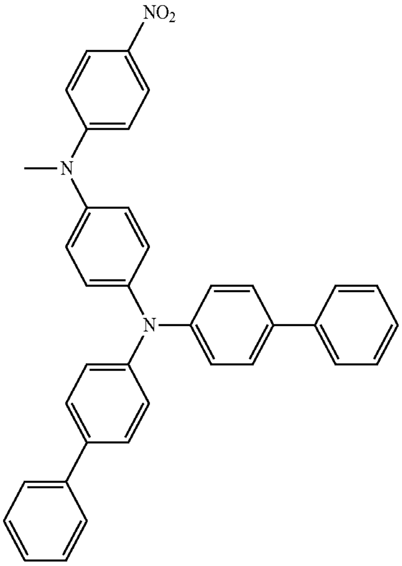

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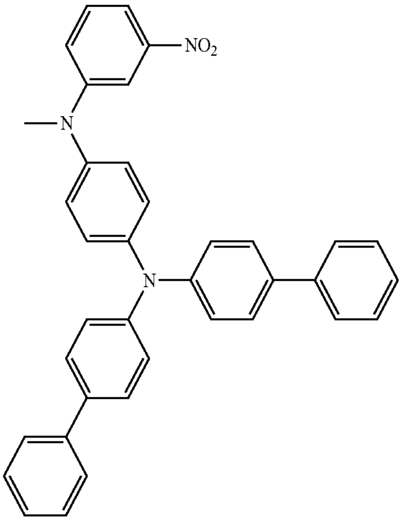

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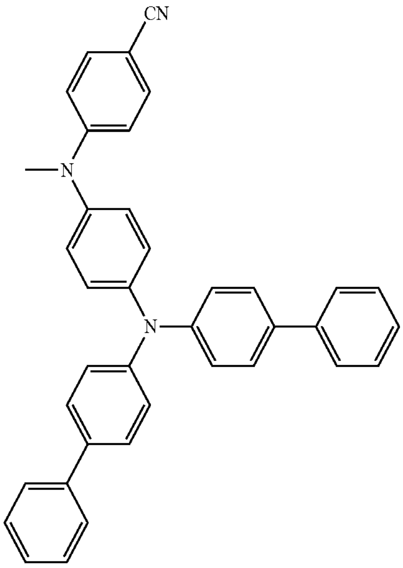

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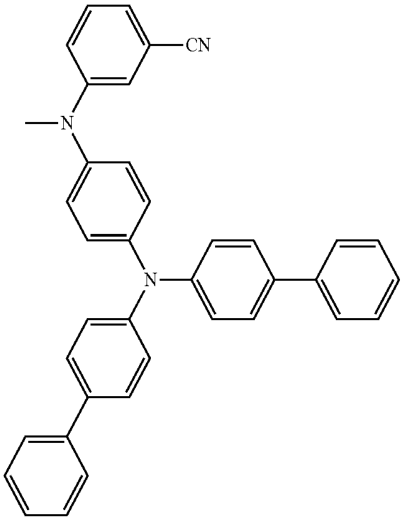

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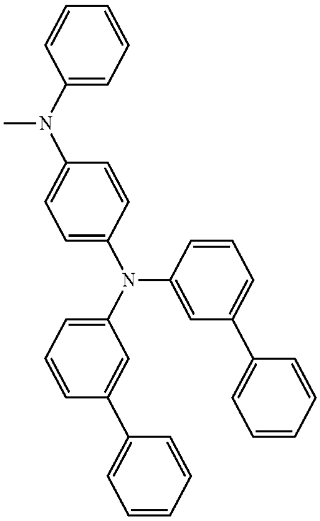

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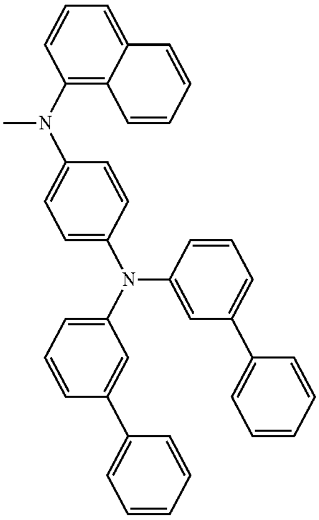

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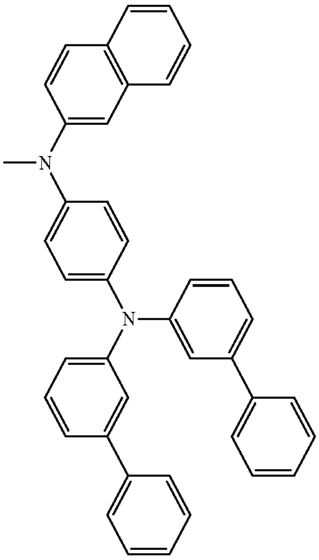

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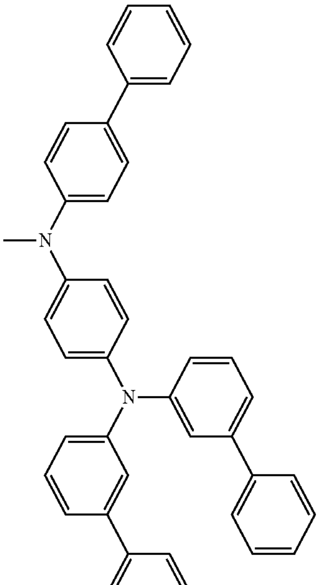

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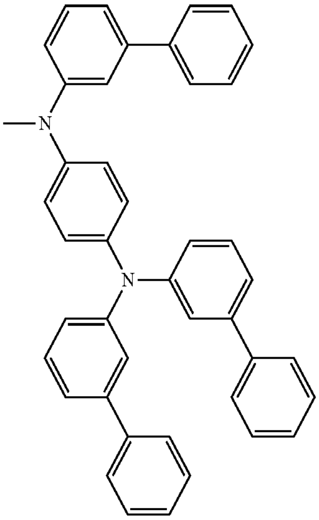

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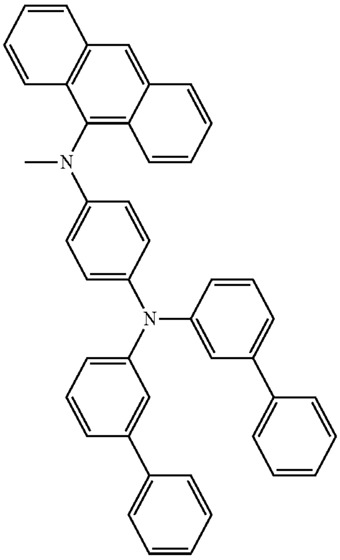

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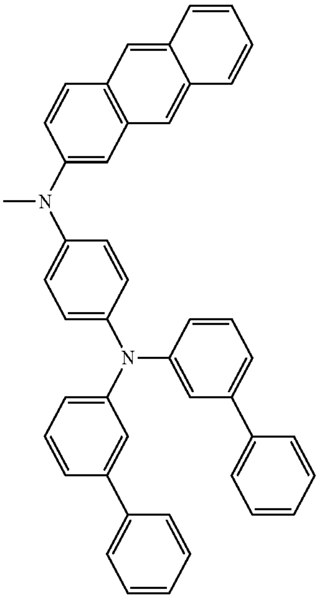

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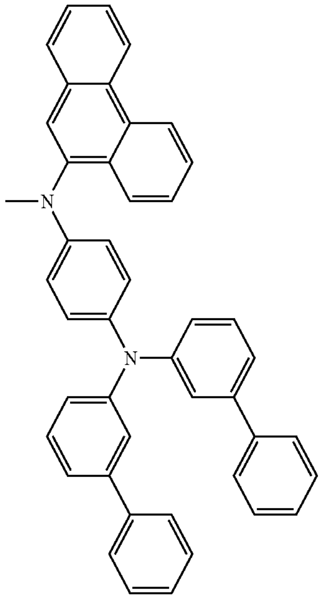

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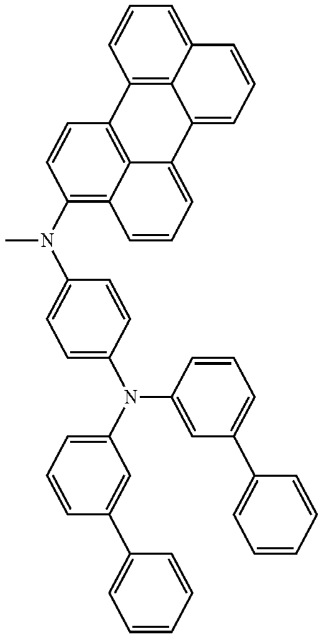

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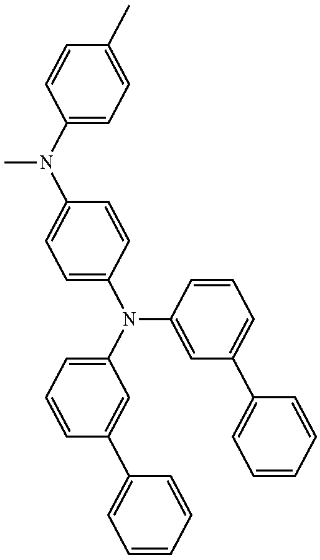

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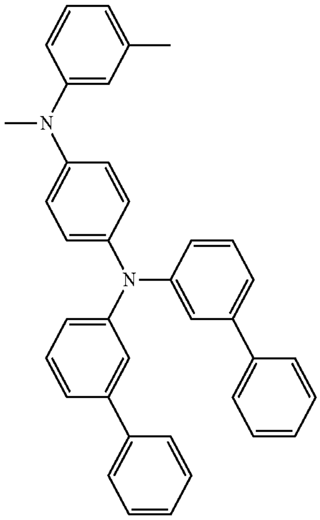

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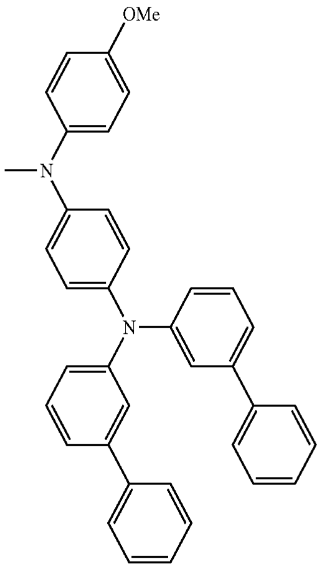

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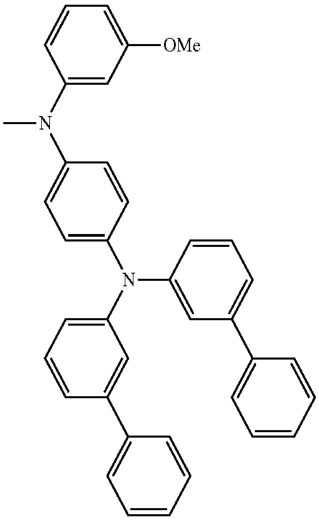

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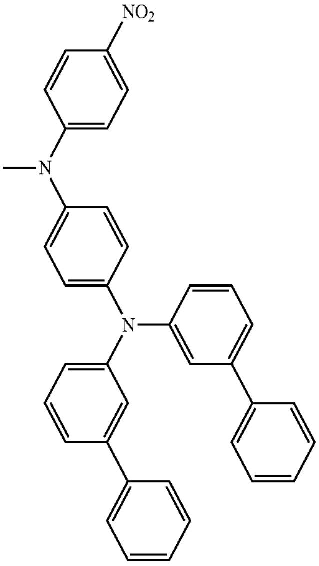

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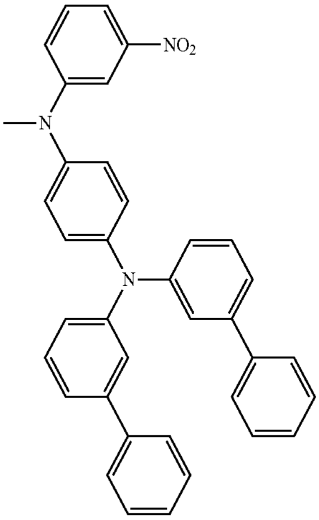

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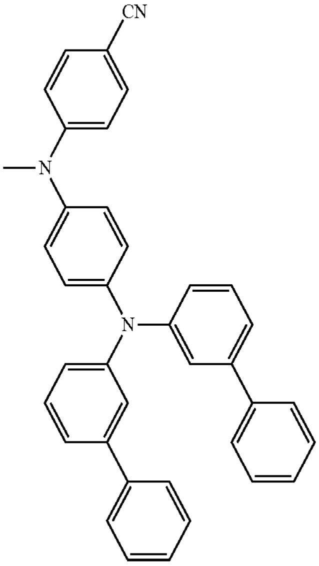

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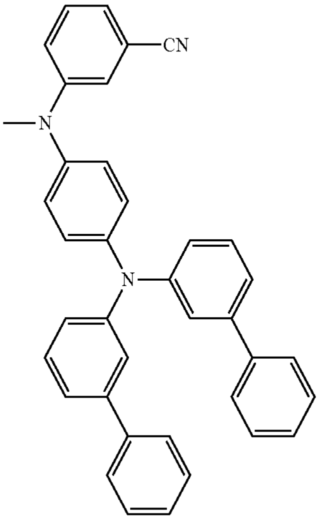

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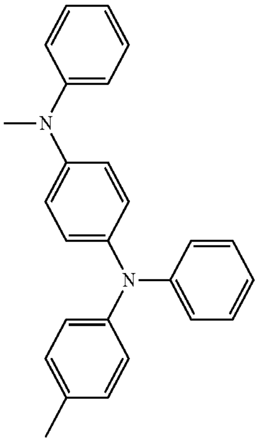

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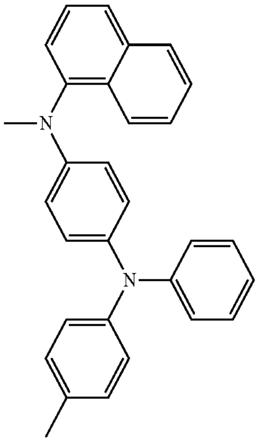

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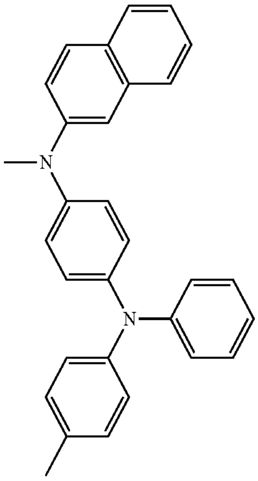

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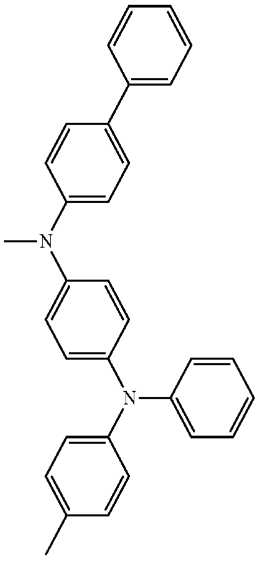

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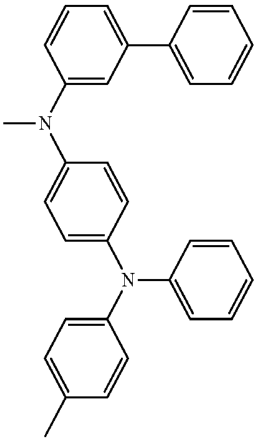

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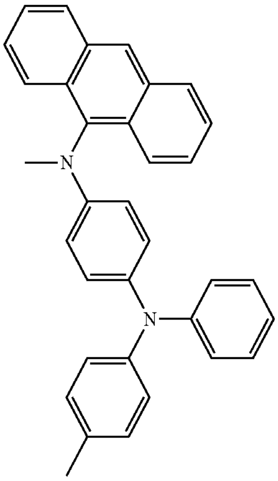

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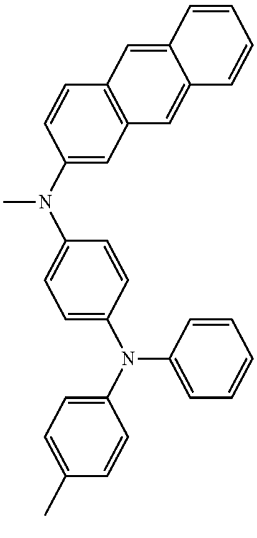

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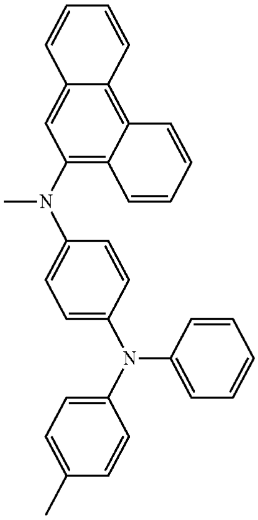

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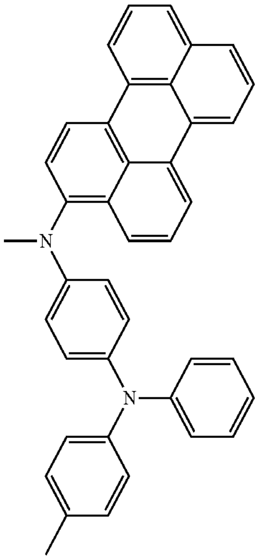

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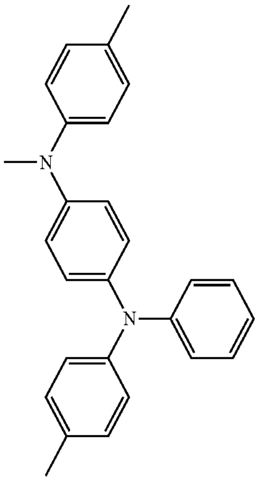

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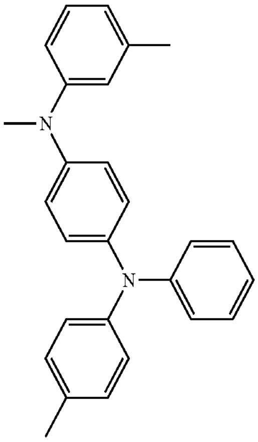

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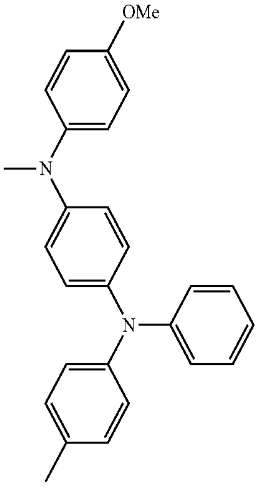

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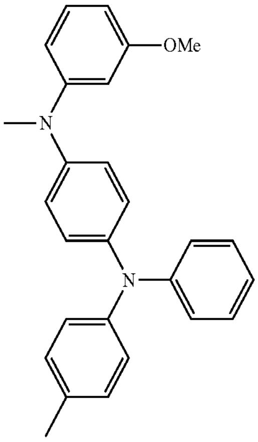

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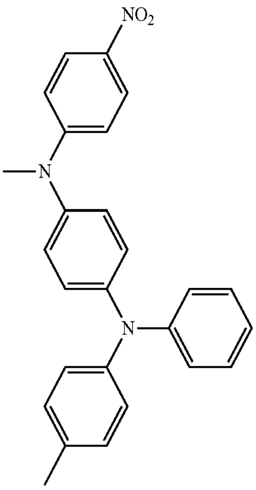

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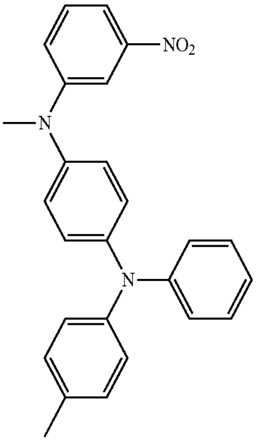

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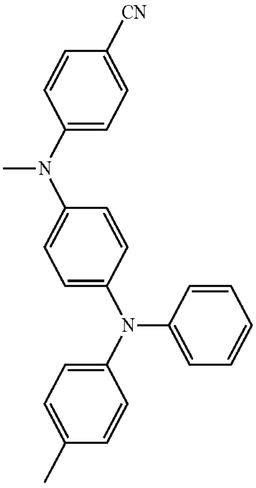

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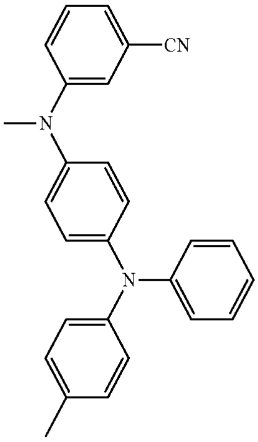

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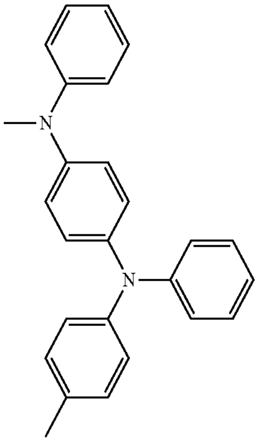

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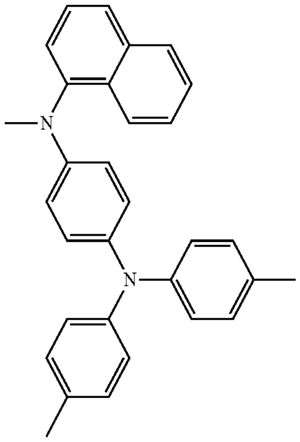

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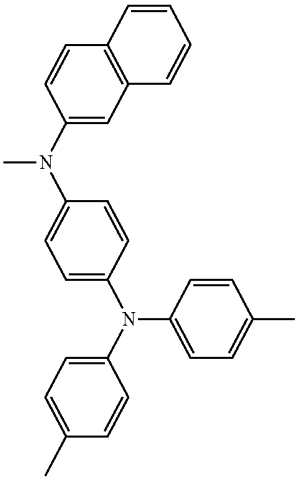

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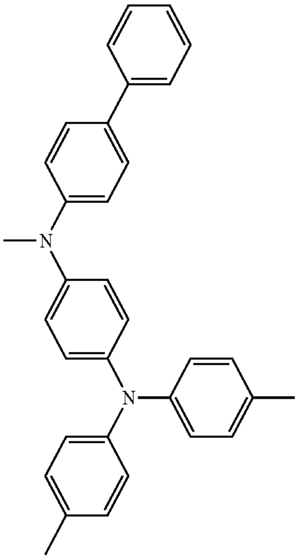

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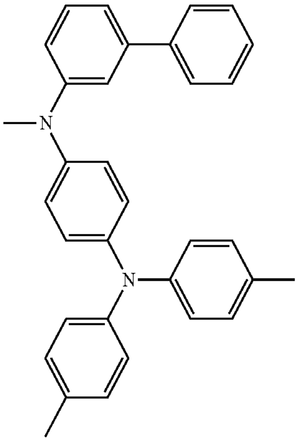

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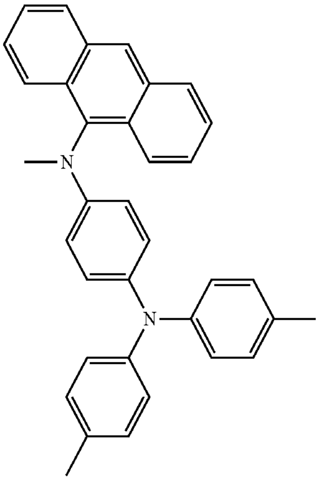

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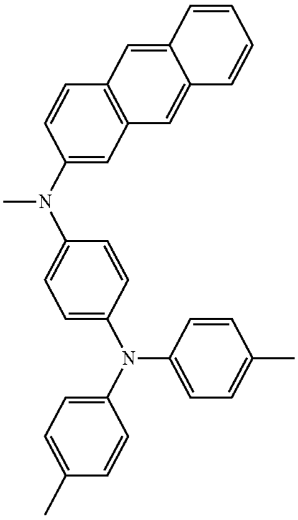

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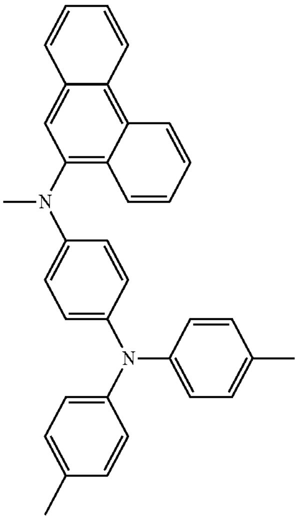

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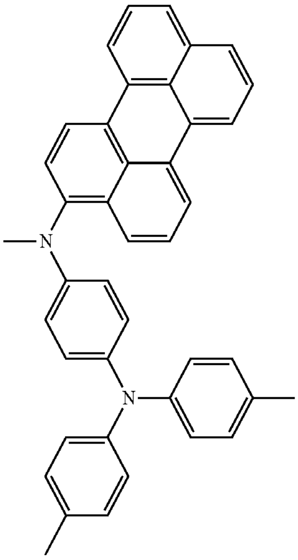

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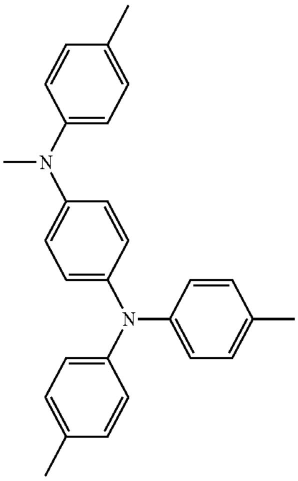

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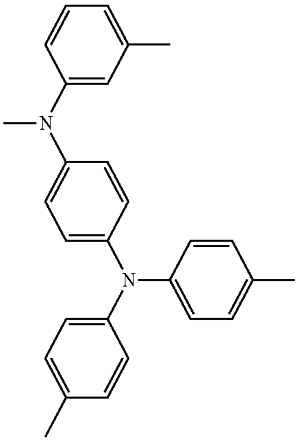

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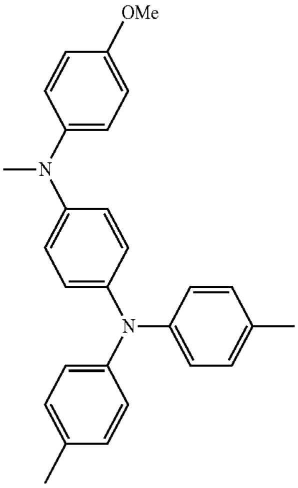

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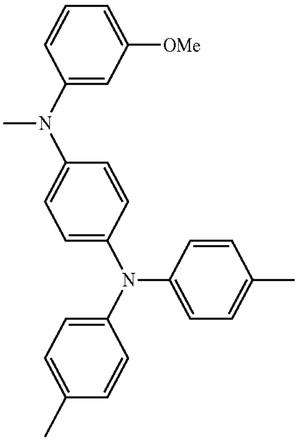

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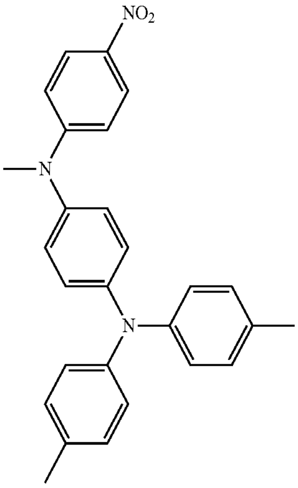

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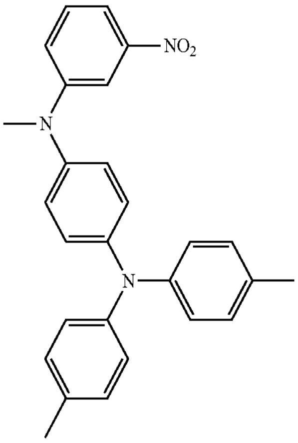

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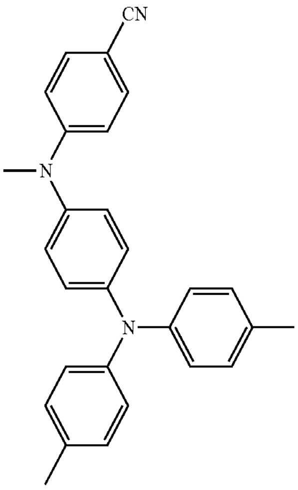

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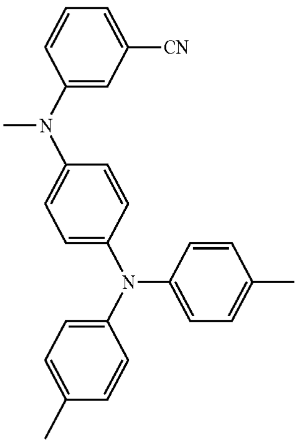

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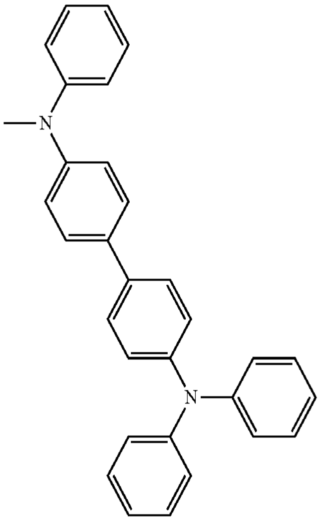

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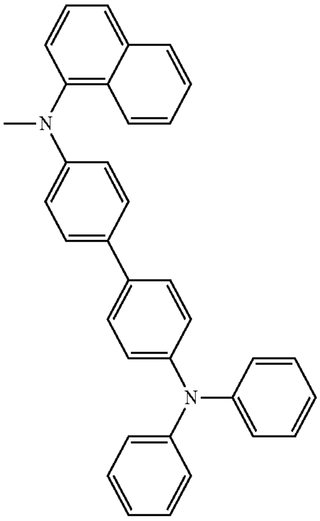

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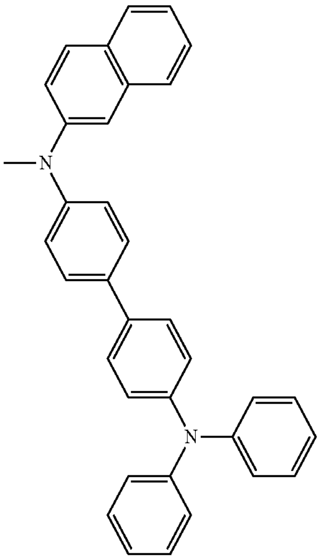

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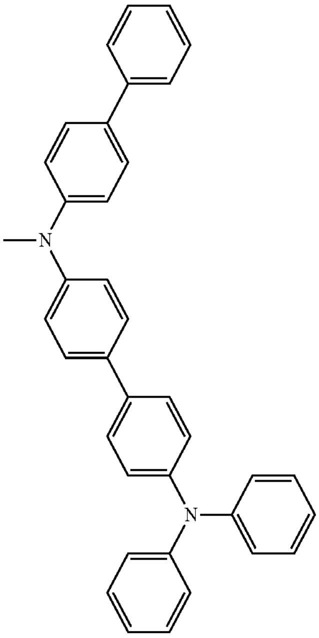

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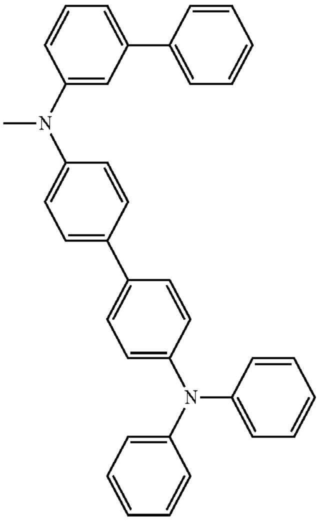

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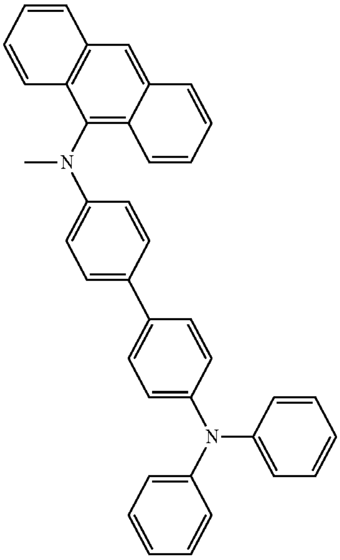

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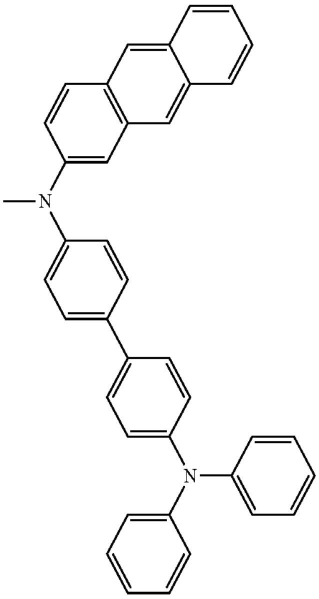

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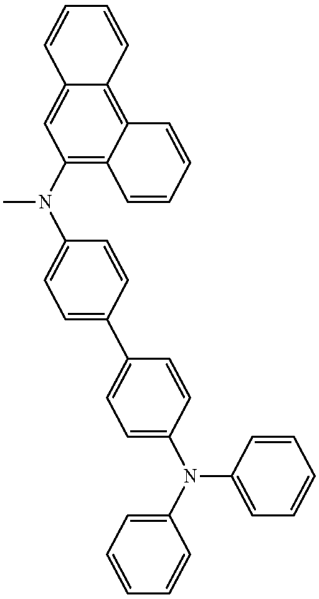

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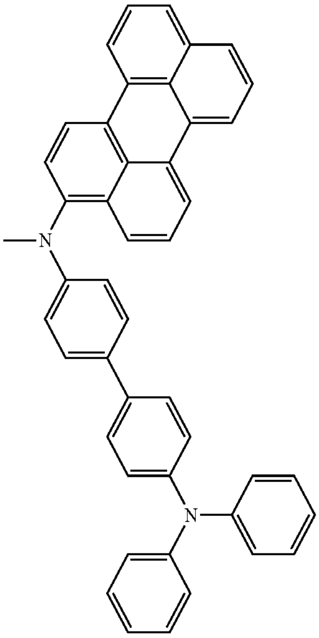

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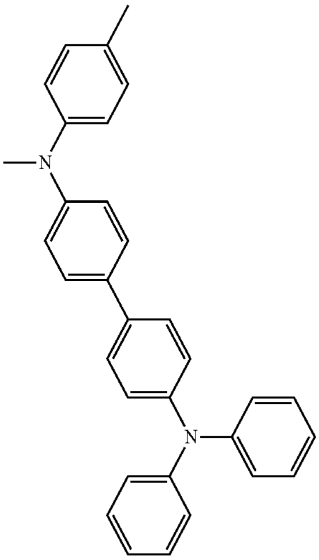

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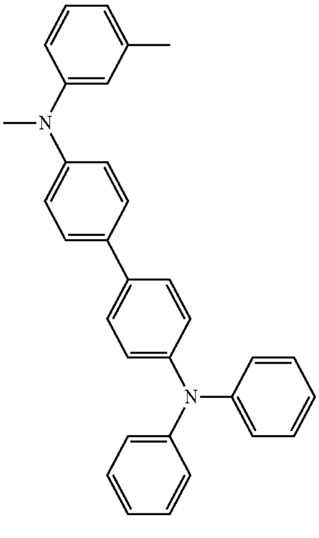

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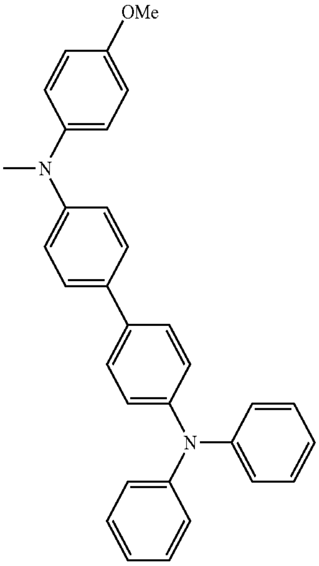

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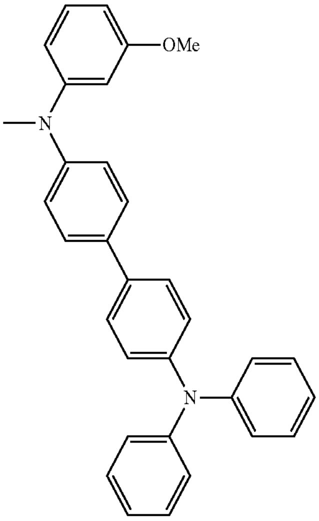

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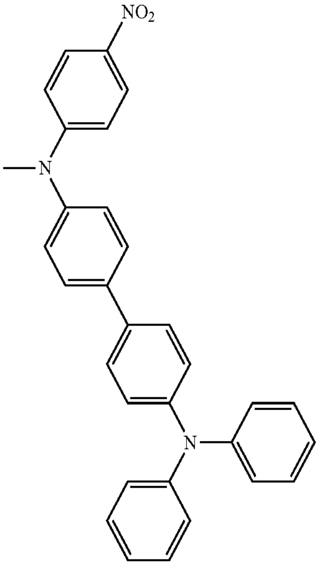

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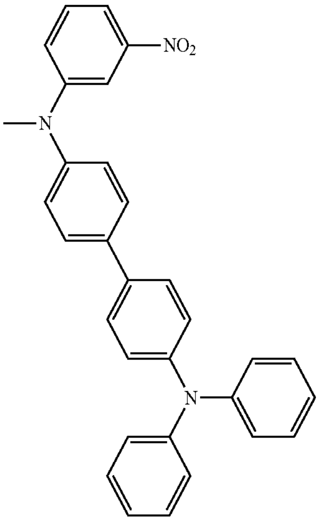

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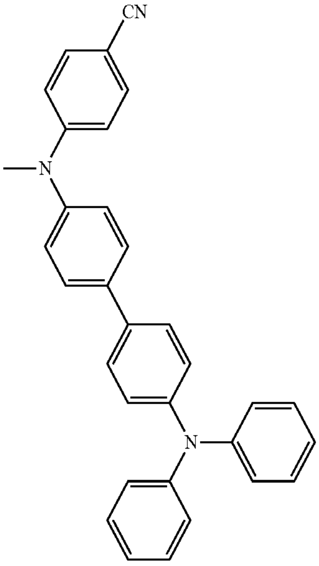

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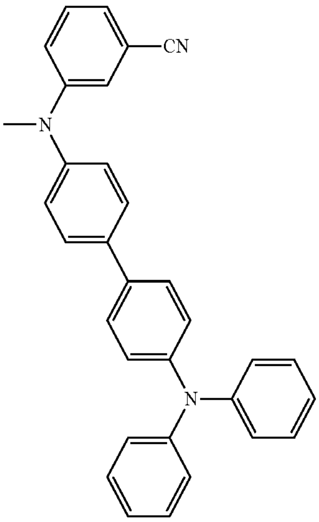

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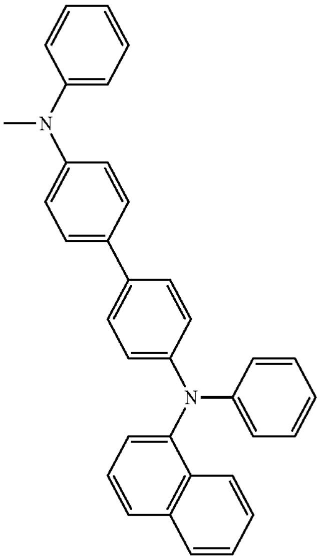

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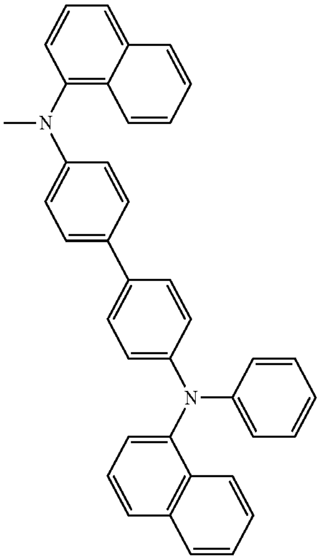

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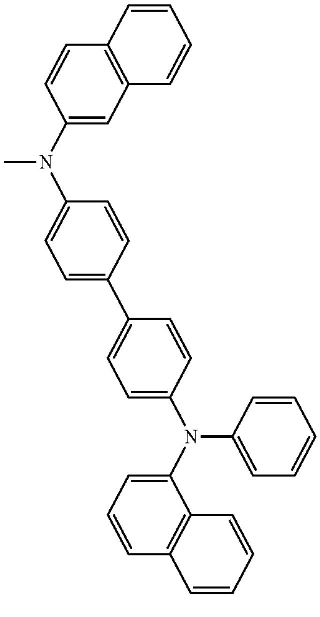

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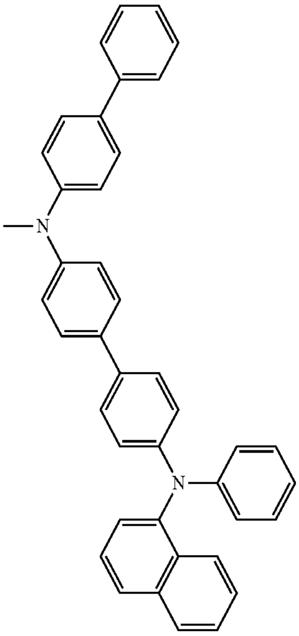

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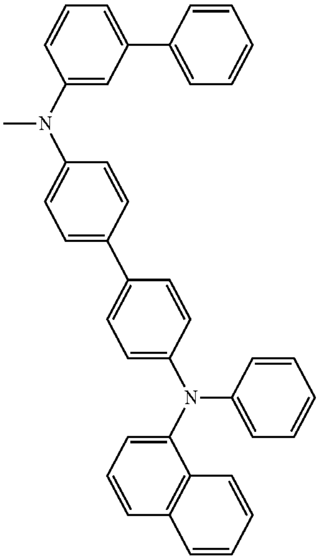

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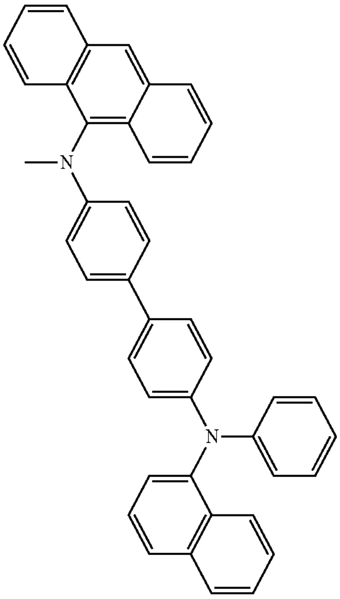

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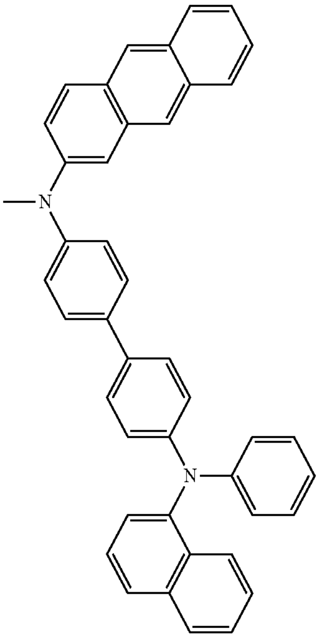

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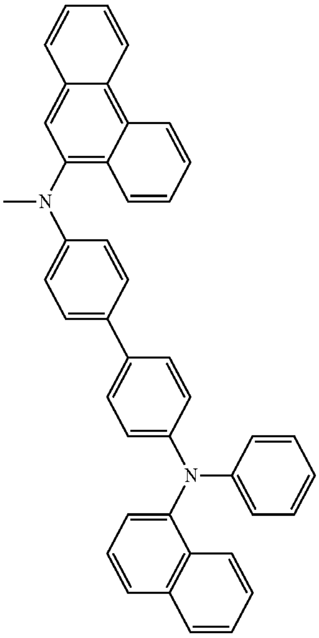

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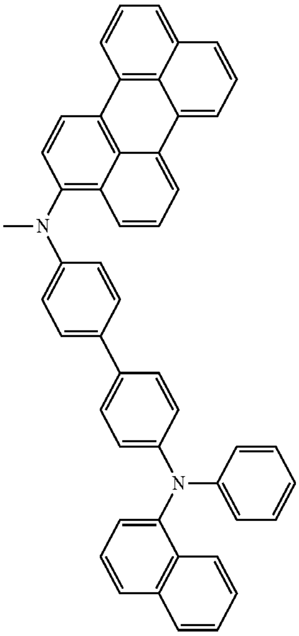

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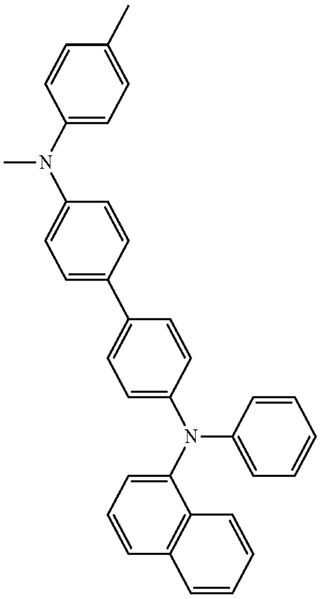

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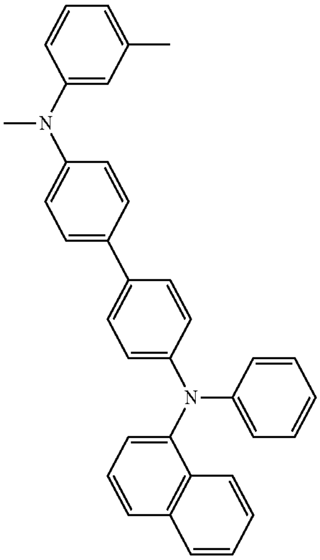

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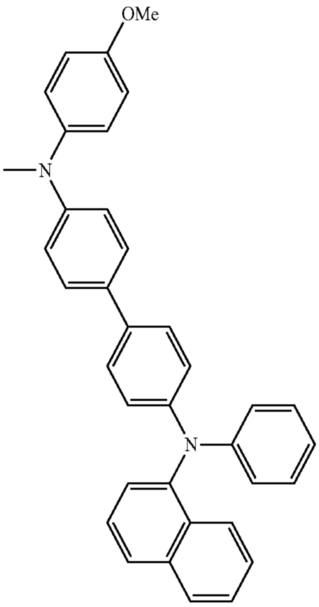

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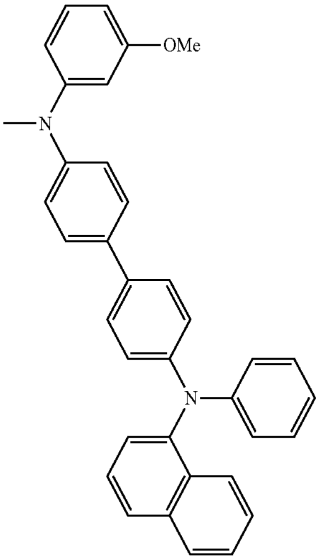

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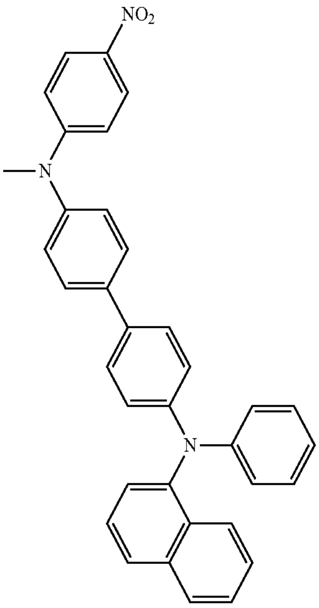

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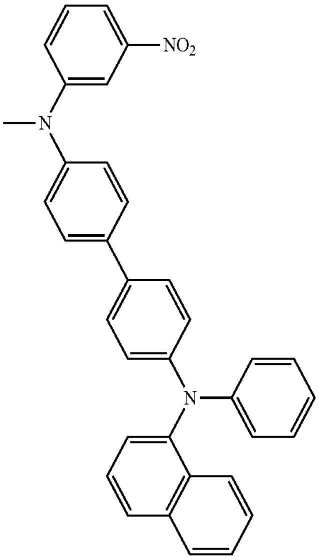

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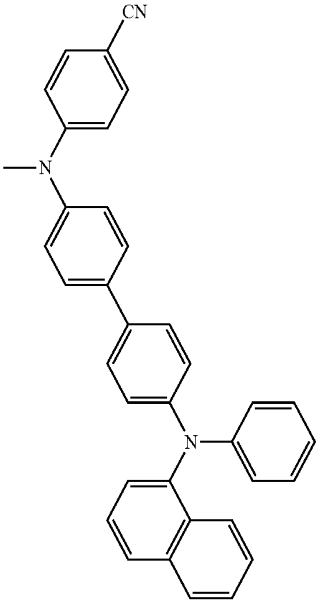

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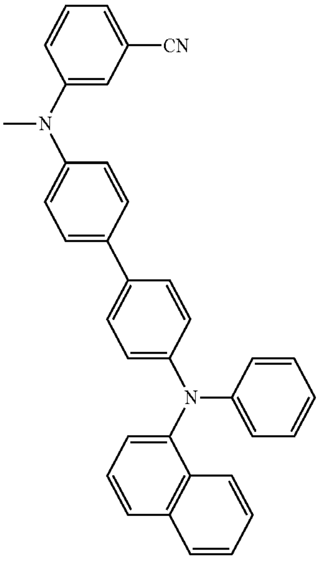

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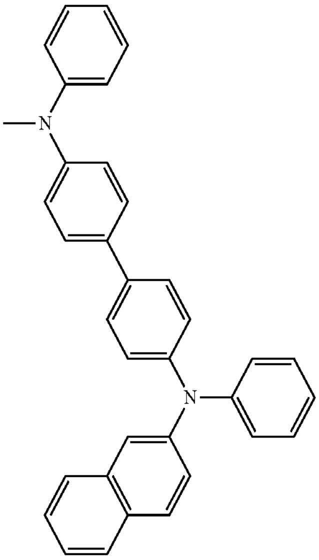

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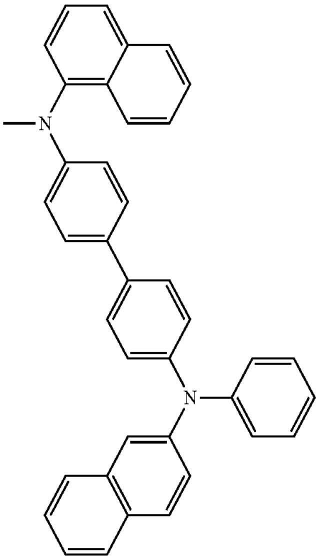

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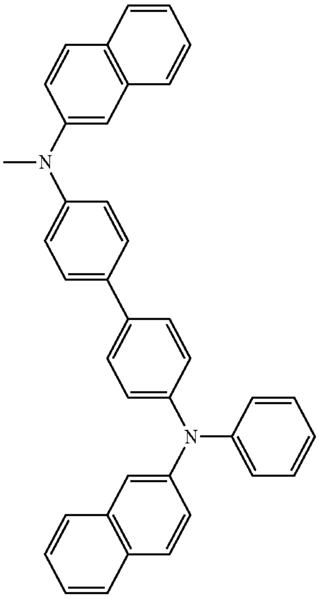

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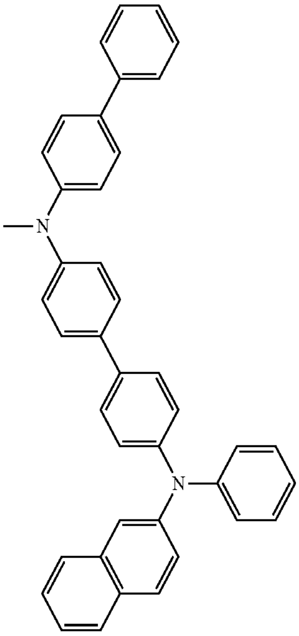

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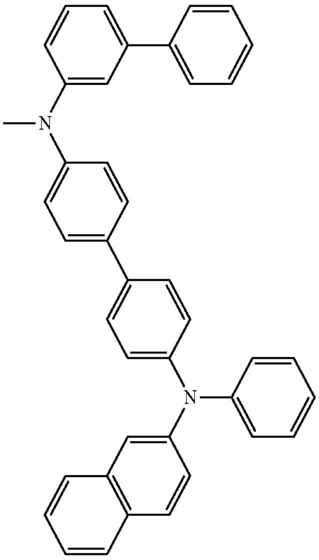

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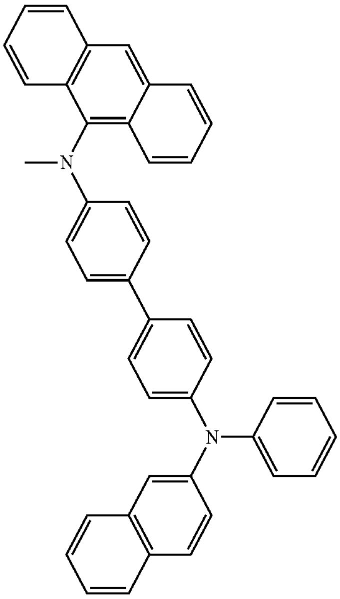

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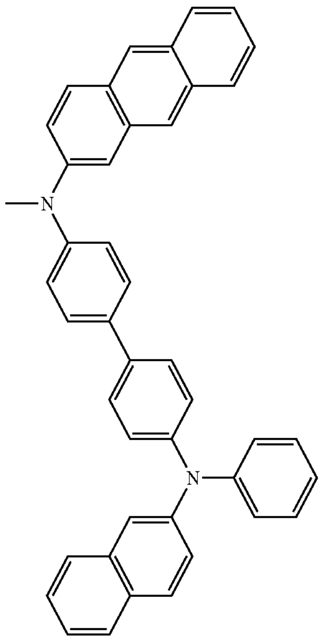

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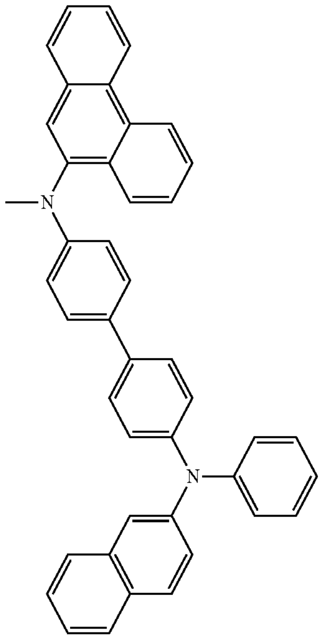

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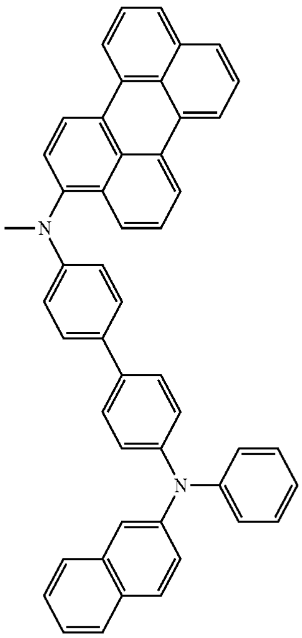

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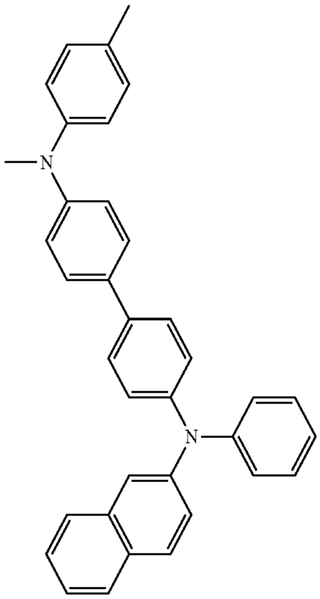

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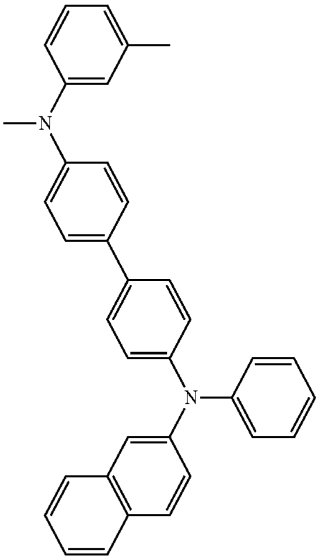

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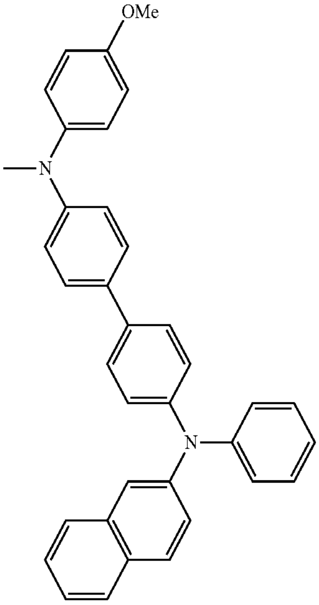

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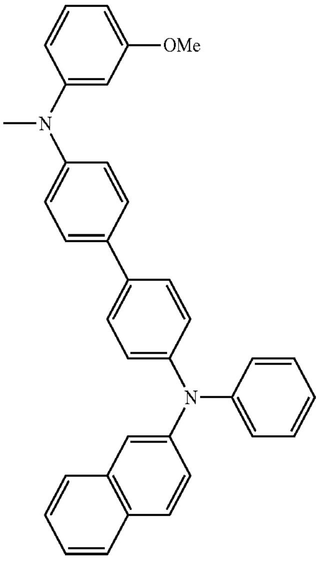

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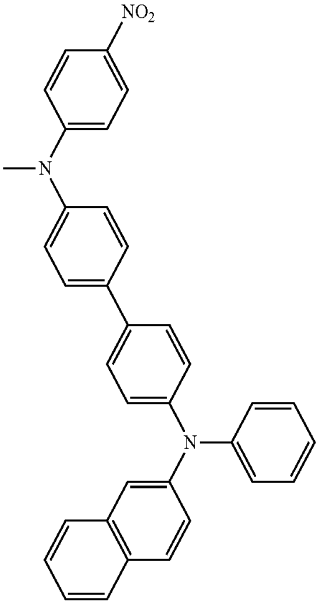

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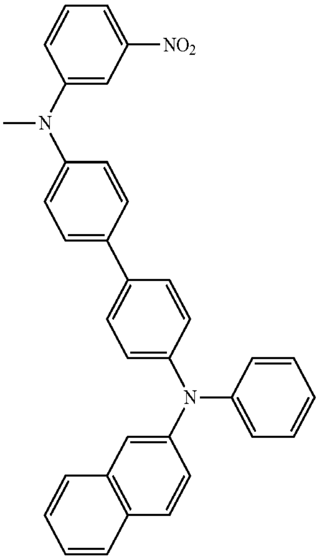

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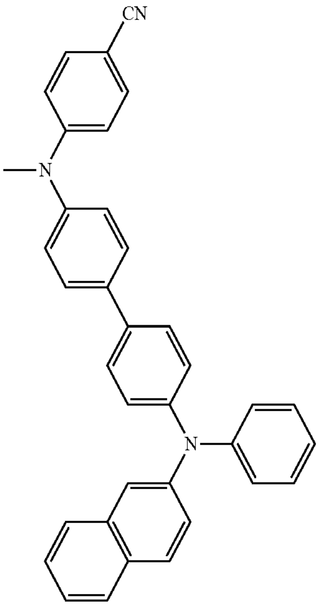

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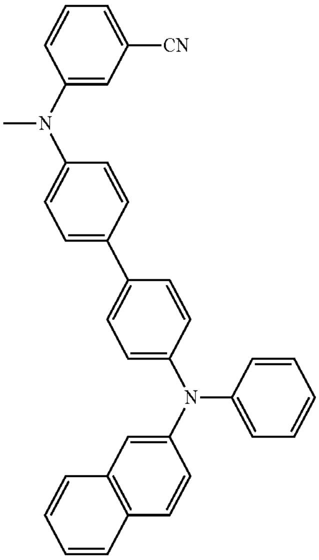

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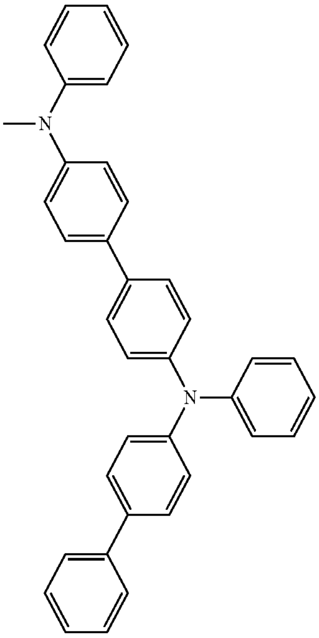

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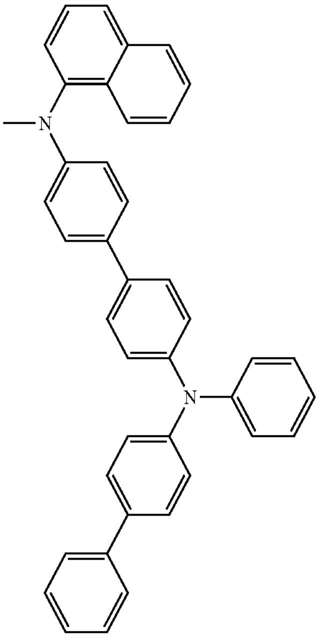

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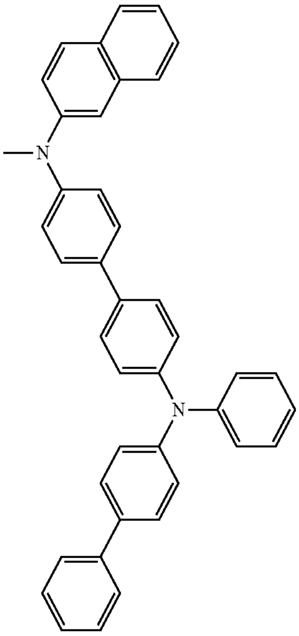

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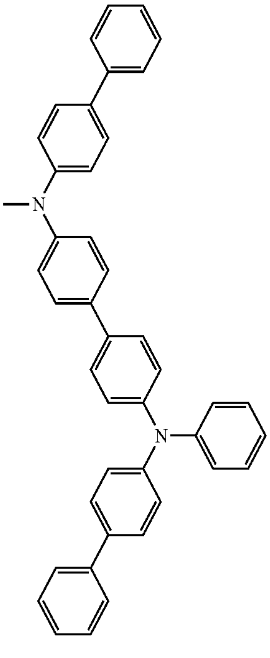

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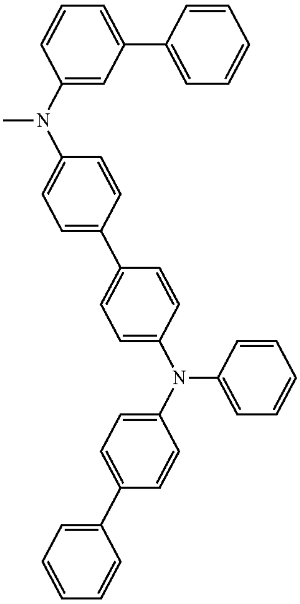

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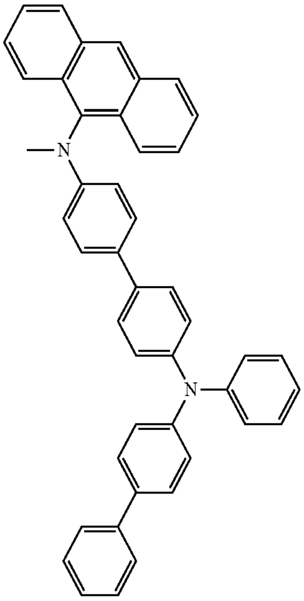

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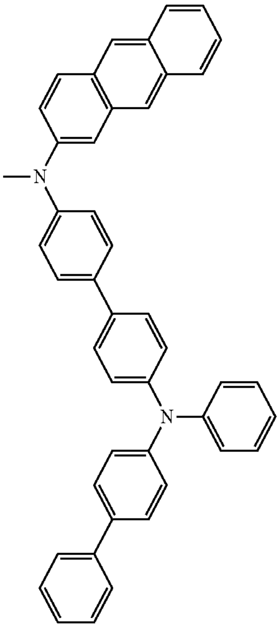

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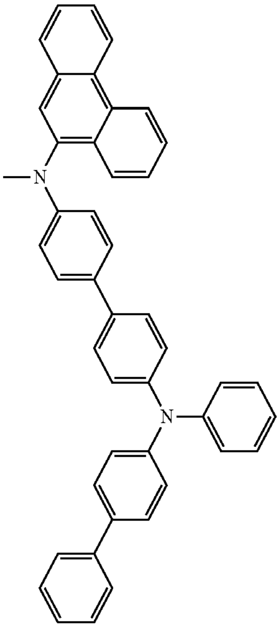

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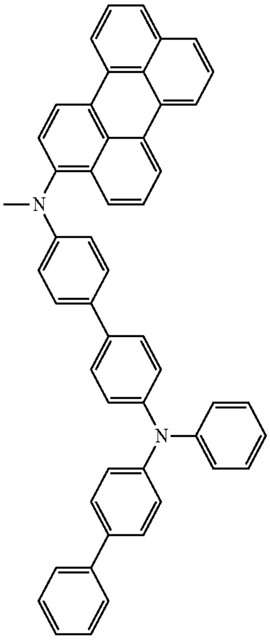

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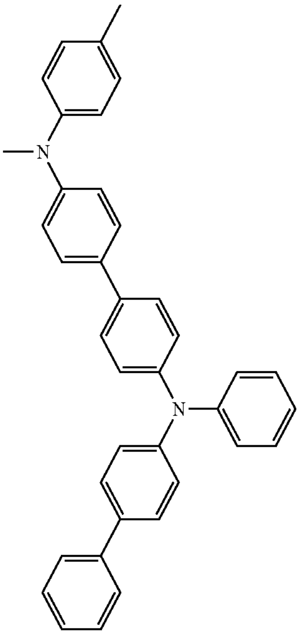

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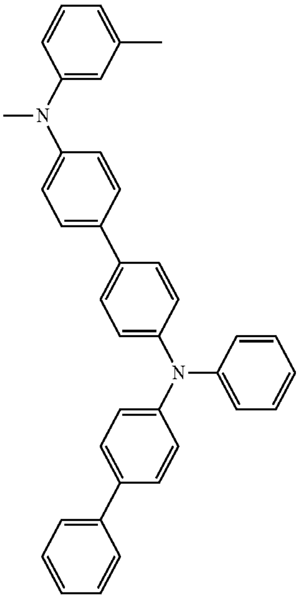

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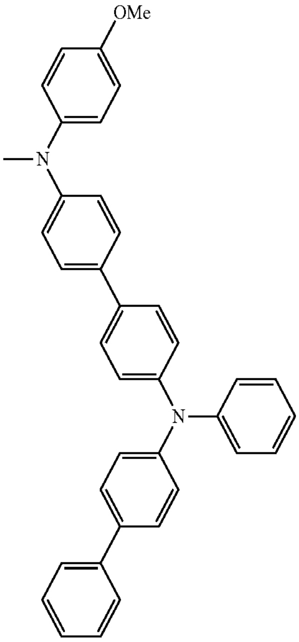

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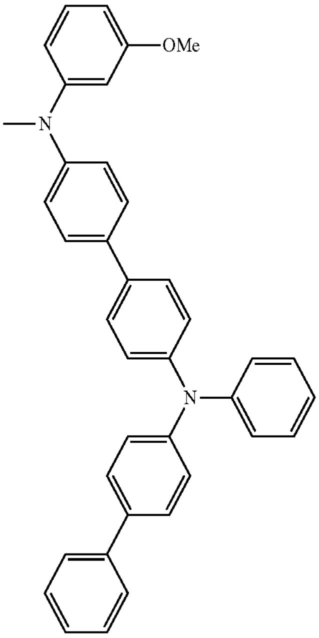

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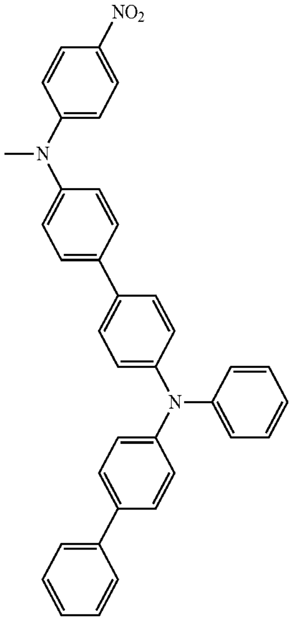

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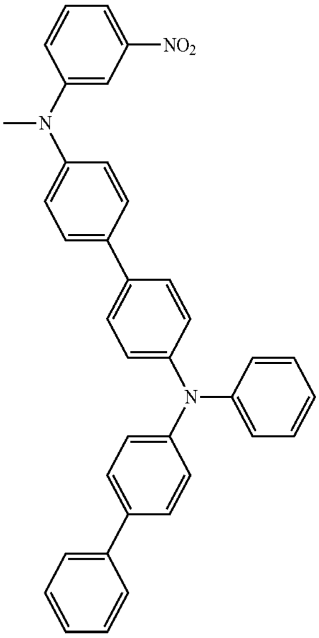

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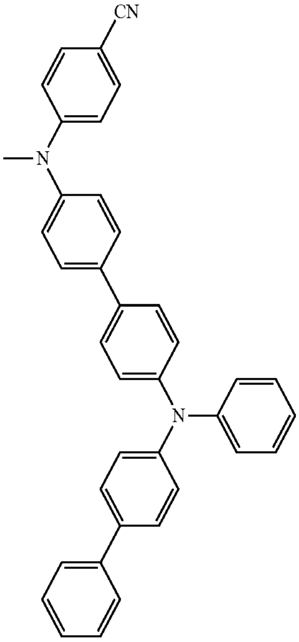

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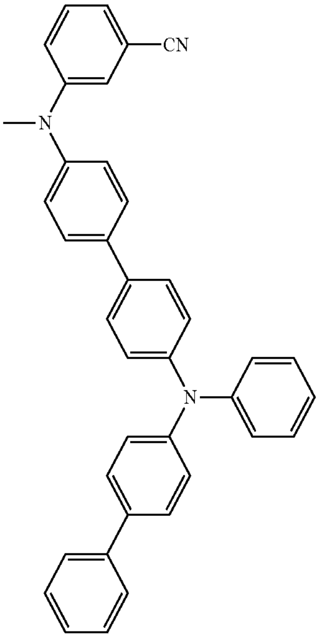

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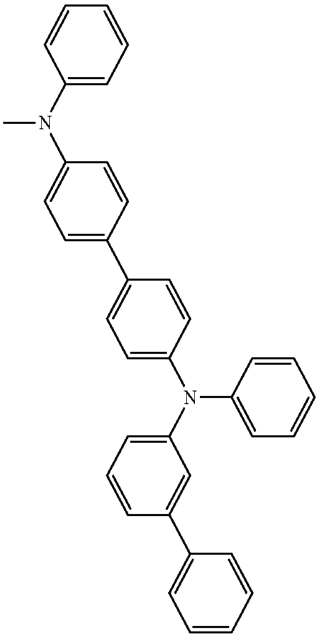

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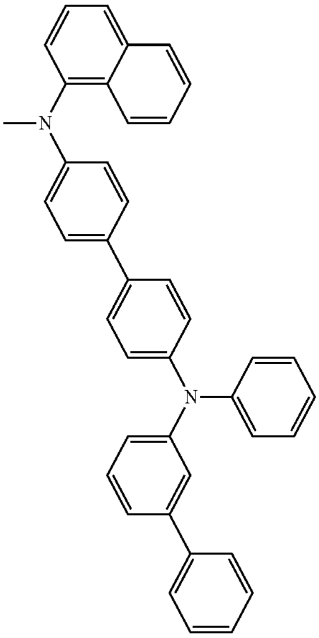

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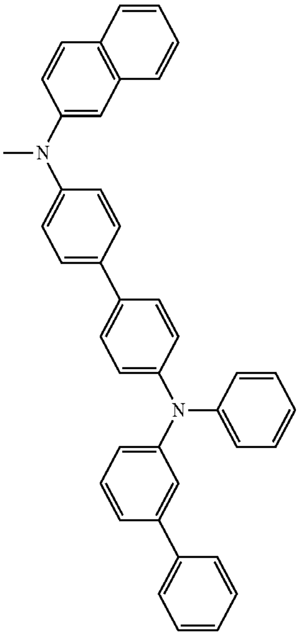

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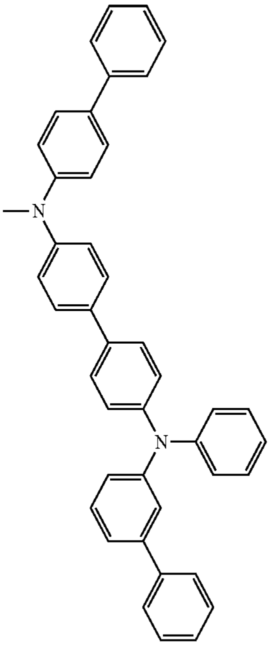

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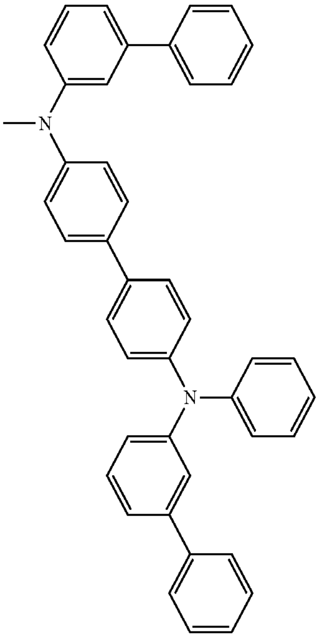

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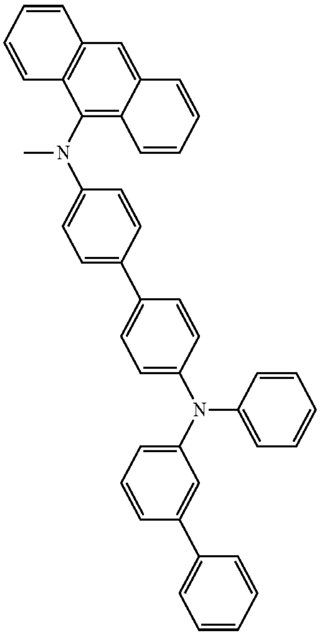

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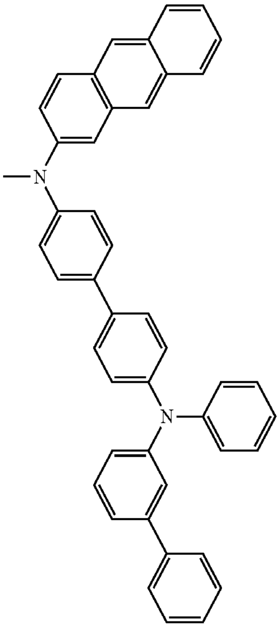

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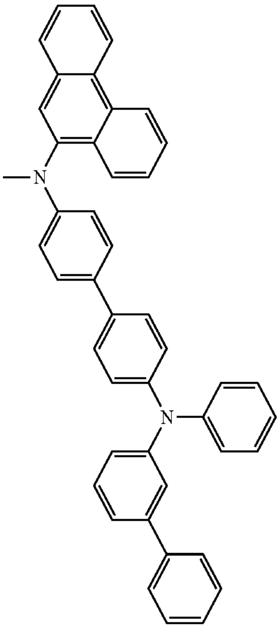

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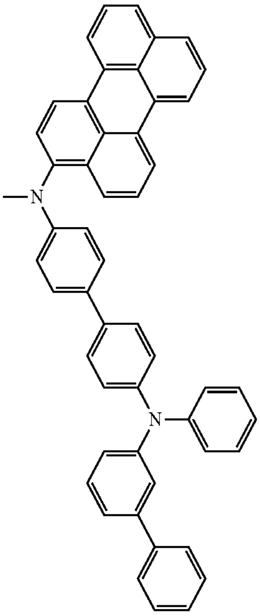

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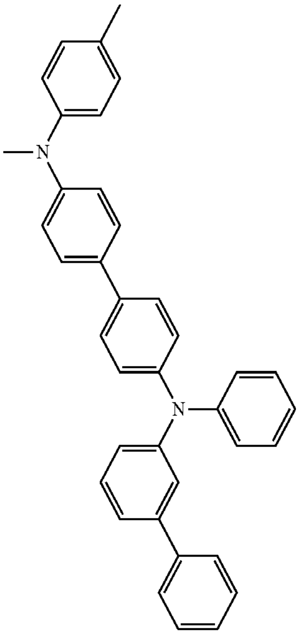

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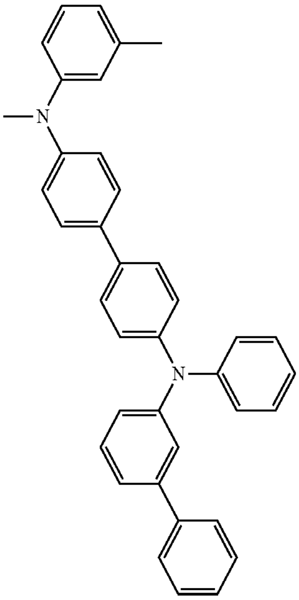

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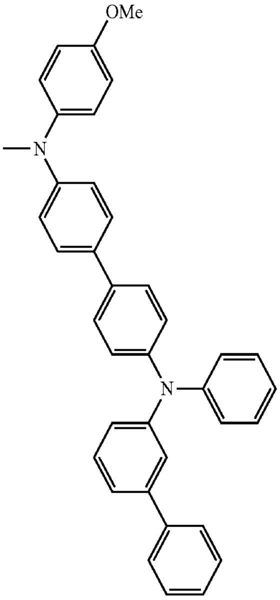

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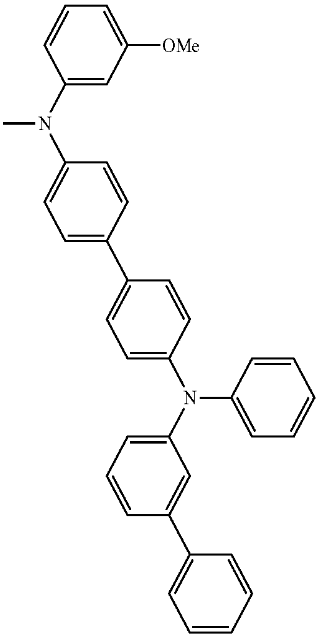

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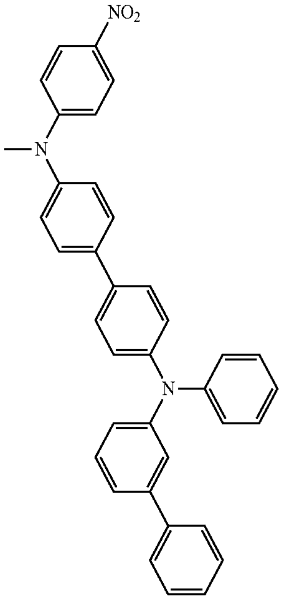

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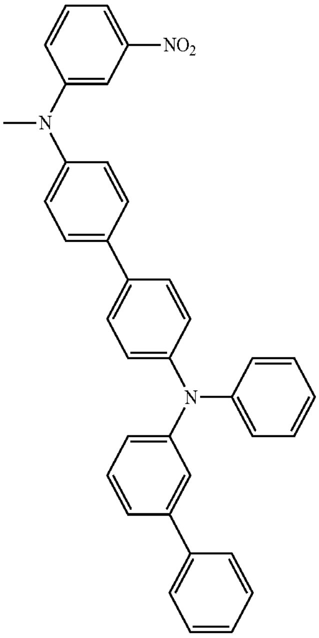

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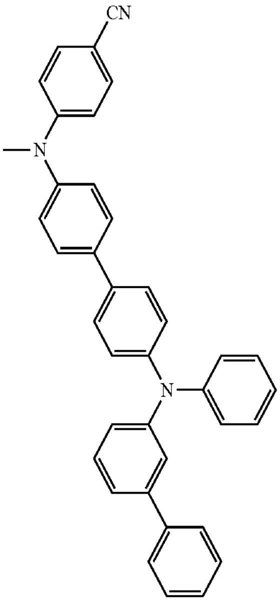

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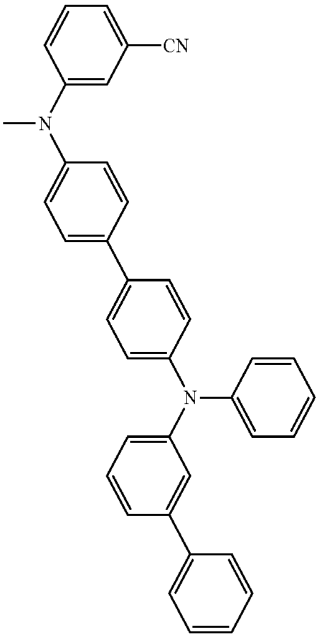

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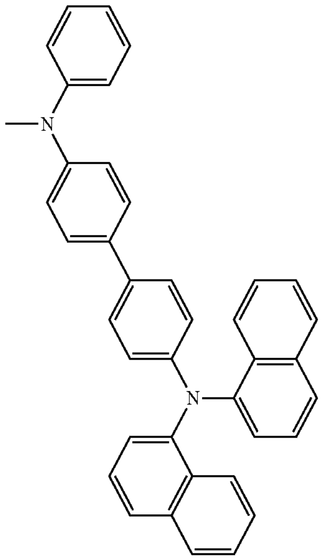

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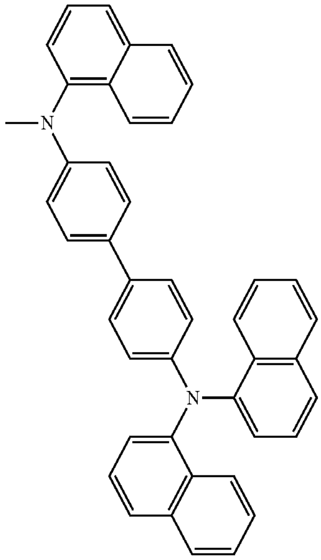

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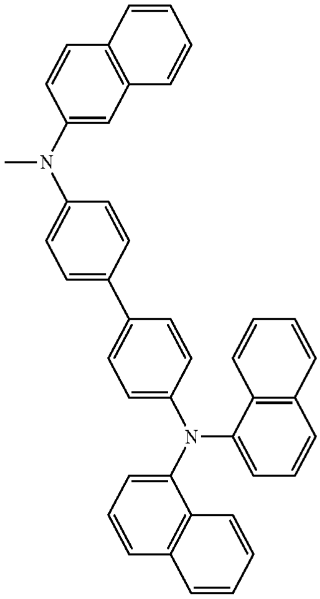

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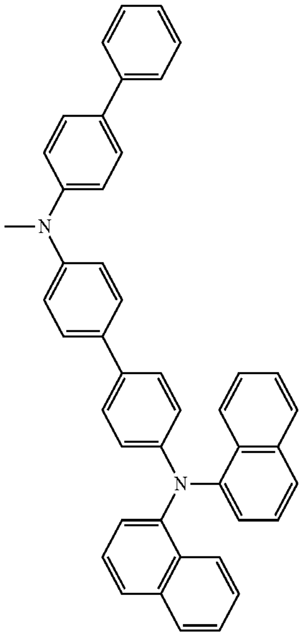

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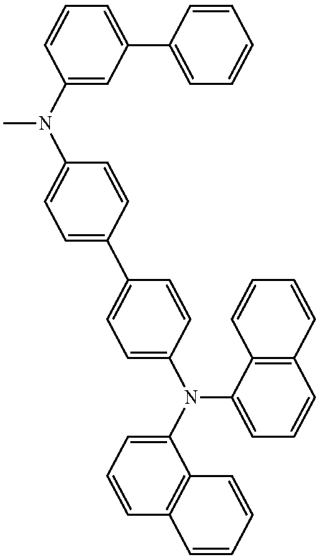

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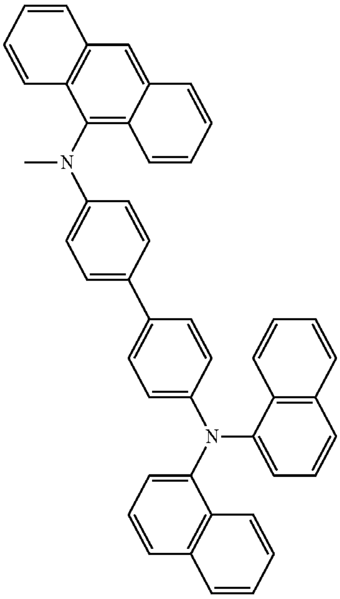

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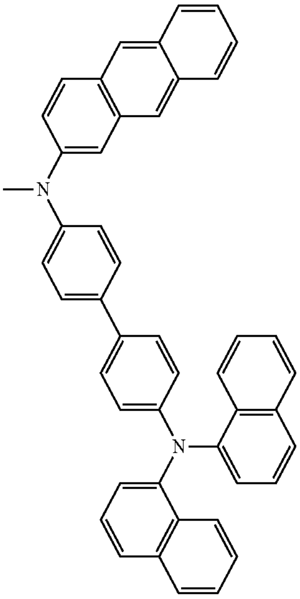

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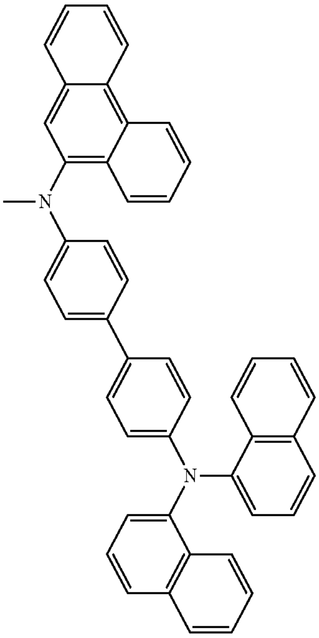

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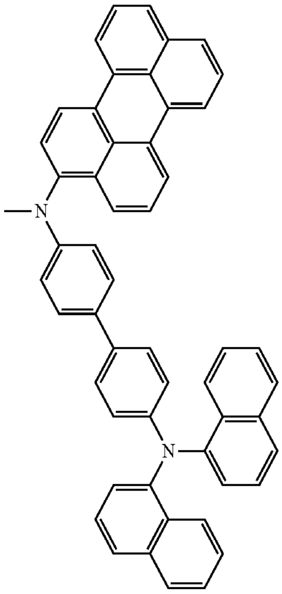

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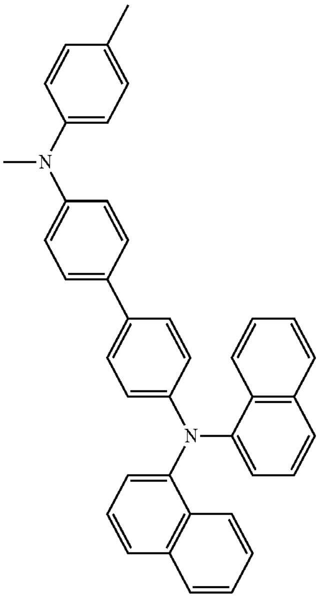

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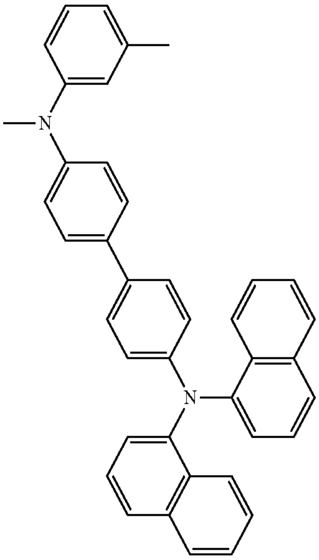

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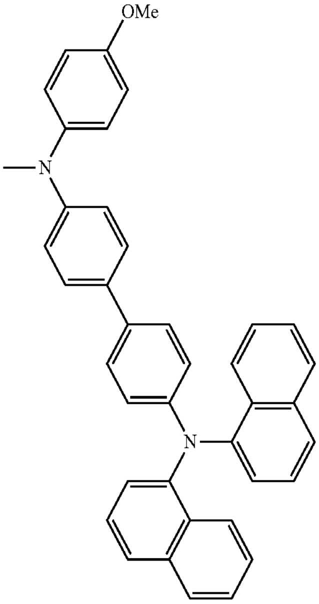

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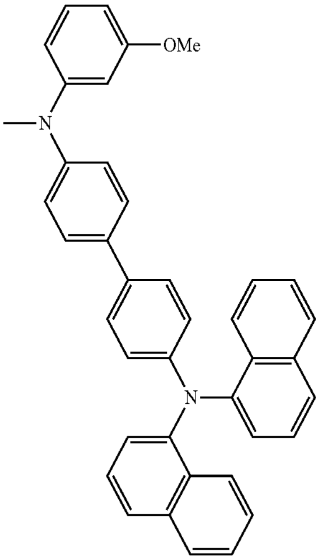

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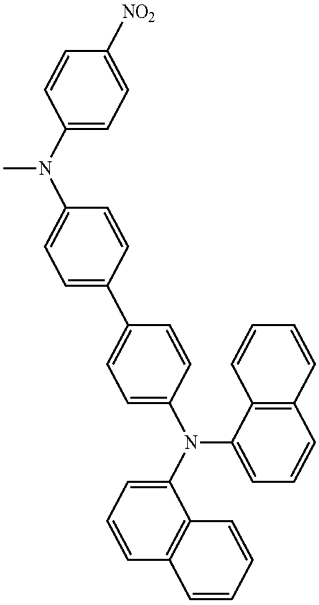

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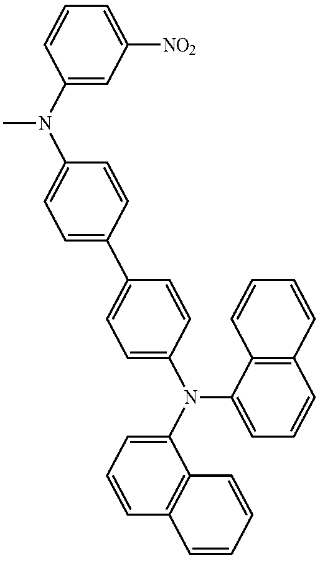

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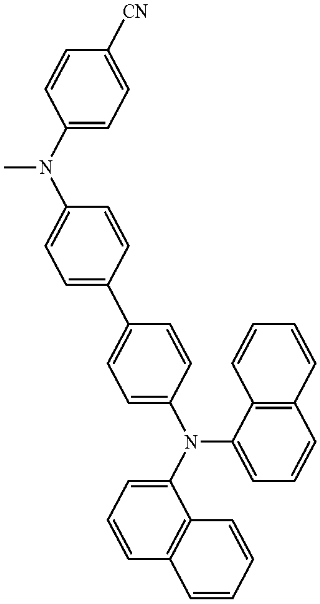

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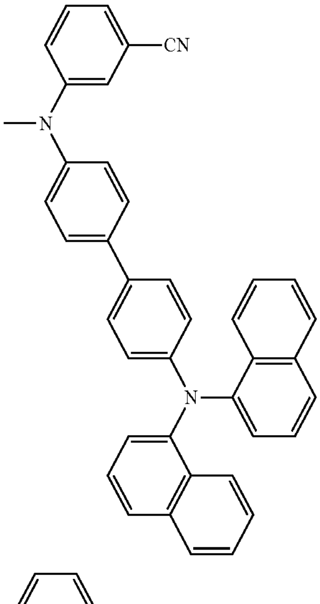

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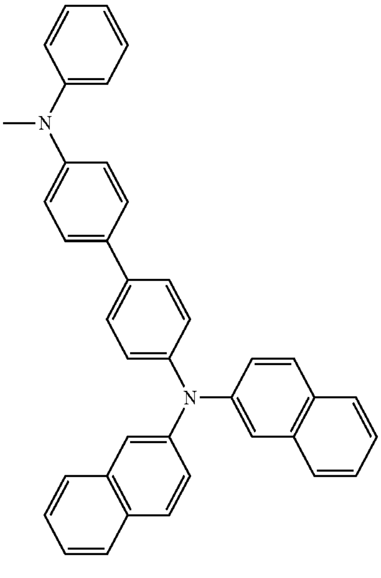

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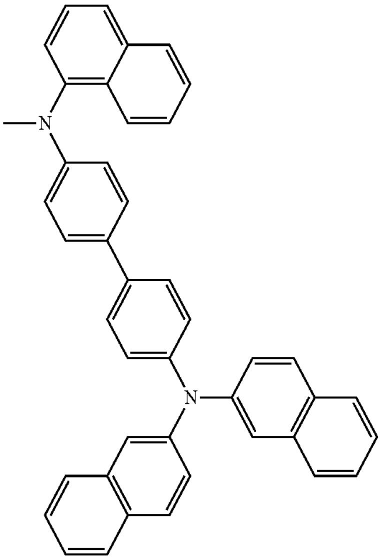

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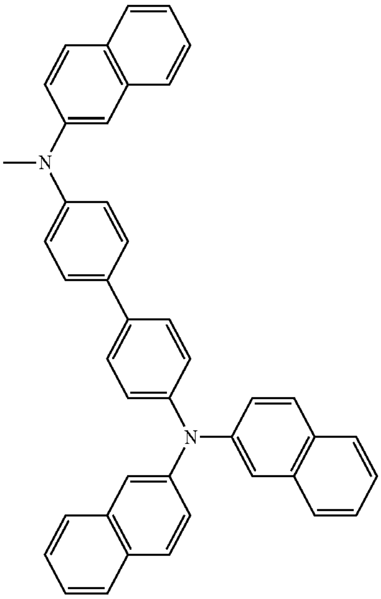

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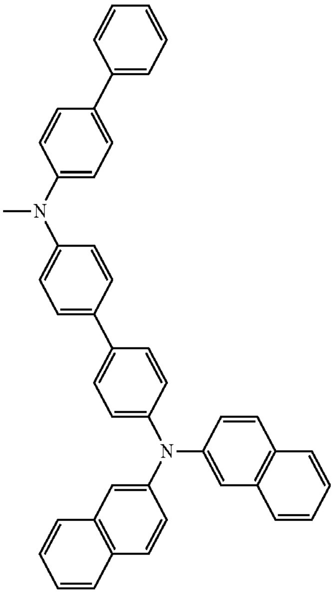

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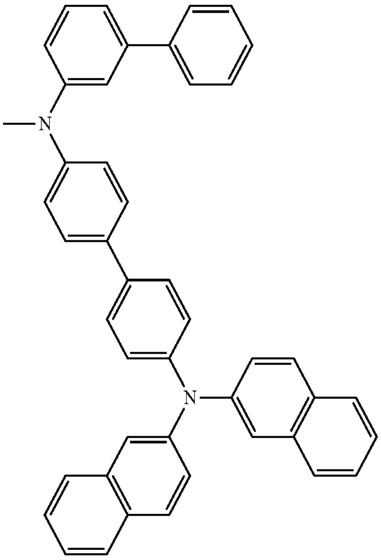

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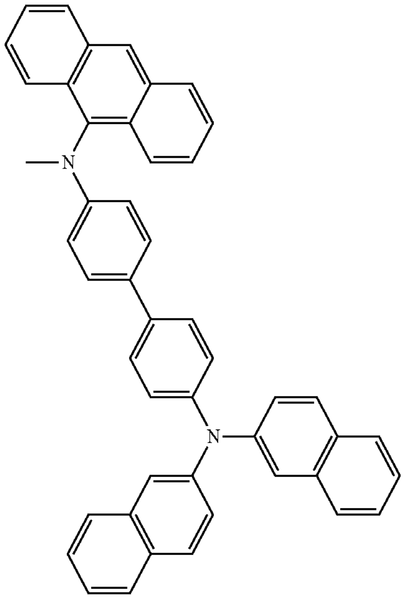

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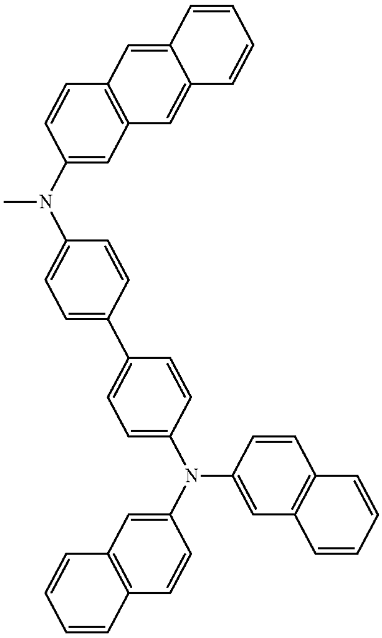

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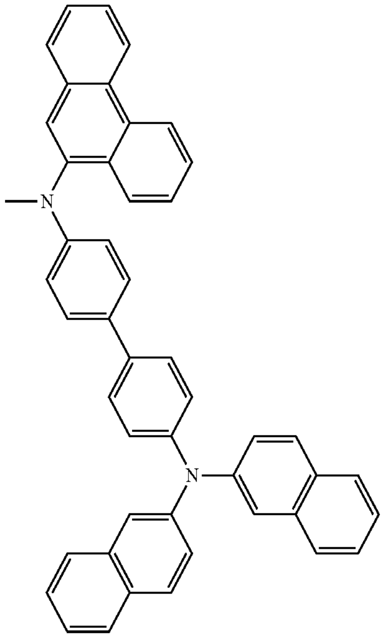

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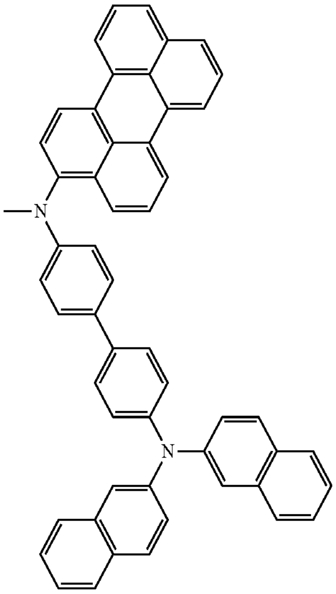

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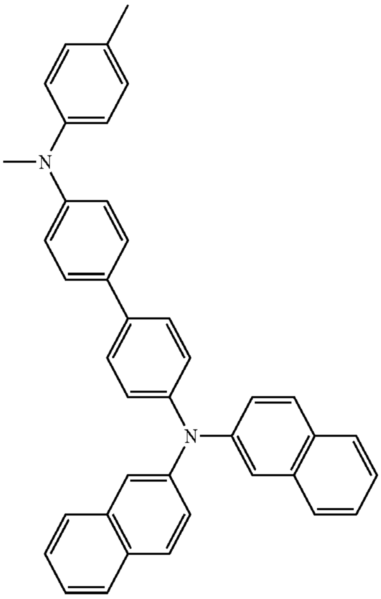

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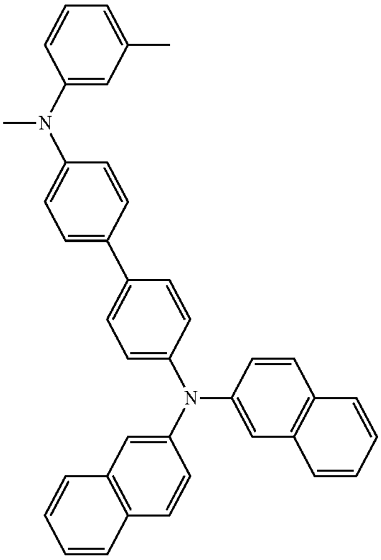

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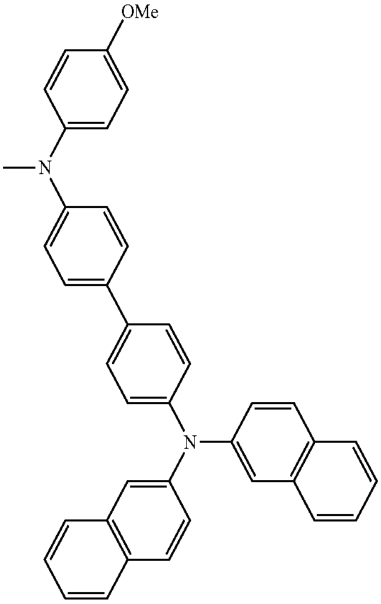

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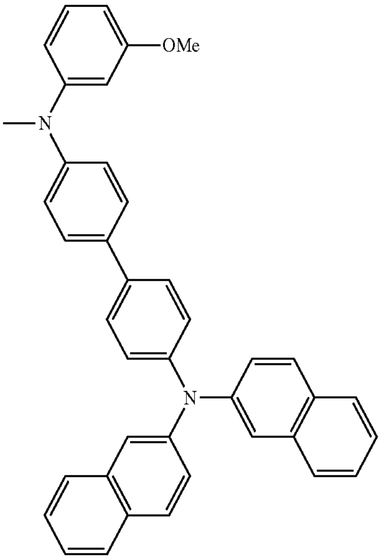

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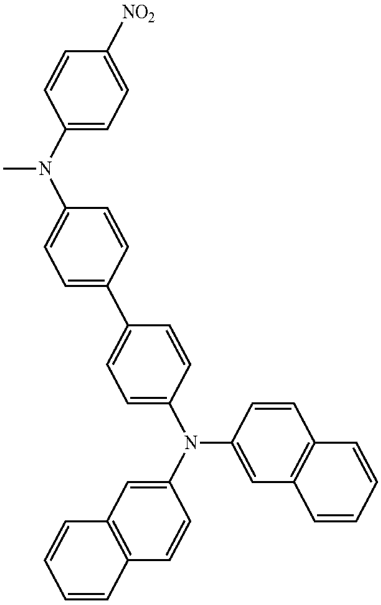

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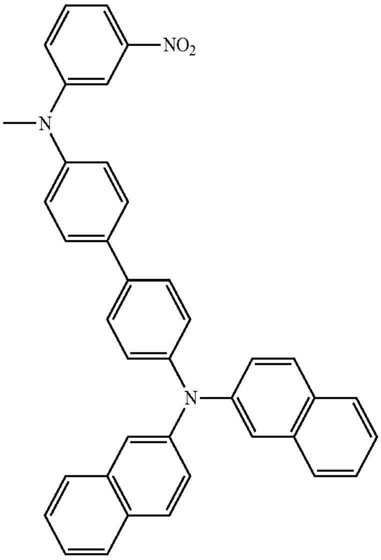

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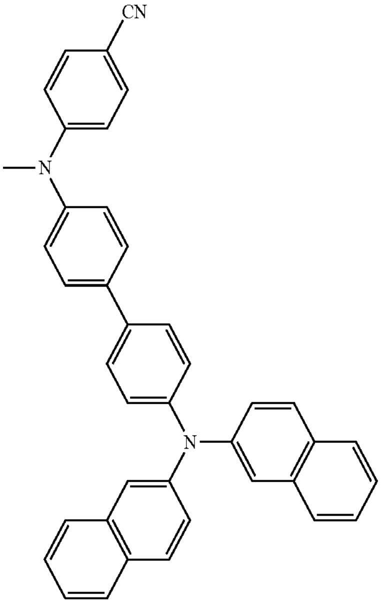

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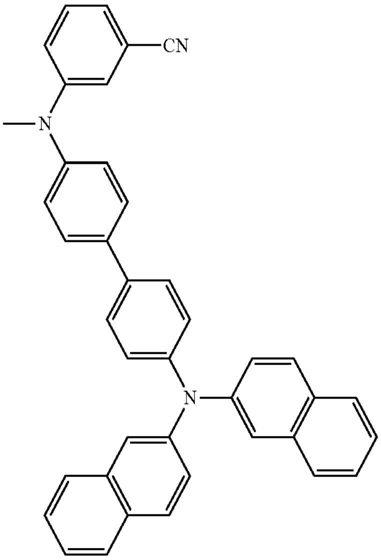

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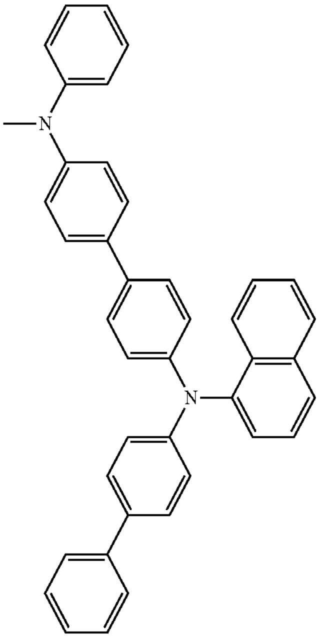

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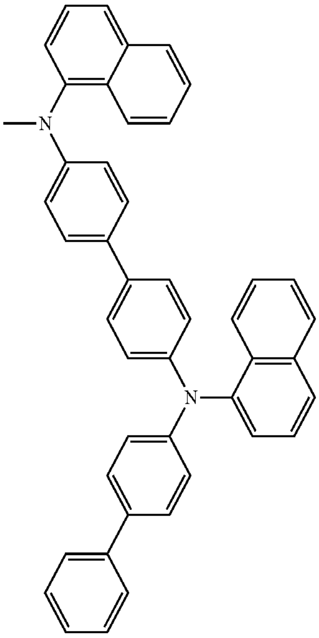

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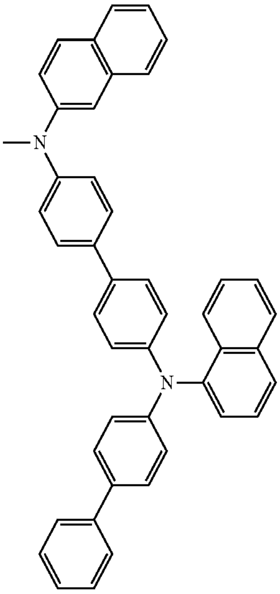

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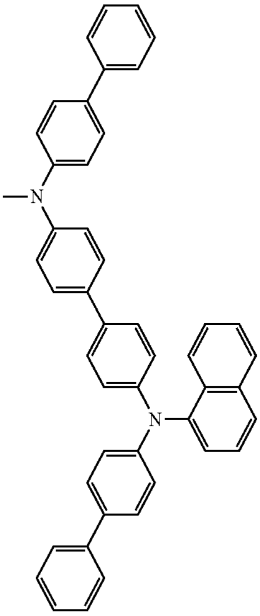

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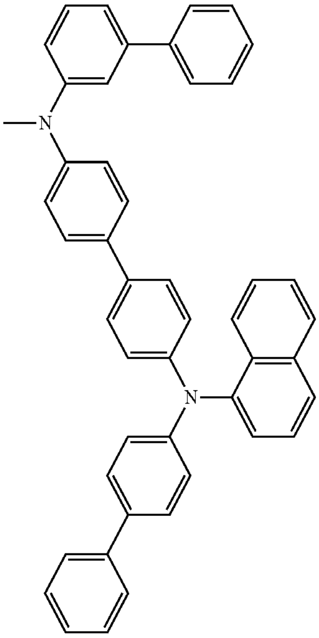

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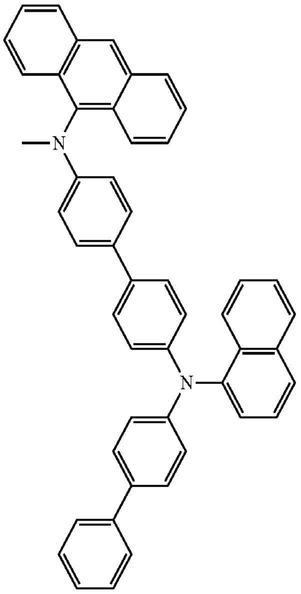

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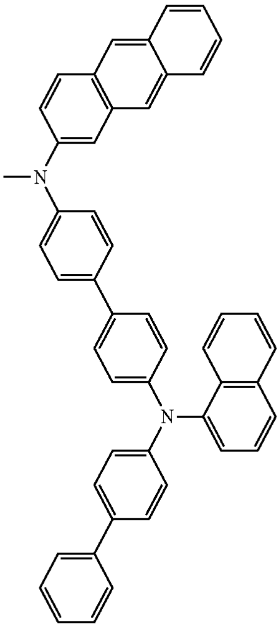

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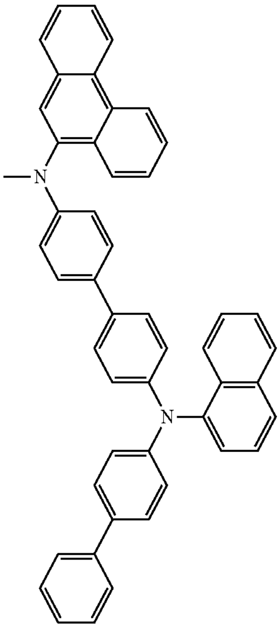

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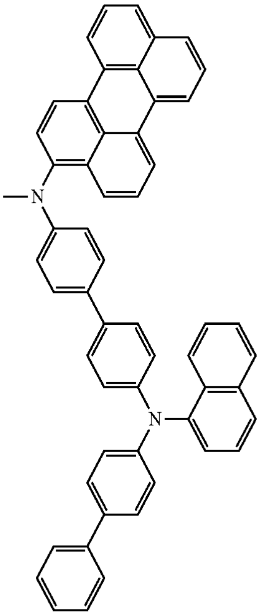

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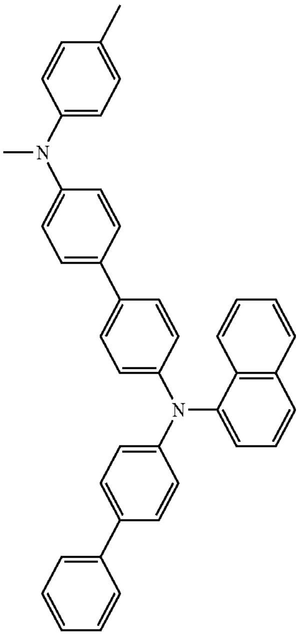

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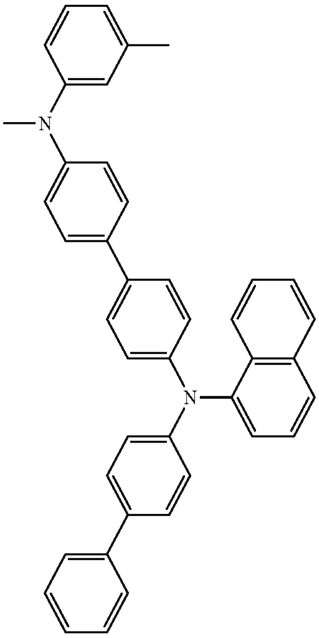

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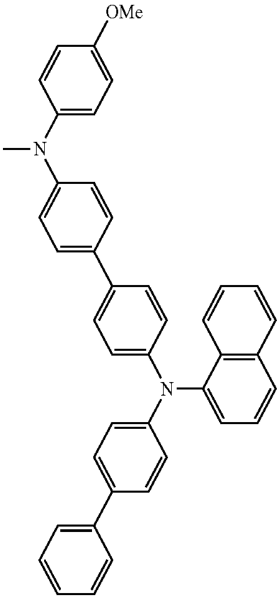

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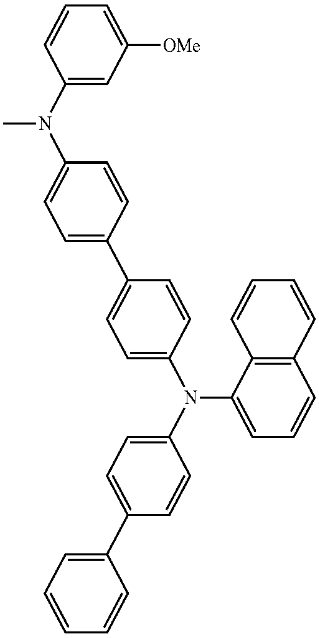

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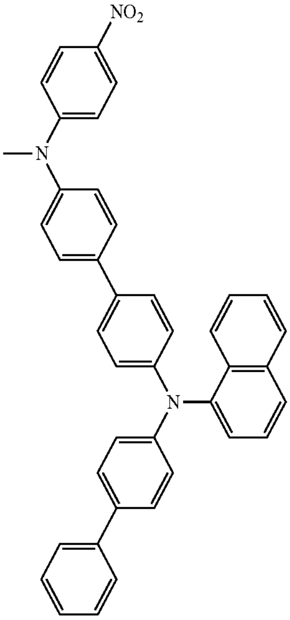

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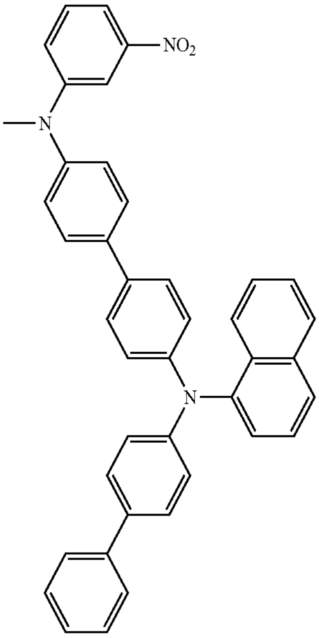

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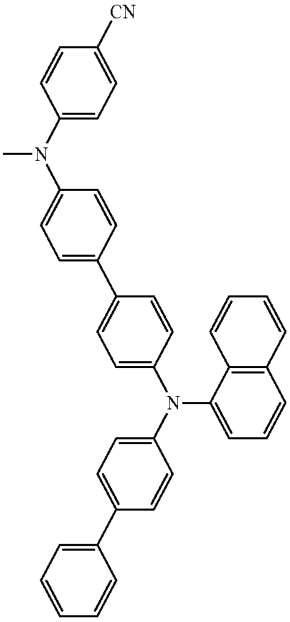

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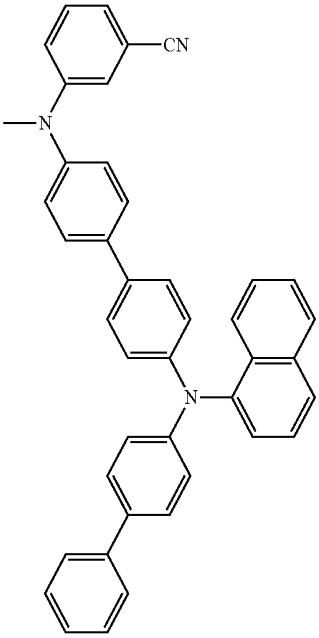

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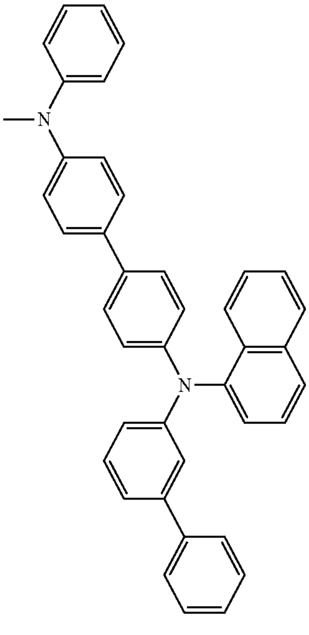

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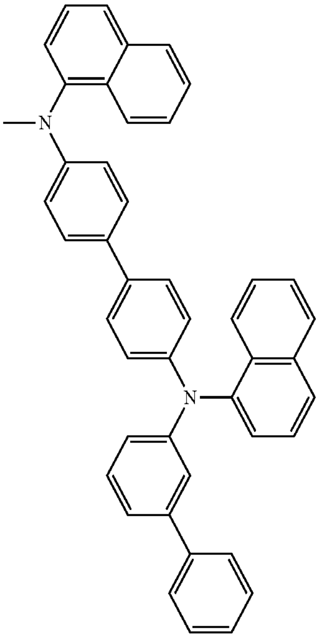

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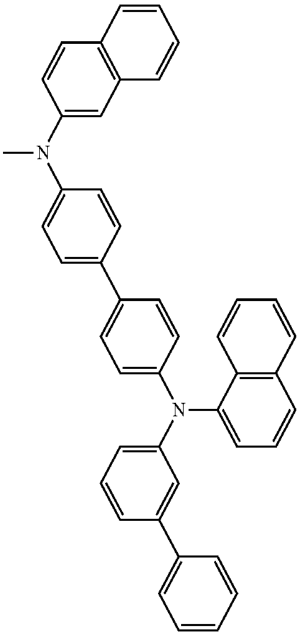

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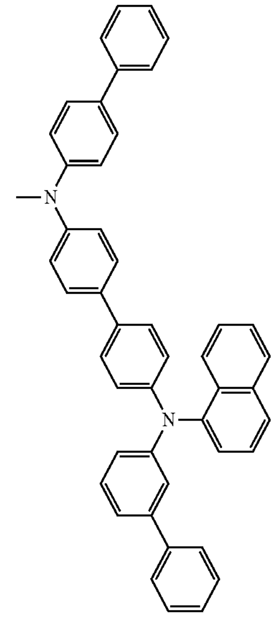

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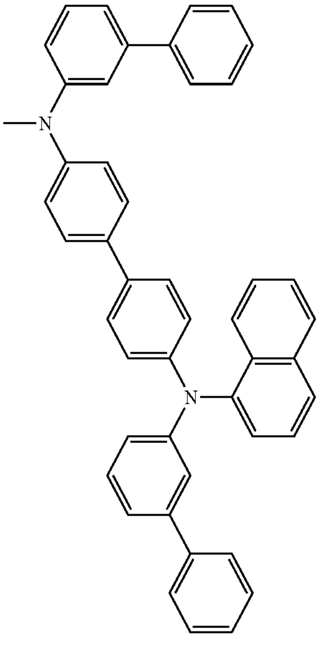

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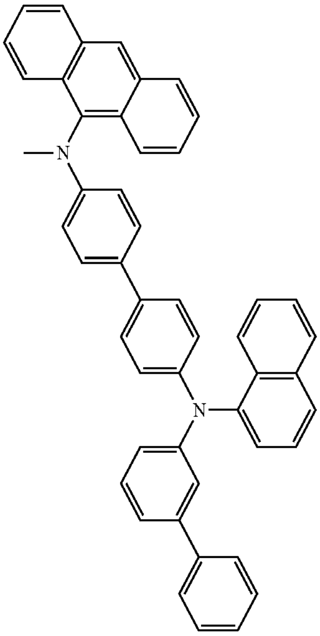

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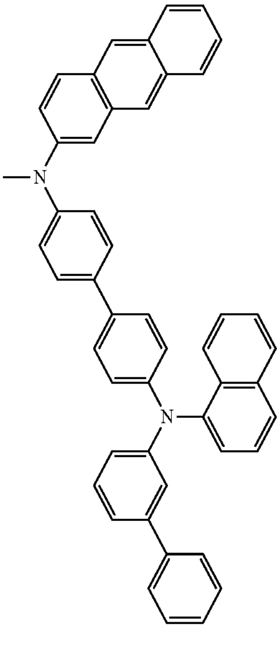

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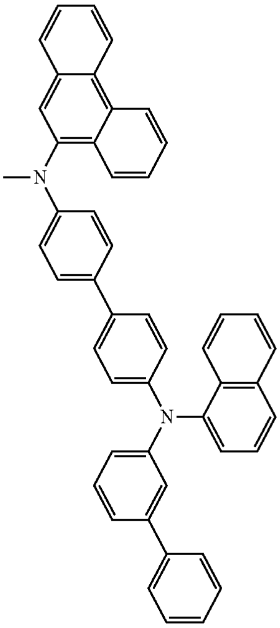

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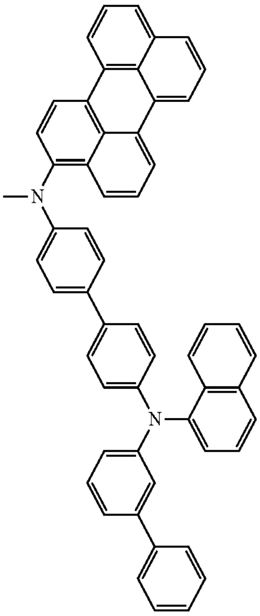

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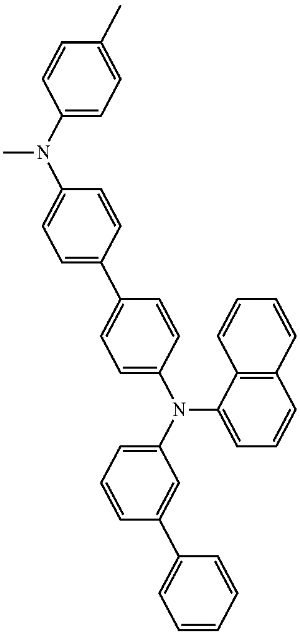

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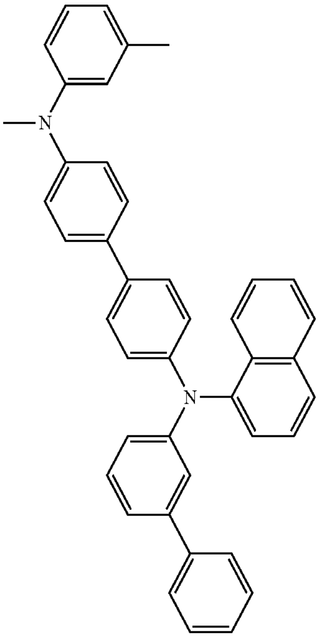

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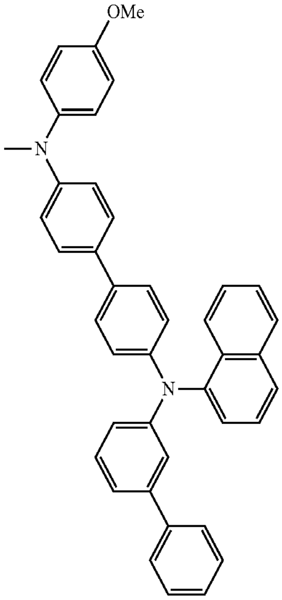

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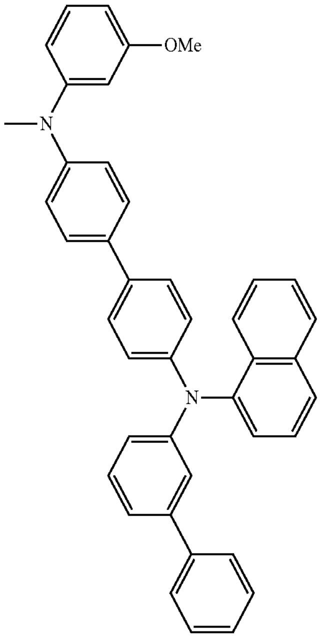

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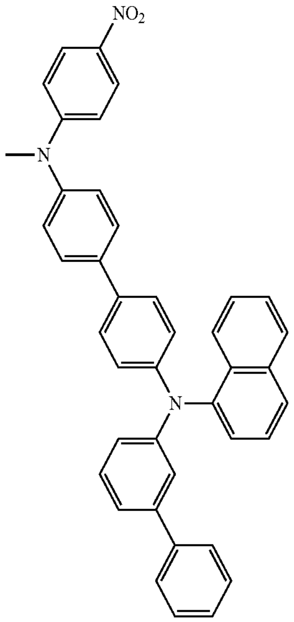

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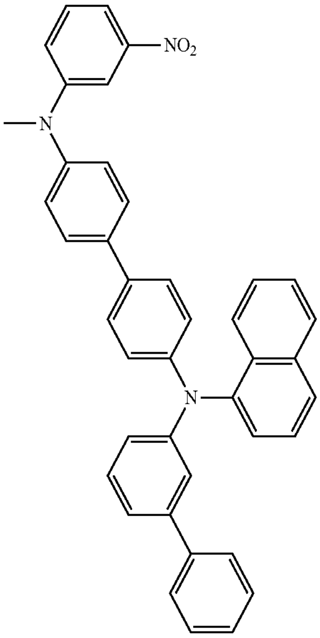

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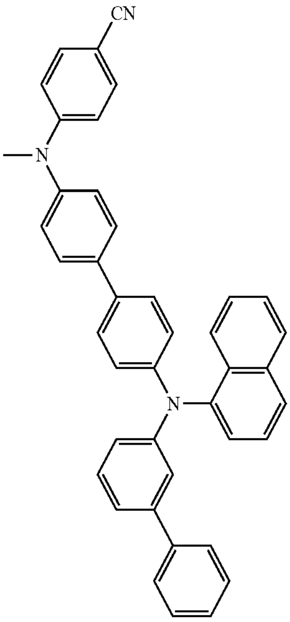

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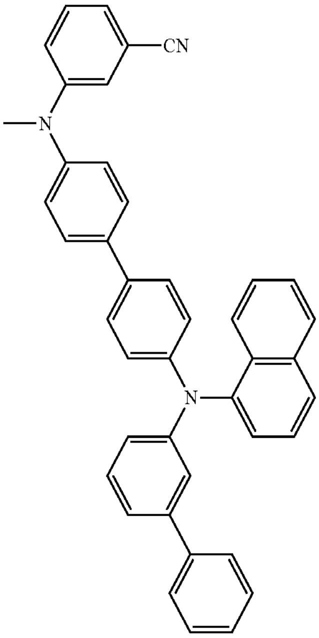

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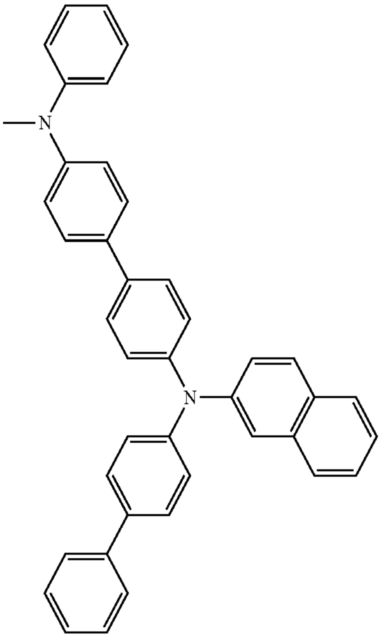

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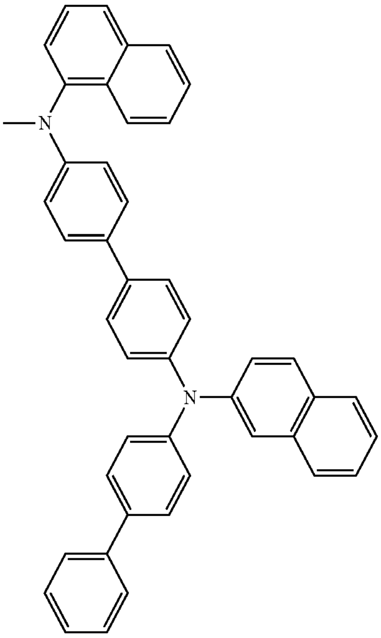

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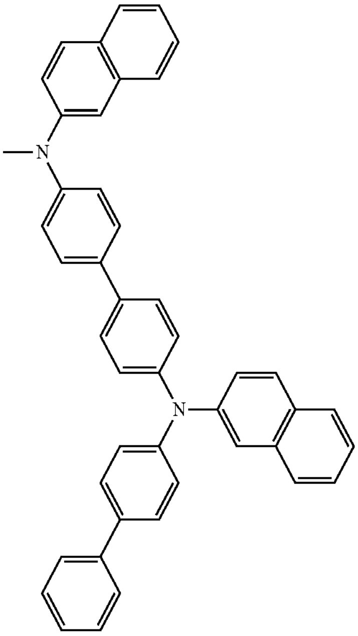

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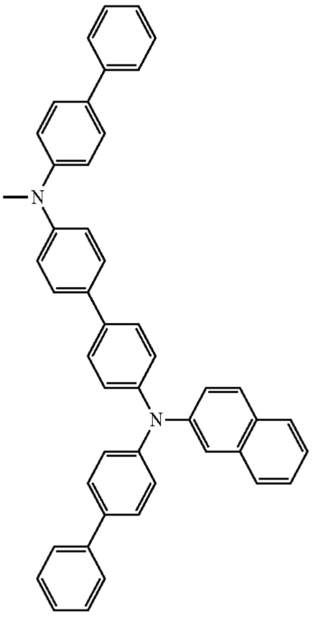

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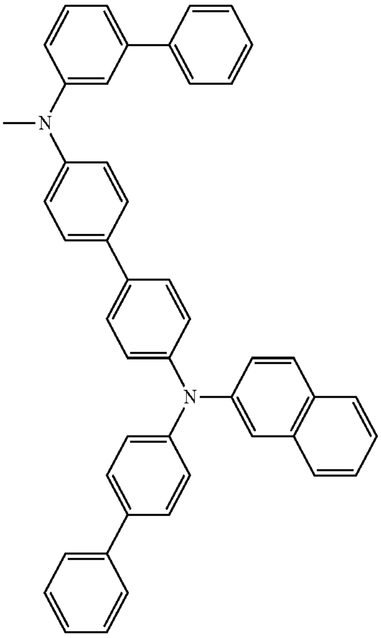

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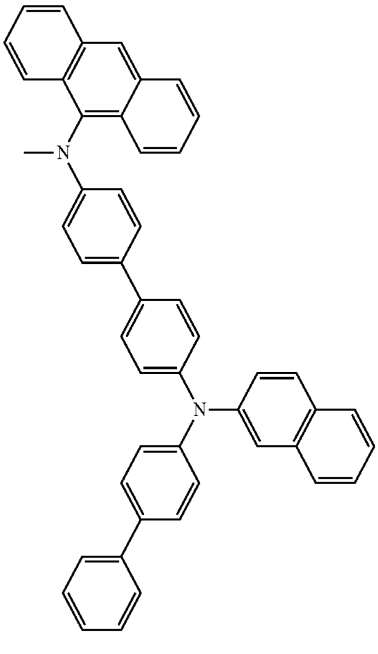

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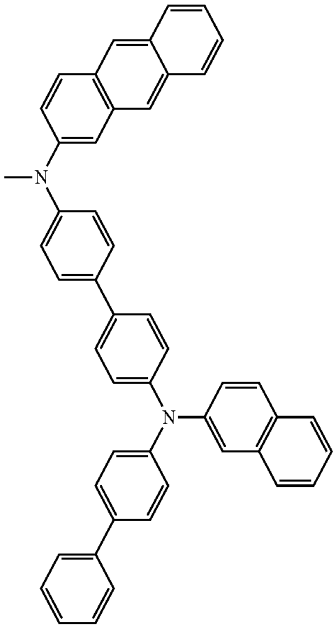

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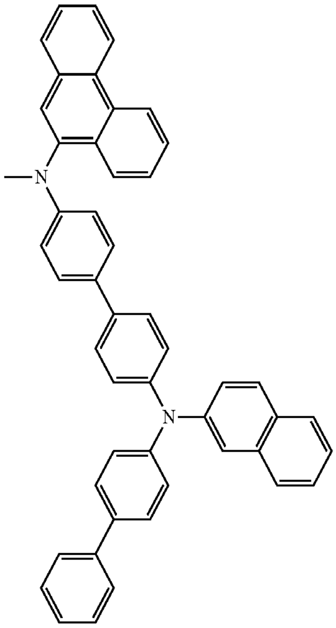

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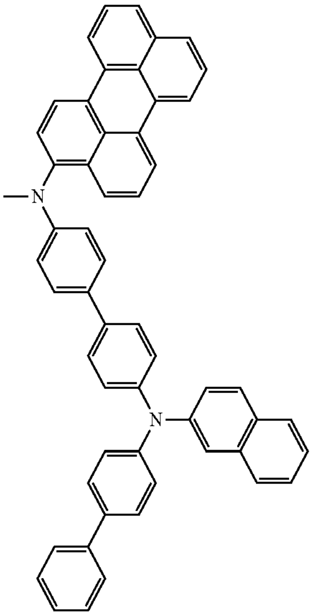

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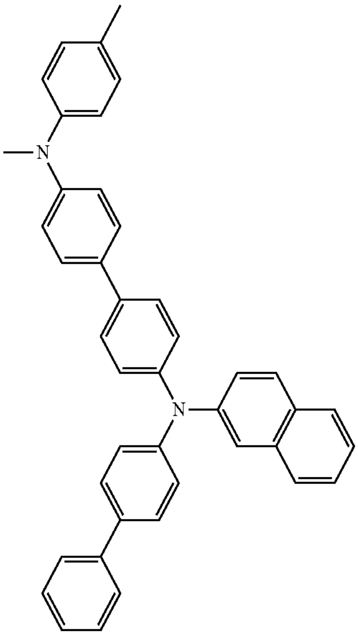

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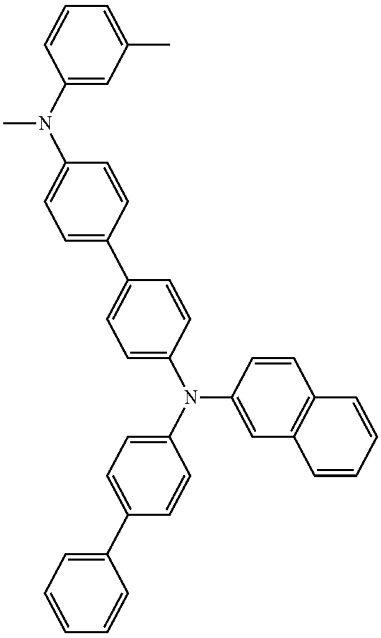

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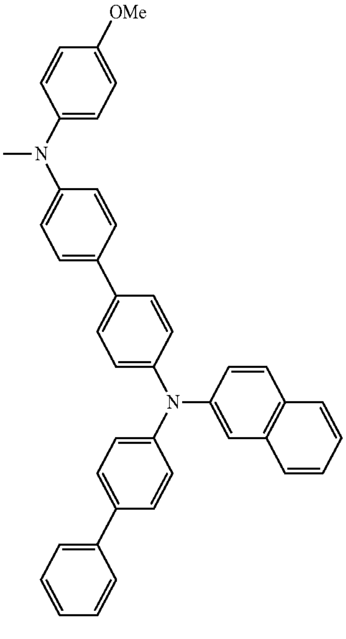

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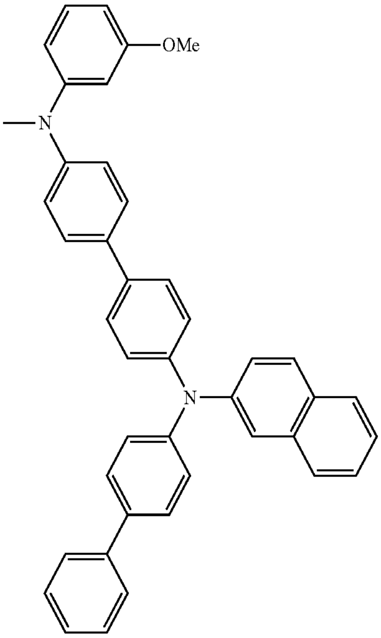

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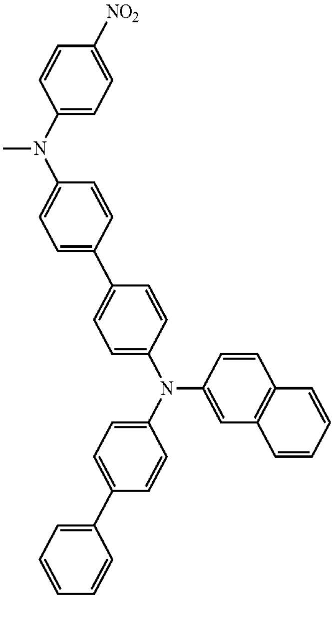

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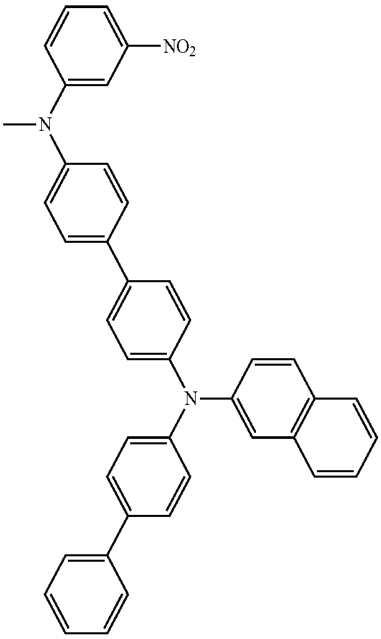

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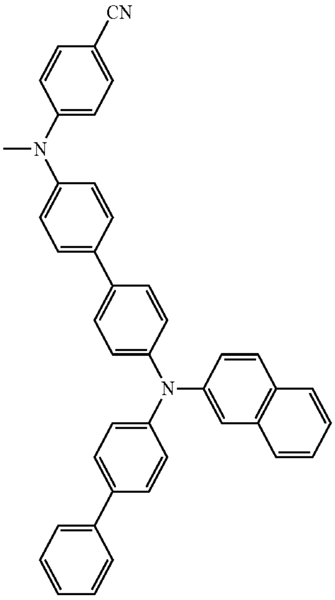

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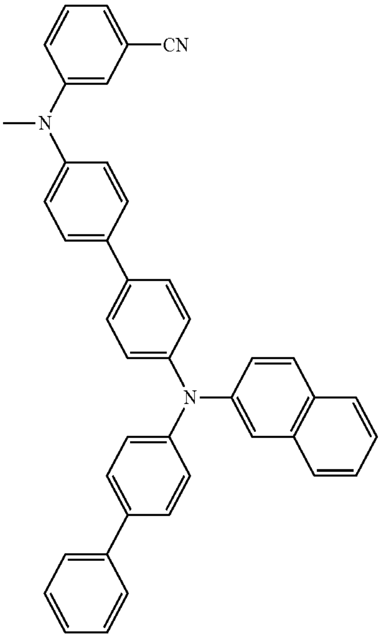

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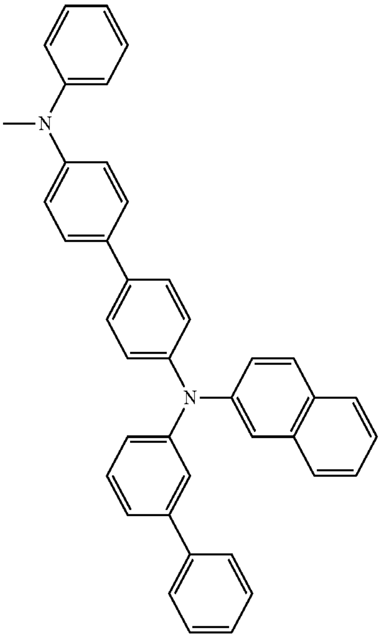

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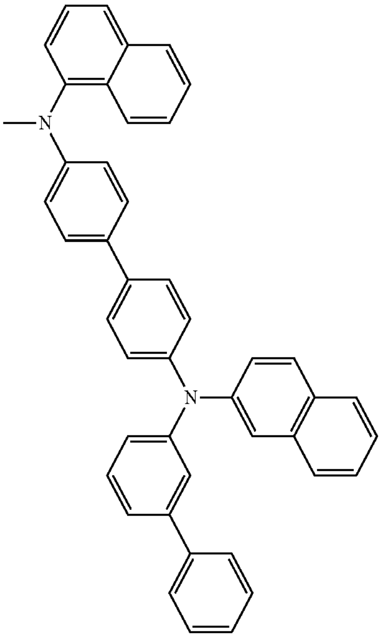

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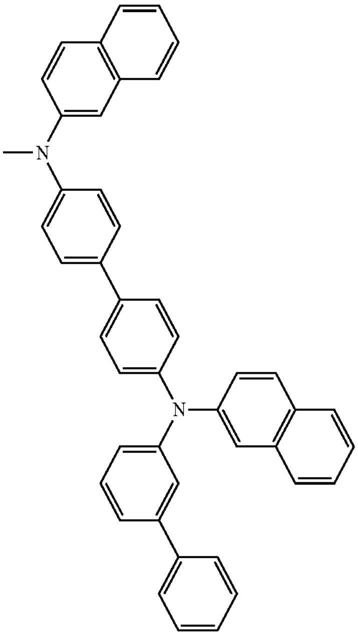

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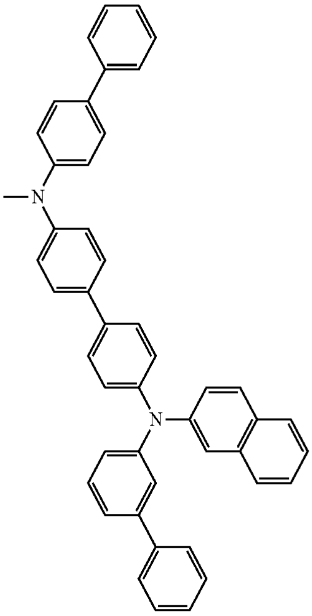

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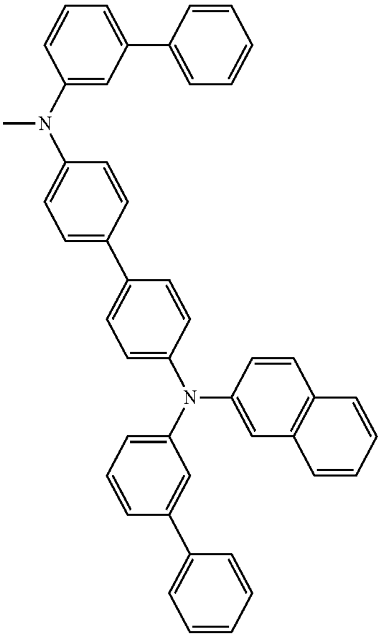

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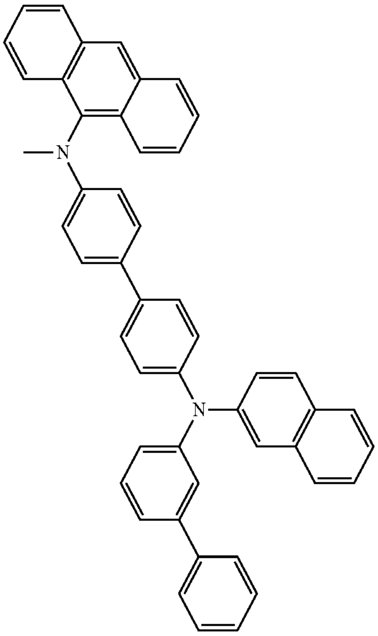

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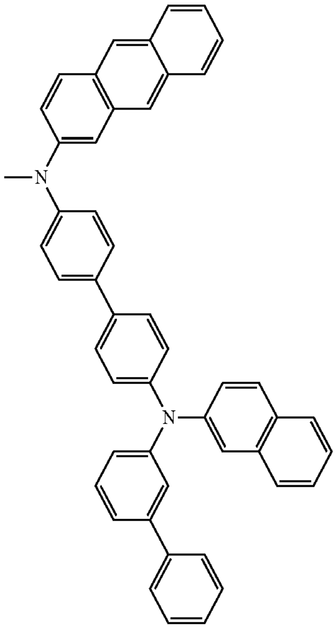

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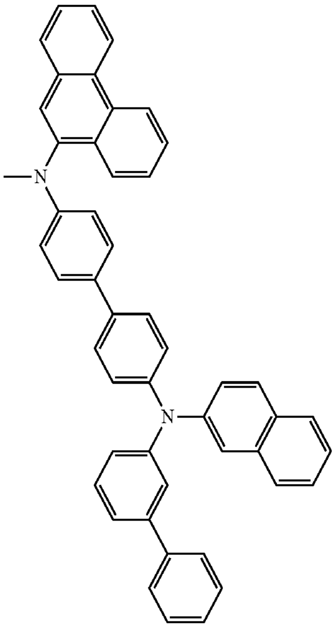

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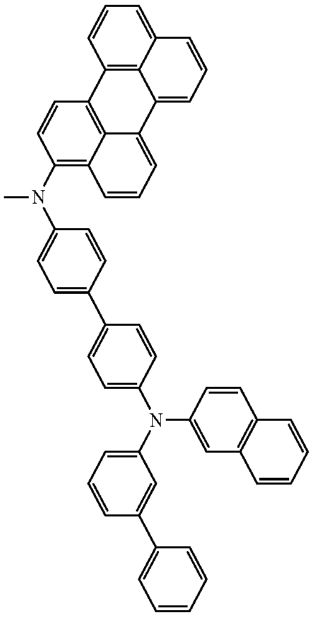

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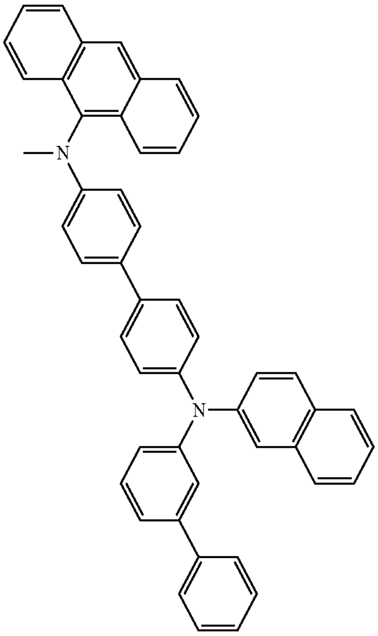

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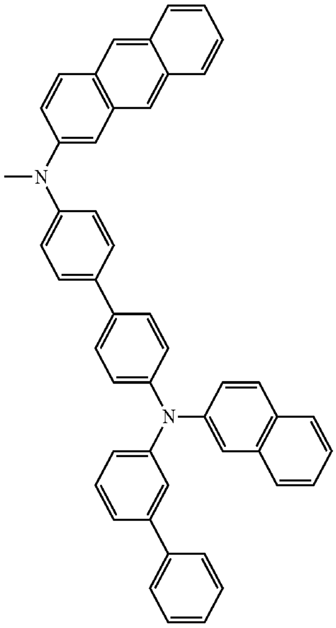

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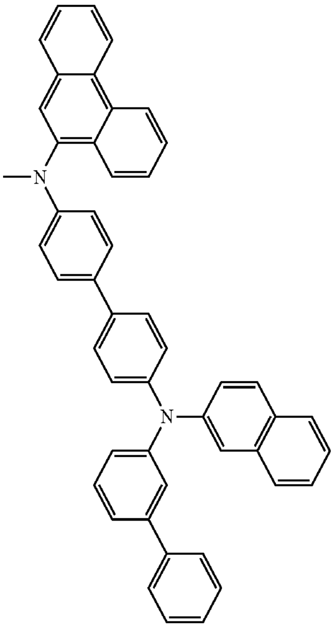

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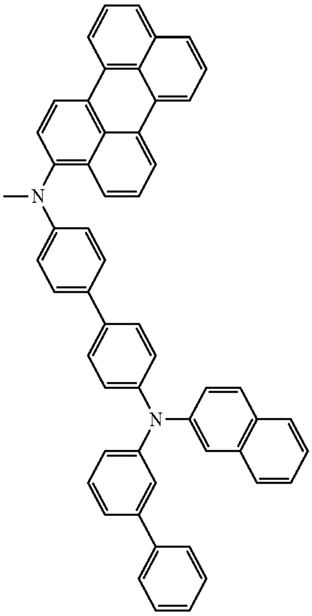

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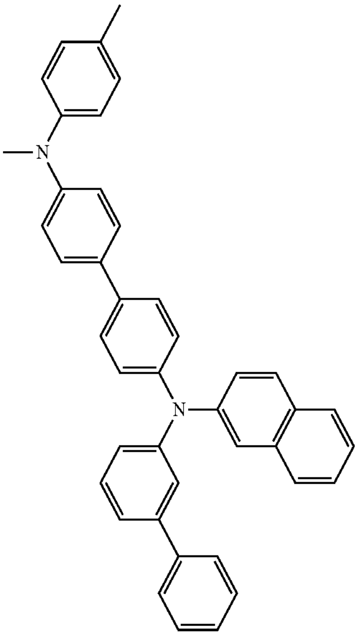

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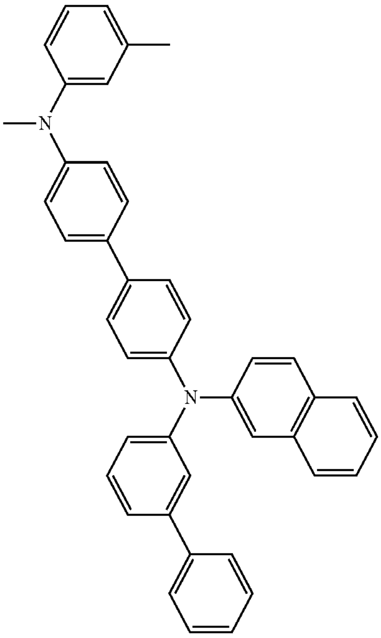

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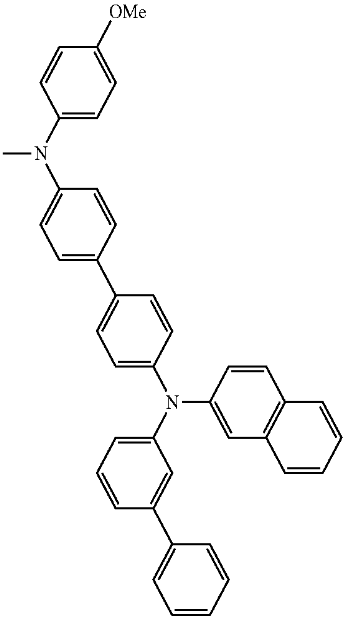

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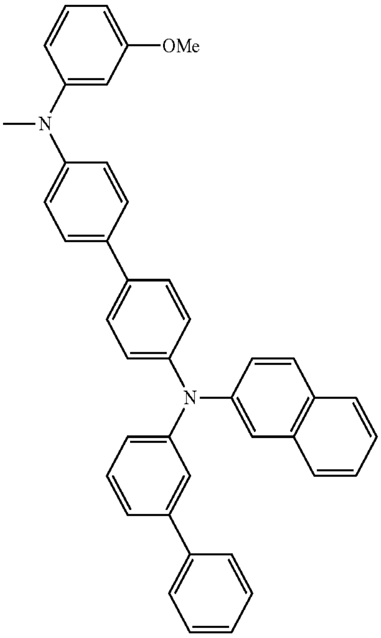

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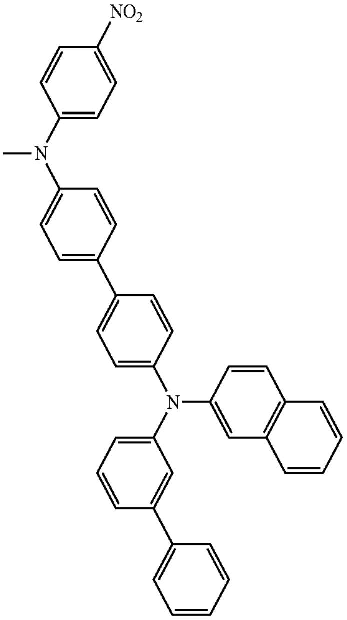

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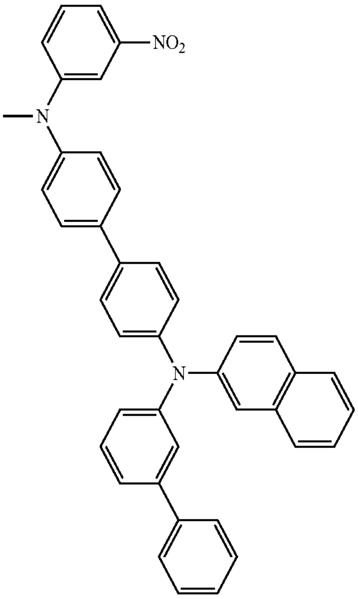

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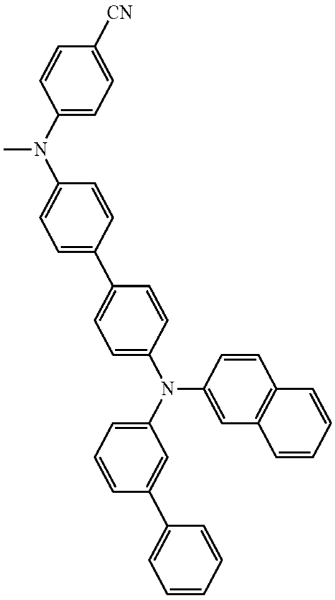

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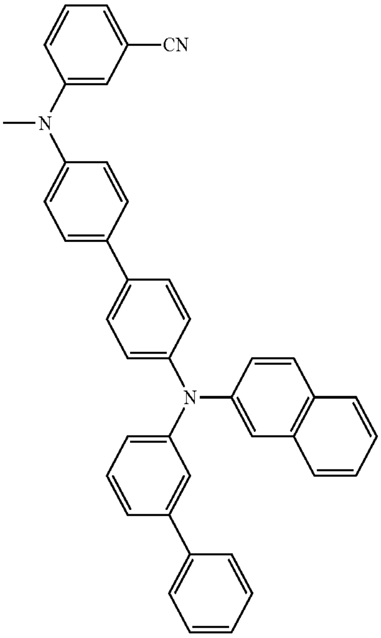

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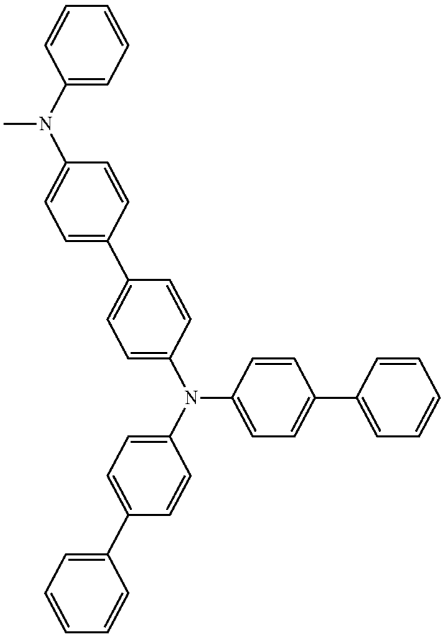

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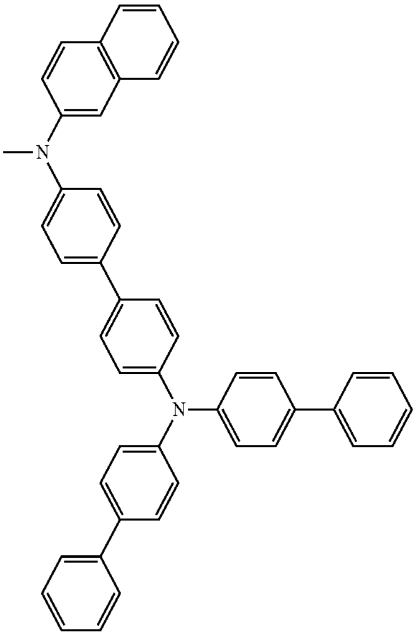

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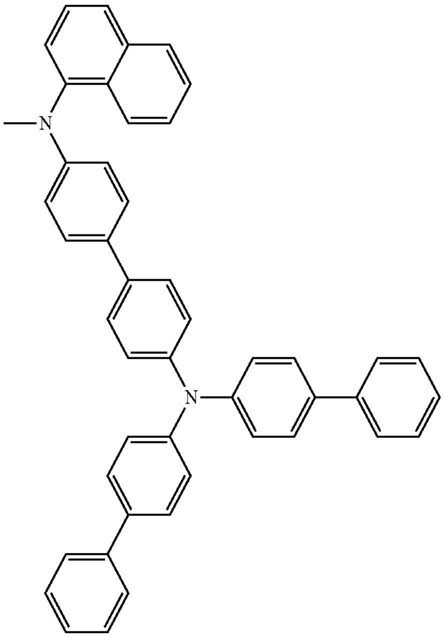

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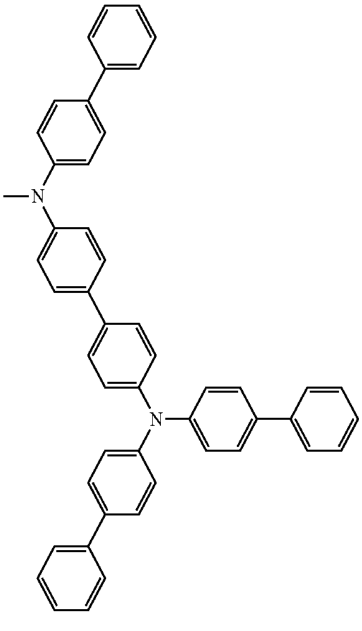

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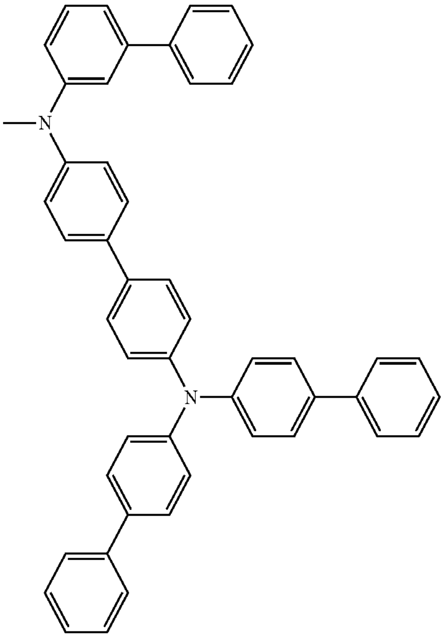

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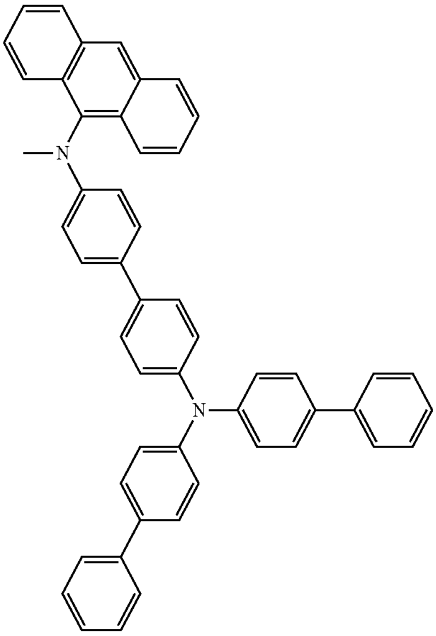

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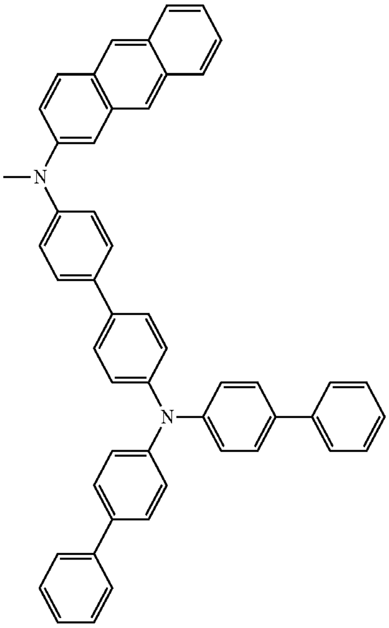

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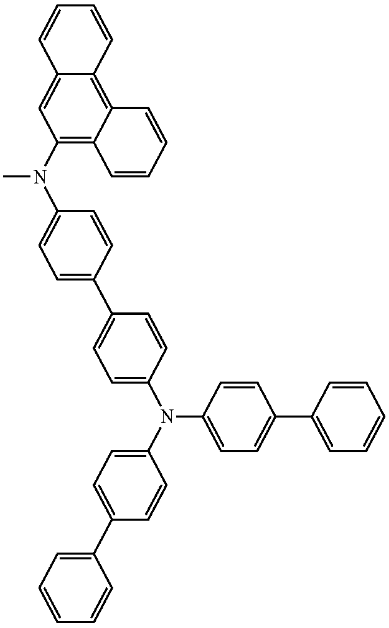

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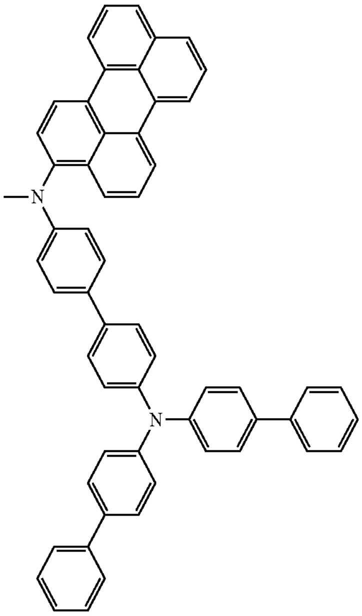

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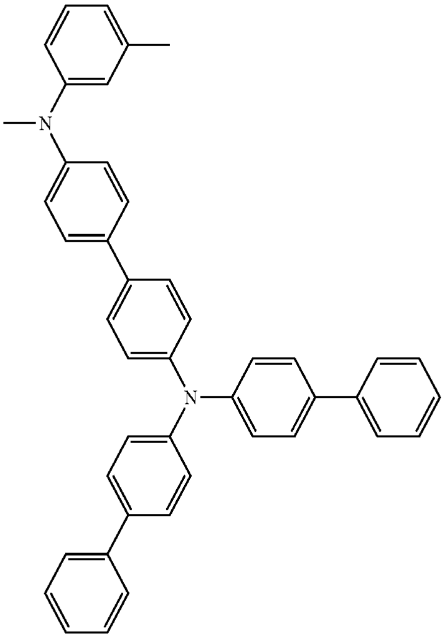

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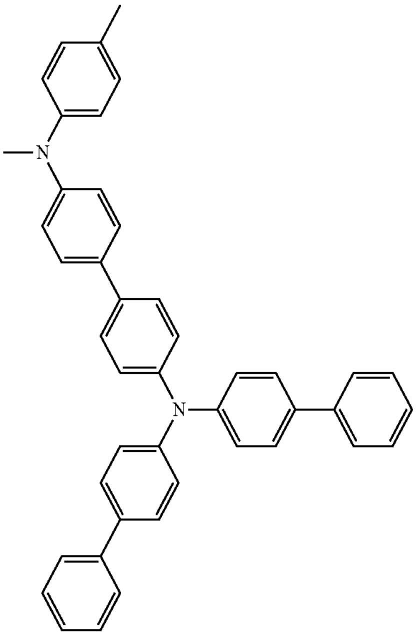

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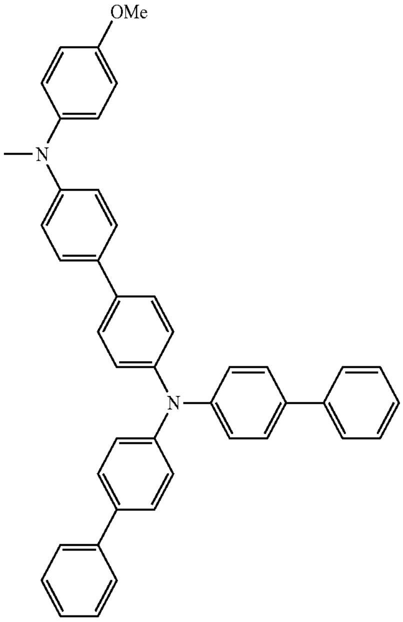

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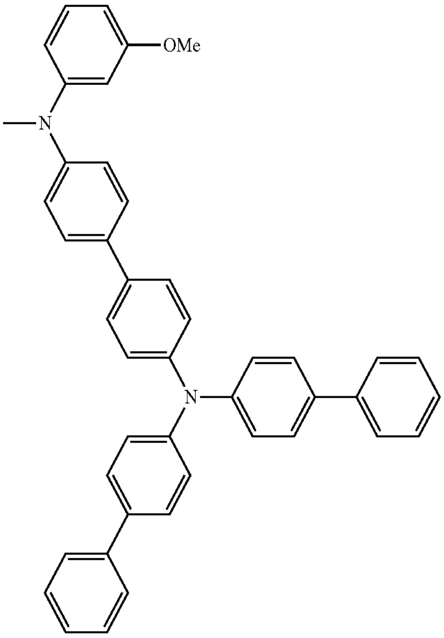

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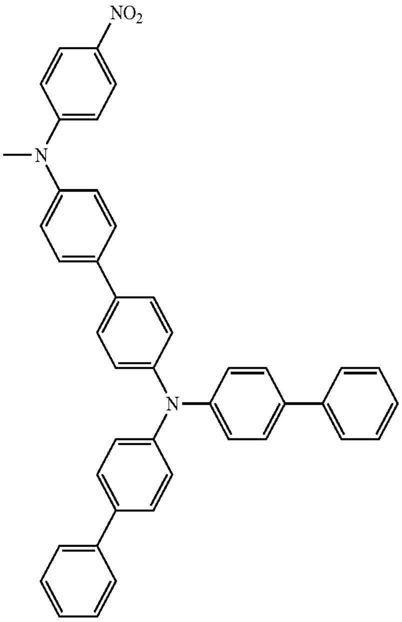

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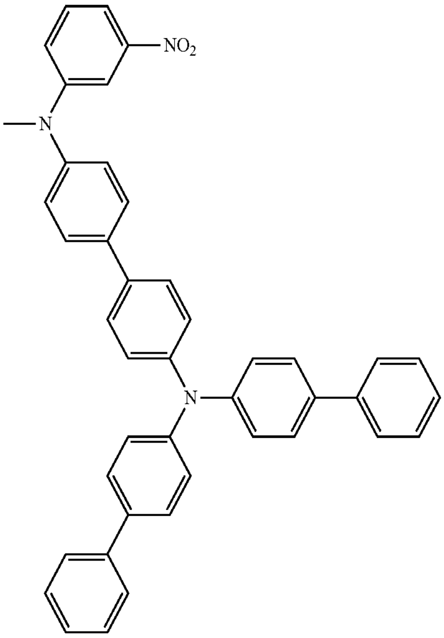

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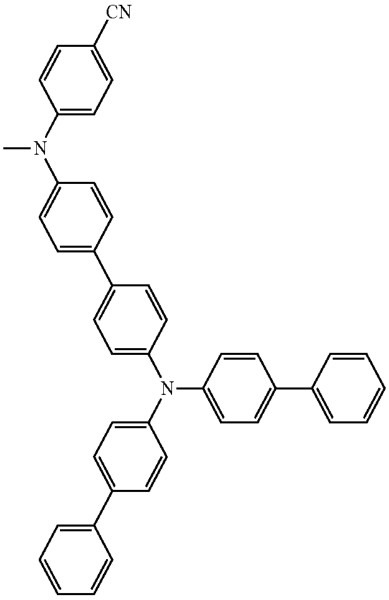

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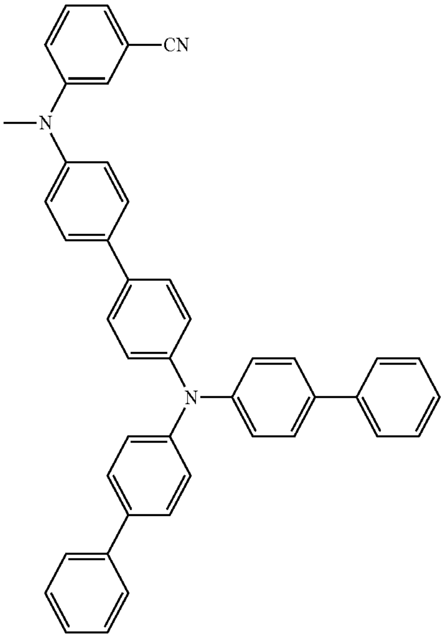

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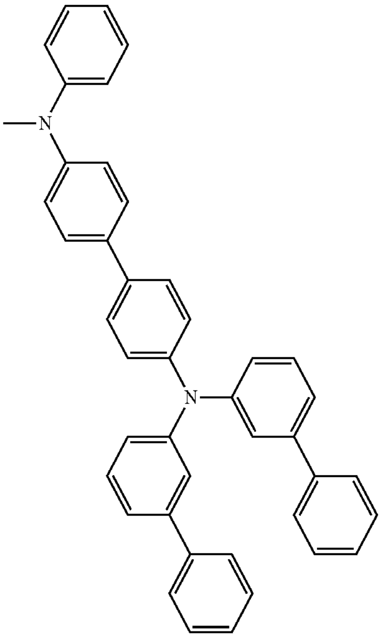

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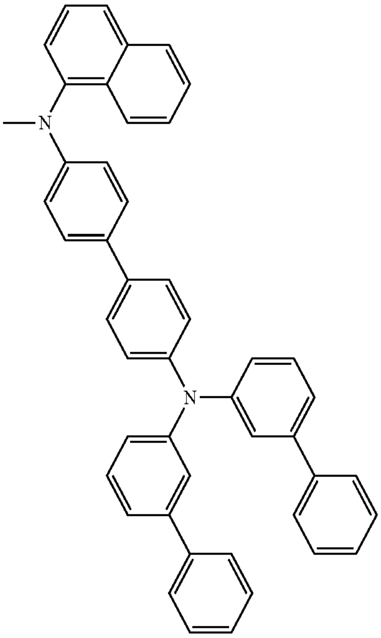

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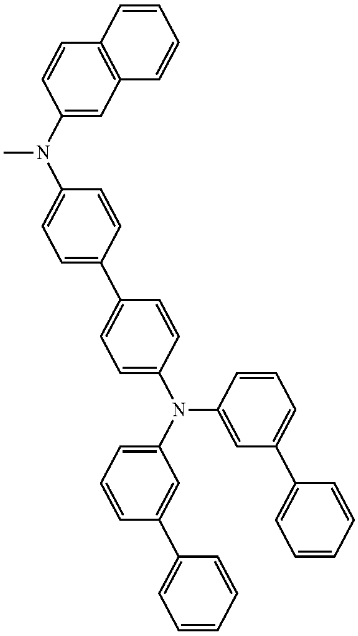

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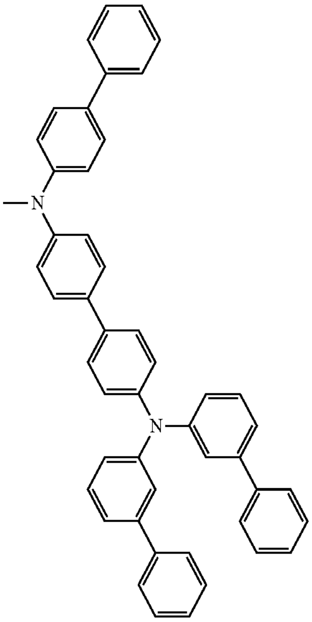

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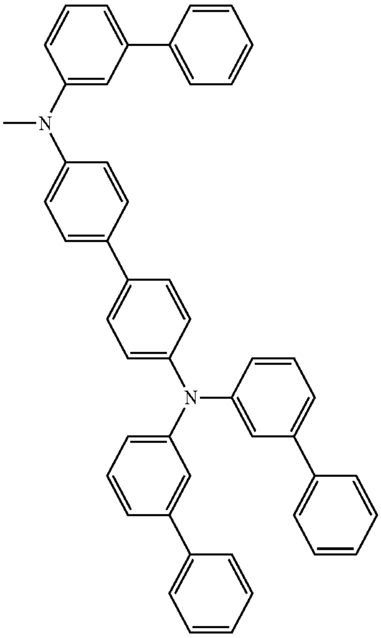

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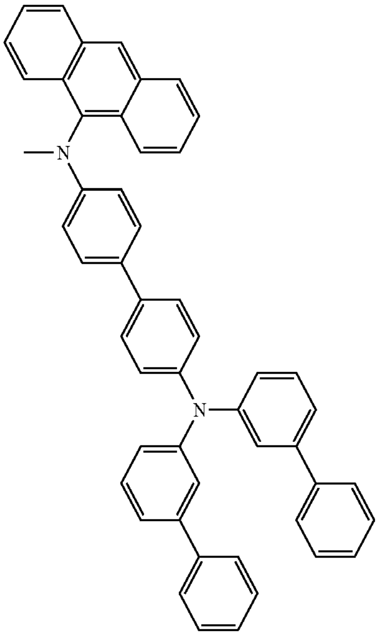

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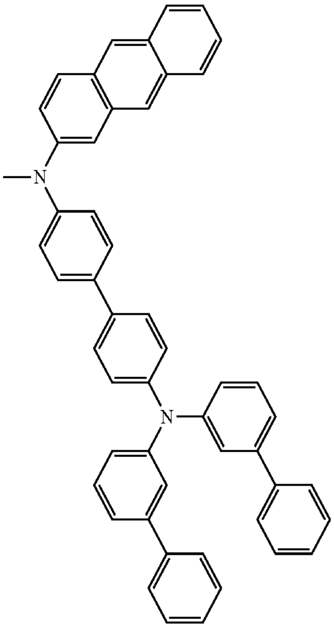

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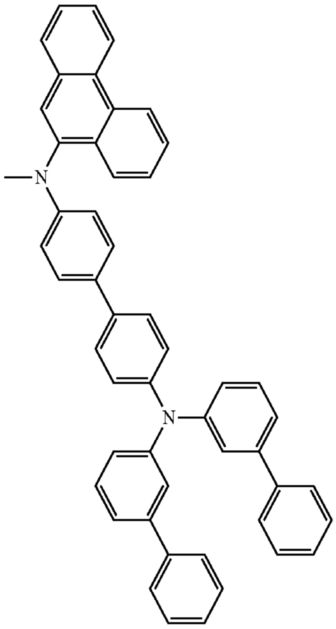

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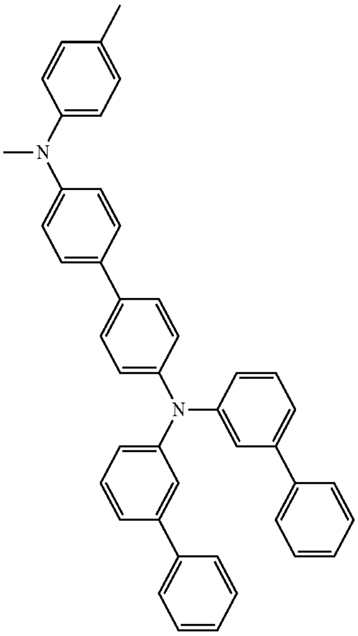

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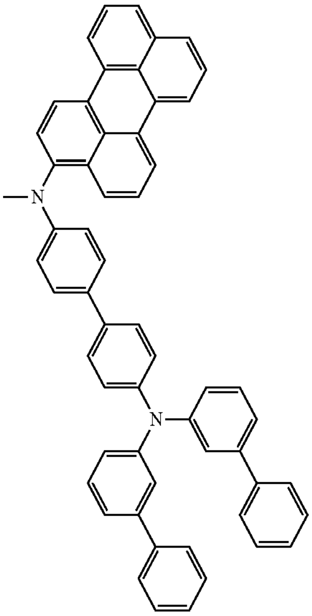

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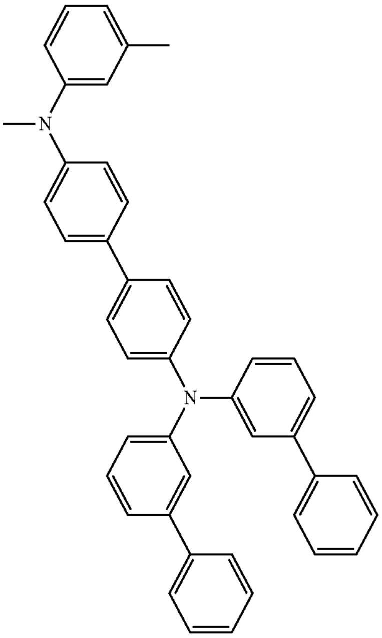

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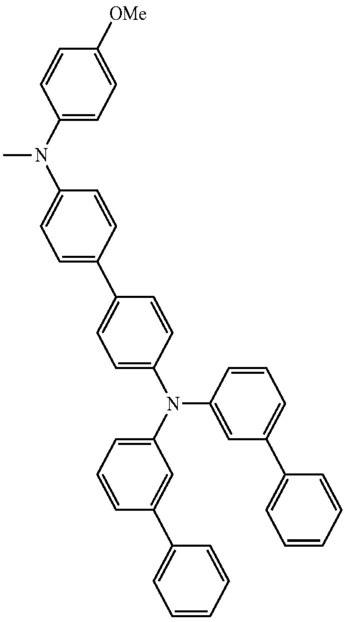

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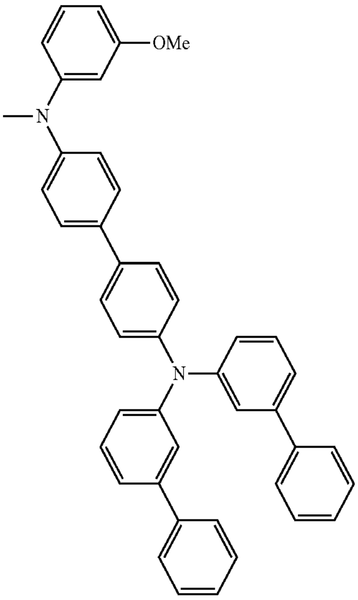

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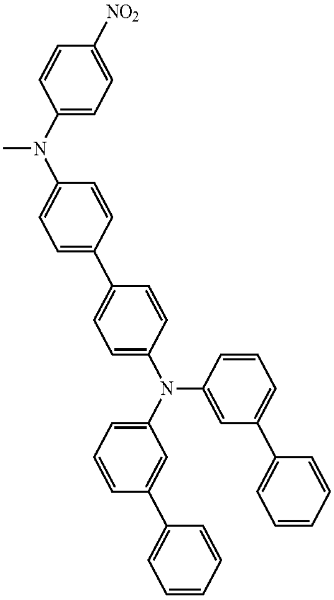

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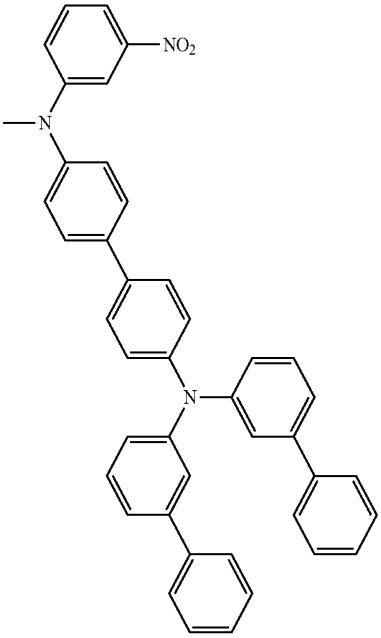

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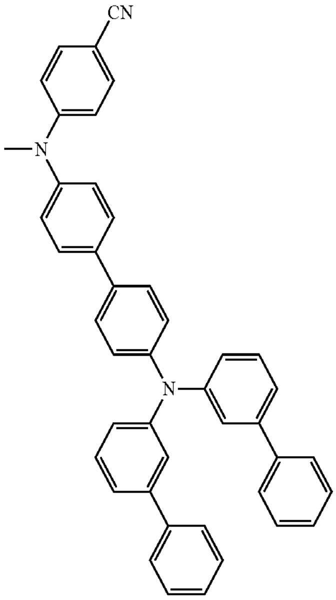

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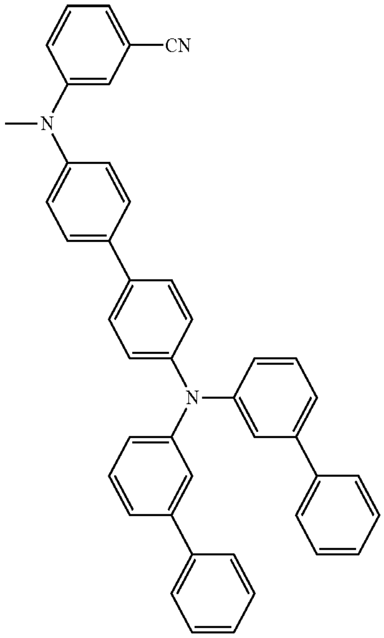
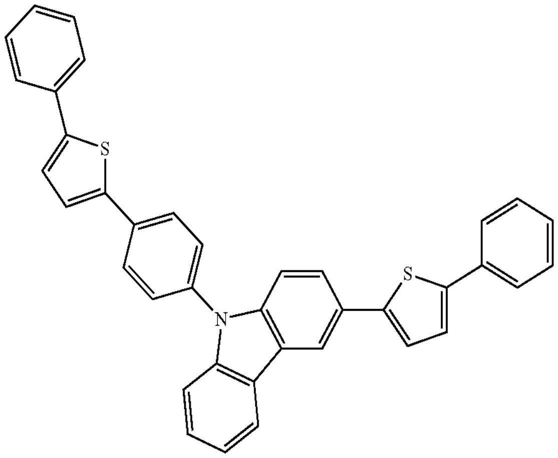


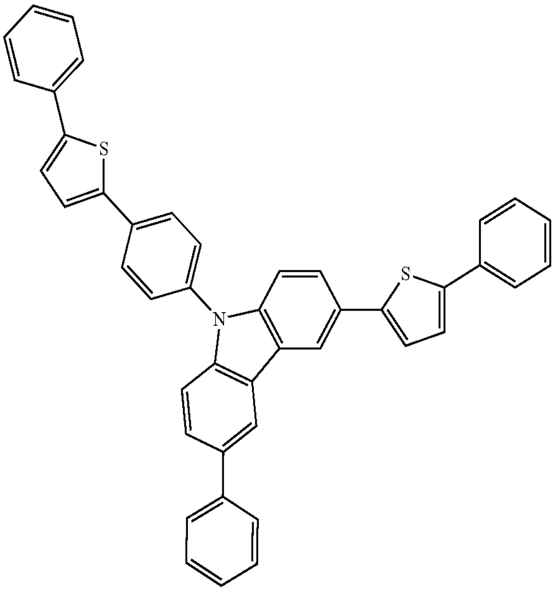
[0036] Ar may be preferably phenylene.

[0037] The compound of Formula 1 may be preferably a compound that is represented by the following Formula 4 to Formula 12.

[Formula 4]



[Formula 5]



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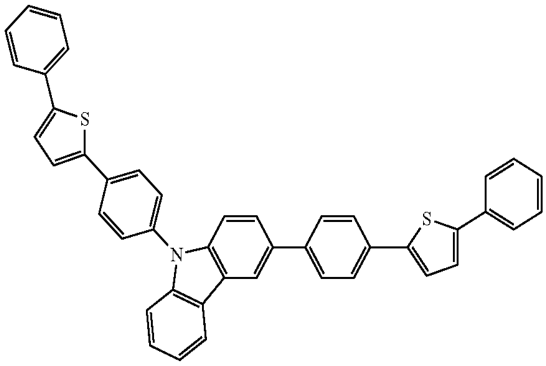
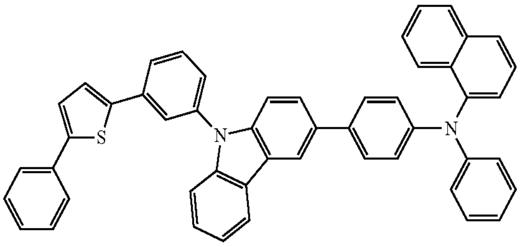
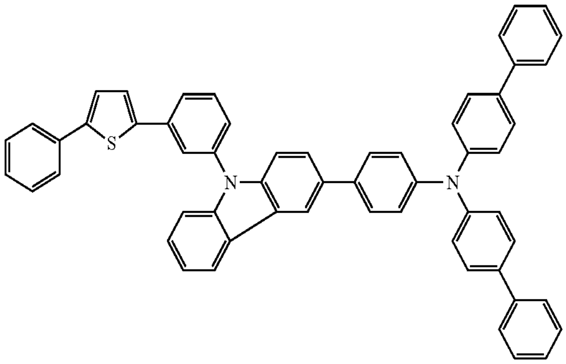
[Formula 6]



[Formula 7]



[Formula 8]



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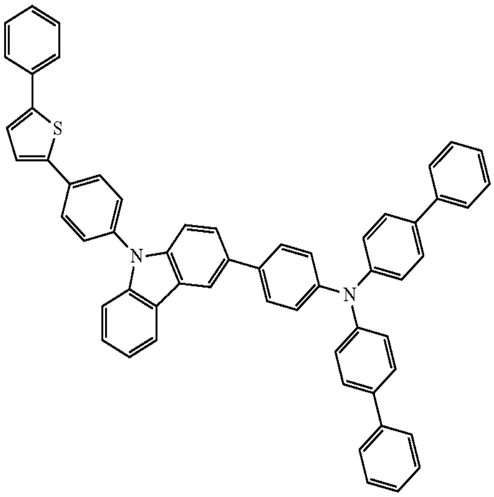

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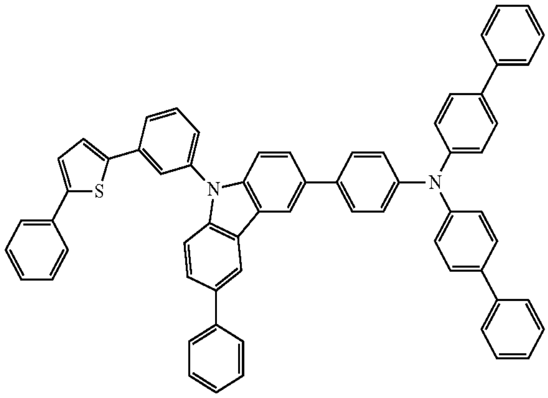

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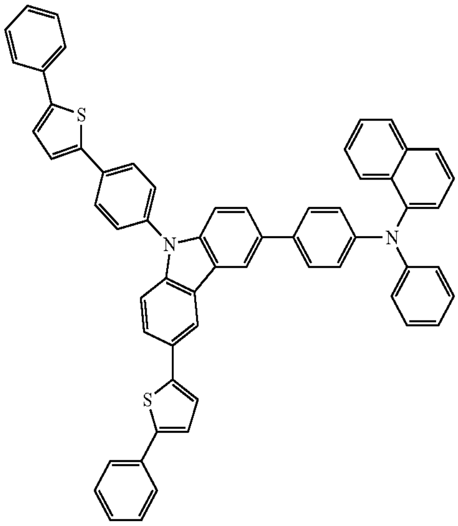

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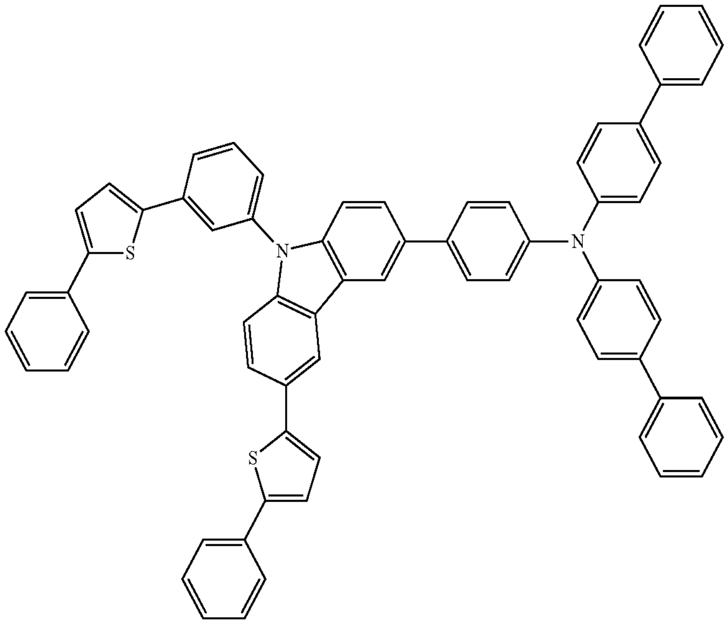
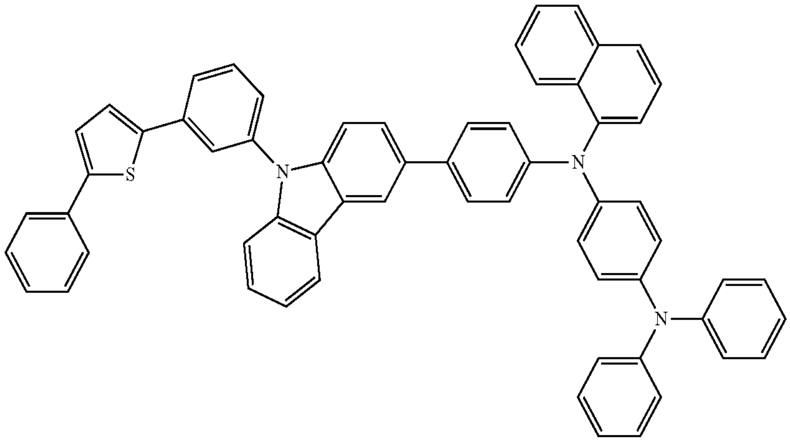
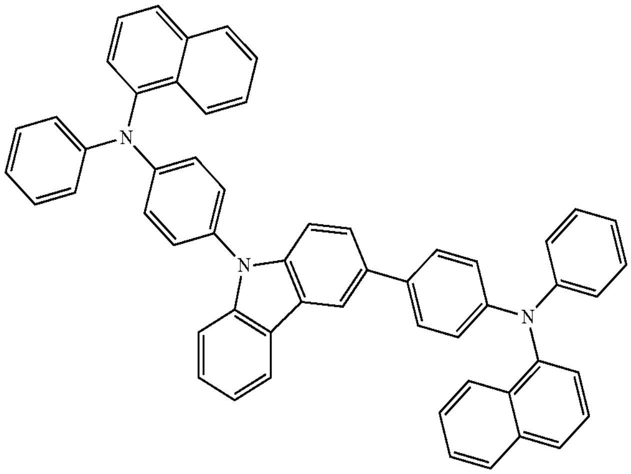
[Formula 12]



[Formula 13]



[Formula 14]



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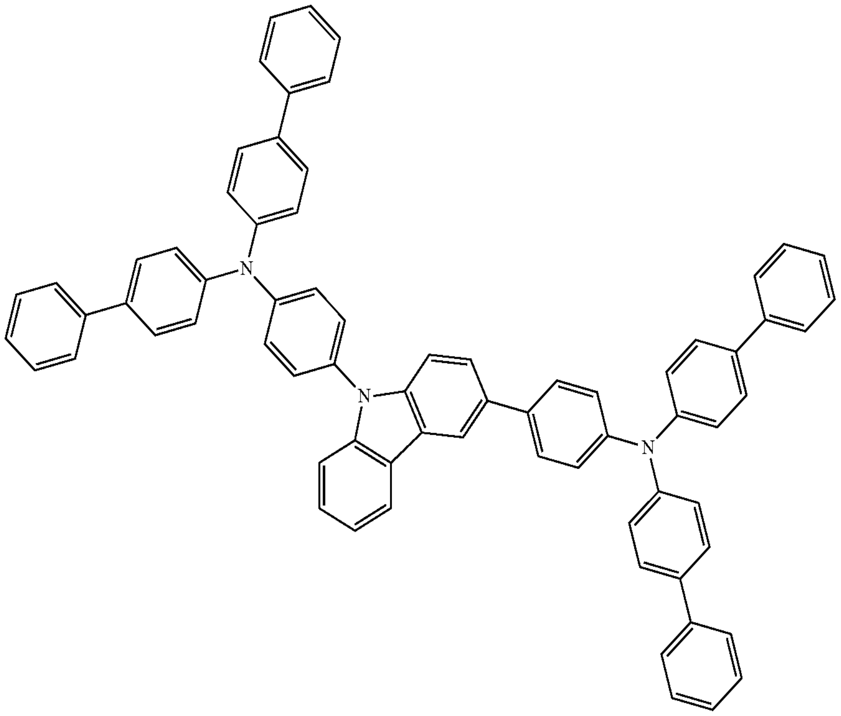
[Formula 15]



[0038] The compound of Formula 1 may have a property that is required when it is used as an organic material layer used in an organic light emitting device by using a core structure which is shown in Formula 1, that is, a structure in which arylene is substituted at a carbon position between R5 and R6 of carbazole as a core structure and introducing various substituents into the core structure including a structure that includes each independently hydrogen, heavy hydrogen; aliphatic hydrocarbon having 1-20 carbon atoms; aromatic hydrocarbon; aromatic hydrocarbon which is substituted with one or more substituent groups selected from the group consisting of nitro, nitrile, halogen, an alkyl group, an alkoxy group, an amino group, an aromatic hydrocarbon and a hetero ring group; a silicon group which is substituted with aromatic hydrocarbon; a hetero ring group; a hetero ring group which is substituted with one or more substituent groups selected from the group consisting of nitro, nitrile, halogen, an alkyl group, an alkoxy group, an amino group, an aromatic hydrocarbon and a hetero ring group; a thiophene group which is substituted with hydrocarbon having 1-20 carbon atoms or aromatic hydrocarbon having 6-20 carbon atoms; or a boron group which is substituted with an aromatic hydrocarbon.

[0039] The conjugation length of the compound has a close relationship with an energy band gap. In detail, the energy band gap is reduced as the conjugation length of the compound increases. As described above, since a conjugation structure is limited in the core structure of the compound of Formula 1, the core structure has a large energy band gap.

[0040] As described above, in the present invention, various substituent groups are introduced to R1 to R7 and X and Y positions of the core structure having the large energy band gap so as to produce compounds having various energy band gaps. Generally, it is easy to control an energy band gap by introducing substituent groups into a core structure having a large energy band gap, but it is difficult to signifimaytly control the energy band gap by introducing substituent groups into a core structure having a small energy band gap. Furthermore, in the present invention, it is possible to control HOMO and LUMO energy levels of the compound by introducing various substituent groups into R1 to R7 and X and Y of the core structure.

[0041] Additionally, by introducing various substituent groups into the core structure, compounds having intrinsic characteristics of the substituent groups may be obtained. For example, substituent groups, which are frequently applied to hole injection layer material, hole transport layer material, light emitting layer material, and electron transport layer materials during the production of the organic light emitting device, are introduced into the core structure so as to produce substances capable of satisfying the requirements of each organic material layer.

[0042] Since the core structure of the compound of Formula 1 includes the amine structure, it has an energy level suitable for the hole injection and/or hole transport materials in the organic light emitting device. In the present invention, the compound having the proper energy level is selected depending on the substituent group among the compounds represented by Formula 1 to be used in the organic light emitting device, thereby it is possible to realize a device having a low driving voltage and a high light efficiency.

[0043] Furthermore, various substituent groups are introduced into the core structure so as to precisely control the energy band gap, and to improve interfacial characteristics with organic materials, thereby apply the compound to various fields.

[0044] In addition, by controlling the number of amine that is included in the substitutent group B, HOMO and LUMO energy levels and the energy band gap are capable of being precisely controlled, and interfacial characteristics with organic materials are improved, thereby apply the compound to various fields.

[0045] Meanwhile, since the compound of Formula 1 has a high glass transition temperature (Tg), it has excellent thermal stability. Such increase in thermal stability is an important factor providing driving stability to the device.

[0046] Furthermore, the compound of Formula 1 may be used to form the organic material layer using a vacuum deposition process or a solution coating process during the production of the organic light emitting device. In connection with this, illustrative, but non-limiting, examples of the solution coating process include a spin coating process, a dip coating process, an inkjet printing process, a screen printing process, a spray process, and a roll coating process.

[0047] The organic light emitting device of the present invention may be produced using known materials through a known process, modified only in that at least one layer of organic material layer(s) include the compound of the present invention, that is, the compound of Formula 1.

[0048] The organic material layer(s) of the organic light emitting device according to the present invention may have a single layer structure, or alternatively, a multilayered structure in which at least two organic material layers are layered. For example, the organic light emitting device of the present invention may comprise a hole injection layer, a hole transport layer, a light emitting layer, an electron transport layer, and an electron injection layer as the organic material layer (s). However, the structure of the organic light emitting device is not limited to this, but may comprise a smaller number of organic material layers.

[0049] Furthermore, the organic light emitting device of the present invention may be produced, for example, by sequentially layering a first electrode, organic material layer(s), and a second electrode on a substrate. In connection with this, a physical vapor deposition (PVD) method, such as a sputtering method or an e-beam evaporation method, may be used, but the method is not limited to these.

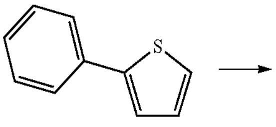
MODE FOR INVENTION

[0050] A better understanding of a method of manufacturing an compound represented by Formula 1 may be obtained in light of the following Preparation Examples. However, the Following Preparation Examples and Experimental Examples are set forth to illustrate, but are not to be construed to limit the present invention.

Preparation Example 1

Manufacturing of the Compound Represented by Formula 4

[0051]



compound A

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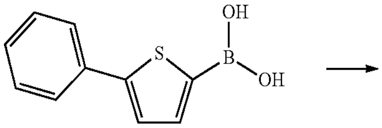
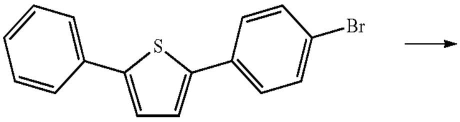
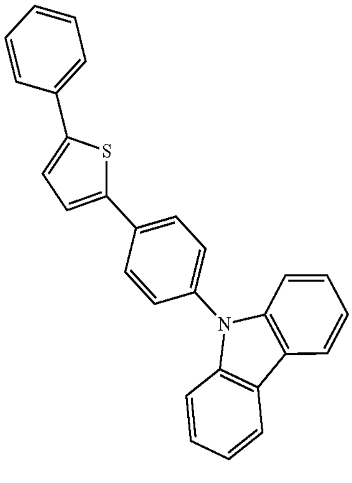


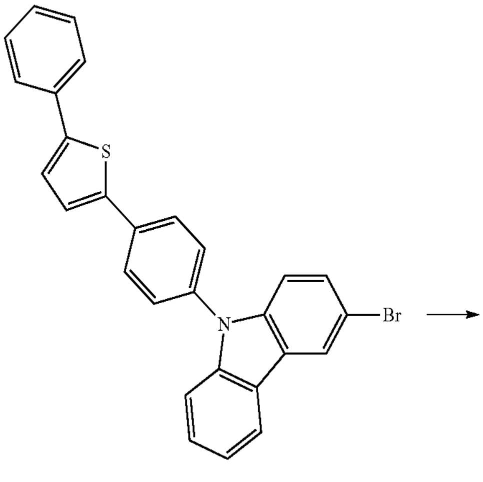
compound B



compound C

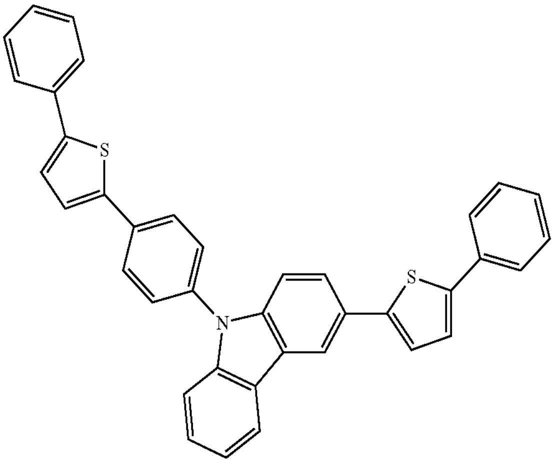


compound D



compound E

-continued



Formula 4

Preparation Example 1-1

Manufacturing of the Compound A

[0052] After 2-bromothiopene (20 g, 122.7 mmol) and phenyl boronic acid (18 g, 147.6 mmol) were dissolved in tetrahydrofuran (300 ml), 4N potassium carbonate aqueous solution (130 mL) and tetrakis(triphenylphosphine)palladium (0) (2.9 g, 2.5 mmol) and were put thereinto and heated while being agitated. After the reaction was finished, the organic layer was separated and dried by using anhydrous magnesium sulfate. After it was distilled under the reduced pressure, it was recrystallized by using hexane to obtain a compound A (14.6 g, yield 74%; $[M+H]^+=161$).

Preparation Example 1-2

Manufacturing of the Compound B

[0053] The compound A (18 g, 112.3 mmol) that was manufactured in Preparation Example 1-1 was dissolved in anhydrous tetrahydrofuran, n-butyl lithium (2.5M hexane solution, 49.4 mL, 123.5 mmol) was added dropwise at −78° C., and agitated for 1 hour. Trimethyl borate (15.1 g, 145.3 mmol) was put thereinto, agitated for 1 hour, 2N hydrochloric acid aqueous solution (80 mL) was put thereinto, and it was heated to normal temperature. After the organic layer was separated, it was dried by using anhydrous magnesium sulfate. After it was distilled under the reduced pressure, it was recrystallized by using hexane to obtain a compound B (15.2 g, yield 66%; $[M+H]^+=205$).

Preparation Example 1-3

Manufacturing of the Compound C

[0054] The compound B (15 g, 73.5 mmol) that was manufactured in Example 1-2 and 4-bromo-3-iodobenzene (20.8 g, 73.5 mmol) were dissolved in tetrahydrofuran (250 ml), 4N potassium carbonate aqueous solution (75 mL) and tetrakis (triphenylphosphine)palladium (0) (1.7 g, 1.5 mmol) and were put thereinto and heated while being agitated. After the reaction was finished, the organic layer was separated and dried by using anhydrous magnesium sulfate. After it was distilled under the reduced pressure, it was recrystallized by using ethanol to obtain a compound C (14.8 g, yield 64%; $[M+H]^+=316$).

Preparation Example 1-4

Manufacturing of the Compound D

[0055] After the compound C (14 g, 44.4 mmol) that was manufactured in Preparation Example 1-3, carbazole (7.5 g, 44.9 mmol), sodium-tertiary-butoxide (5.5 g, 57.2 mmol) and bis(tri tertiary-butyl phosphine)palladium (0) (0.23 g, 0.45 mmol) were suspended in xylene (300 ml), they were refluxed while being agitated. After the reaction was finished, it was cooled to normal temperature, and the manufactured solid was filtered. It was sequentially washed by using water and ethanol to obtain a compound D (14.7 g, yield 82%; $[M+H]^+=402$)<

Preparation Example 1-5

Manufacturing of the Compound E

[0056] The compound D (14 g, 34.9 mmol) that was manufactured in Preparation Example 1-4 was dissolved in chloroform (300 mL), N-bromosuccinimide (6.3 g, 35.4 mmol) was added thereto, and they were agitated at normal temperature. After the reaction was finished, water was poured thereon, and the organic layer was separated, and it was dried by using anhydrous magnesium sulfate. It was distilled under the reduced pressure, and recrystallized by using tetrahydrofuran and ethanol to obtain a compound E (14.3 g, yield 85%; $[M+H]^+=481$)

Preparation Example 1-6

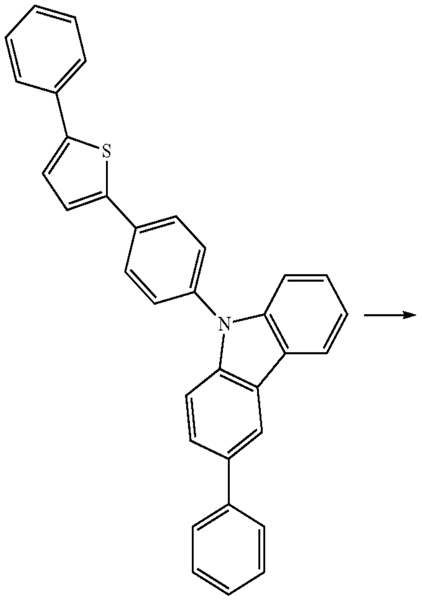
Manufacturing of Formula 4

[0057] The compound E (13 g, 27 mmol) that was manufactured in Example 1-5 and the compound B (5.5 g, 27 mmol) that was manufactured in Example 1-2 were dissolved in tetrahydrofuran (200 ml), 4N potassium carbonate aqueous solution (30 mL) and tetrakis(triphenylphosphine)palladium (0) (0.62 g, 0.54 mmol) and were put thereinto and heated while being agitated. After the reaction was finished, the organic layer was separated and dried by using anhydrous magnesium sulfate. After it was distilled under the reduced pressure, it was recrystallized by using tetrahydrofuran and ethanol to obtain Formula 4 (10.7 g, yield 71%; $[M+H]^+=560$).

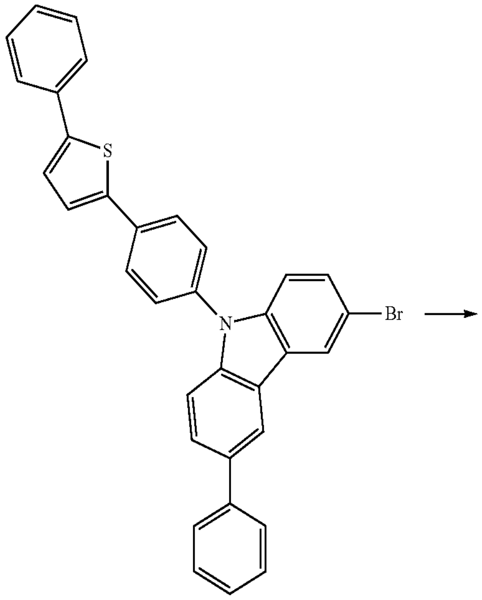
Preparation Example 2

Manufacturing of the Compound Represented by Formula 5

[0058]



compound A



compound B

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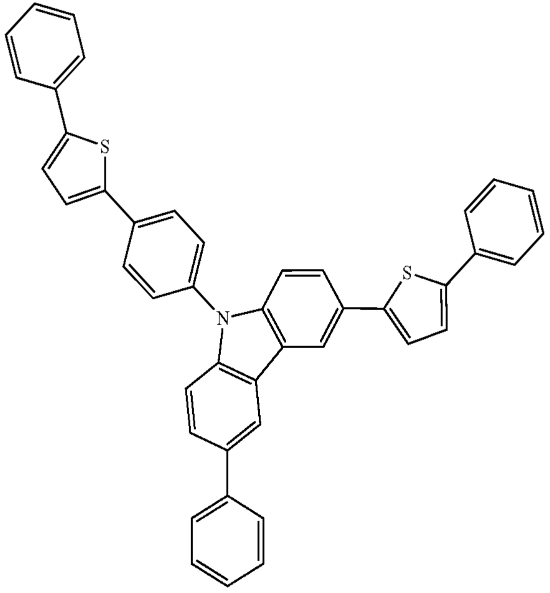


Formula 5

Preparation Example 2-1

Manufacturing of the Compound A

[0059] After the compound E (10 g, 20.8 mmol) of Preparation Example 1-5, and phenyl boronic acid (2.7 g, 22.1 mmol) were dissolved in tetrahydrofuran (300 ml), 4N potassium carbonate aqueous solution (25 mL) and tetrakis(triphenylphosphine)palladium (0) (0.49 g, 0.42 mmol) and were put thereinto and heated while being agitated. After the reaction was finished, the organic layer was separated and dried by using anhydrous magnesium sulfate. After it was distilled under the reduced pressure, it was recrystallized by using tetrahydrofuran and hexane to obtain a compound A (8.2 g, yield 83%; $[M+H]^+=478$).

Preparation Example 2-2

Manufacturing of the Compound B

[0060] The compound A (8 g, 16.7 mmol) that was manufactured in Preparation Example 2-1 was dissolved in chloroform (200 mL), N-bromosuccinimide (3 g, 16.9 mmol) was added thereto, and they were agitated at normal temperature. After the reaction was finished, water was poured thereon and the manufactured solid was filtered. It was sequentially washed by using water and ethanol to obtain a compound B (8.2 g, yield 88%; $[M+H]^+=557$).

Preparation Example 2-3

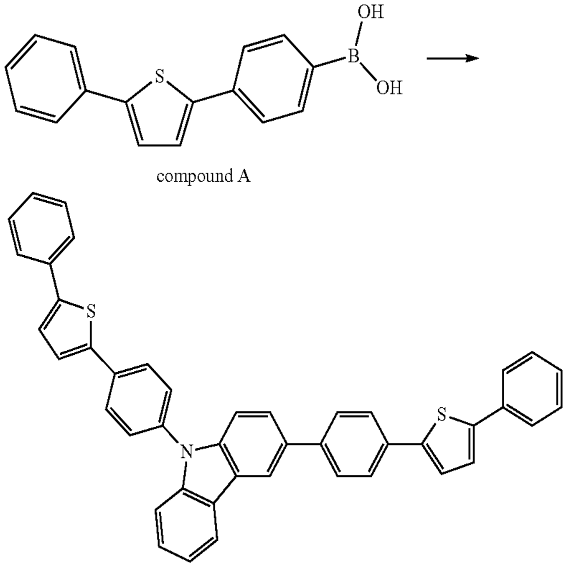
Manufacturing of Formula 5

[0061] The compound B (5 g, 9 mmol) that was manufactured in Preparation Example 2-2 and the compound B (1.9 g, 9.3 mmol) that was manufactured in Preparation Example 1-2 were dissolved in tetrahydrofuran (150 ml), 4N potassium carbonate aqueous solution (12 mL) and tetrakis(triphenylphosphine)palladium (0) (0.2 g, 0.18 mmol) and were put thereinto and heated while being agitated. After the reaction was finished, the organic layer was separated and dried by using anhydrous magnesium sulfate. After it was distilled under the reduced pressure, it was recrystallized by using tetrahydrofuran and ethanol to obtain Formula 5 (3.9 g, yield 68%; $[M+H]^+=636$).

Preparation Example 3

Manufacturing of the Compound Represented by Formula 6

[0062]



compound A

Formula 6

Preparation Example 3-1

Manufacturing of the Compound A

[0063] The compound C (10 g, 31.7 mmol) that was manufactured in Preparation Example 1-3 was dissolved in anhydrous tetrahydrofuran, n-butyl lithium (2.5M hexane solution, 13.8 mL, 34.5 mmol) was added dropwise at −78° C., and agitated for 1 hour. Trimethyl borate (4.3 g, 41.4 mmol) was put thereinto, agitated for 1 hour, 2N hydrochloric acid aqueous solution (20 mL) was put thereinto, and it was heated to normal temperature. After the organic layer was separated, it was dried by using anhydrous magnesium sulfate. After it was distilled under the reduced pressure, it was recrystallized by using hexane to obtain a compound A (5.4 g, yield 61%; $[M+H]^+=281$).

Preparation Example 3-2

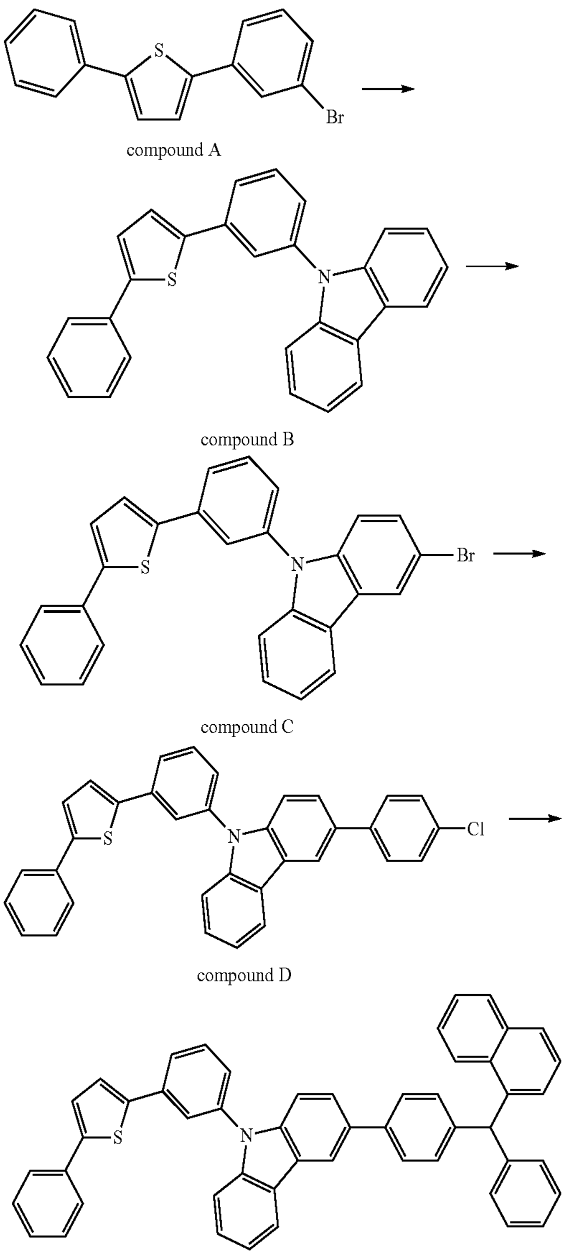
Manufacturing of Formula 6

[0064] The compound A (5 g, 17.8 mmol) that was manufactured in Preparation Example 3-1 and the compound E (8.5 g, 17.7 mmol) that was manufactured in Preparation Example 1-5 were dissolved in tetrahydrofuran (150 ml), 4N potassium carbonate aqueous solution (20 mL) and tetrakis(triphenylphosphine)palladium (0) (0.42 g, 0.36 mmol) and were put thereinto and heated while being agitated. After the reaction was finished, the organic layer was separated and dried by using anhydrous magnesium sulfate. After it was distilled under the reduced pressure, it was recrystallized by using tetrahydrofuran and ethanol to obtain Formula 6 (8.2 g, yield 73%; $[M+H]^+=636$).

Preparation Example 4

Manufacturing of the Compound Represented by Formula 7

[0065]



compound A

compound B

compound C

compound D

Formula 7

Preparation Example 4-1

Manufacturing of the Compound A

[0066] The compound B (15 g, 73.5 mmol) that was manufactured in Preparation Example 1-2 and 3-bromo-1-iodobenzene (20.8 g, 73.5 mmol) were dissolved in tetrahydrofuran (180 ml), 4N potassium carbonate aqueous solution (75 mL) and tetrakis(triphenylphosphine)palladium (0) (1.7 g, 1.5 mmol) and were put thereinto and heated while being agitated. After the reaction was finished, the organic layer was separated and dried by using anhydrous magnesium sulfate. After it was distilled under the reduced pressure, it was subjected to the column separation by using a tetrahydrofuran/hexane=1/10 solvent to obtain a compound A (14.4 g, yield 62%; $[M+H]^+=316$).

Preparation Example 4-2

Manufacturing of the Compound B

[0067] After the compound A (14 g, 44.4 mmol) that was manufactured in Preparation Example 4-1, carbazole (7.5 g, 44.9 mmol), sodium-tertiary-butoxide (5.5 g, 57.2 mmol) and bis(tri tertiary-butyl phosphine)palladium (0) (0.23 g, 0.45 mmol) were suspended in xylene (300 ml), they were refluxed while being agitated. After the reaction was finished, it was cooled to normal temperature, and the manufactured solid was filtered. It was sequentially washed by using water and ethanol to obtain a compound B (15.1 g, yield 85%; $[M+H]^+=402$).

Preparation Example 4-3

Manufacturing of the Compound C

[0068] The compound B (15 g, 37.4 mmol) that was manufactured in Preparation Example 4-2 was dissolved in chloroform (300 mL), N-bromosuccinimide (6.7 g, 37.6 mmol) was added thereto, and they were agitated at normal temperature. After the reaction was finished, water was poured thereon, the organic layer was separated, and they were dried by using anhydrous magnesium sulfate. It was distilled under the reduced pressure and recrystallized by using tetrahydrofuran and ethanol to obtain a compound C (14.2 g, yield 79%; $[M+H]^+=481$).

Preparation Example 4-4

Manufacturing of the Compound D

[0069] The compound C(13 g, 27 mmol) that was manufactured in Preparation Example 4-3 and 4-chlorophenyl borate (4.3 g, 27.5 mmol) were dissolved in tetrahydrofuran (300 ml), 4N potassium carbonate aqueous solution (33 mL) and tetrakis(triphenylphosphine)palladium (0) (0.62 g, 0.54 mmol) and were put thereinto and heated while being agitated. After the reaction was finished, the organic layer was separated and dried by using anhydrous magnesium sulfate. After it was distilled under the reduced pressure, it was recrystallized by using tetrahydrofuran and ethanol to obtain a compound D (9.5 g, yield 69%; $[M+H]^+=512$).

Preparation Example 4-5

Manufacturing of Formula 7

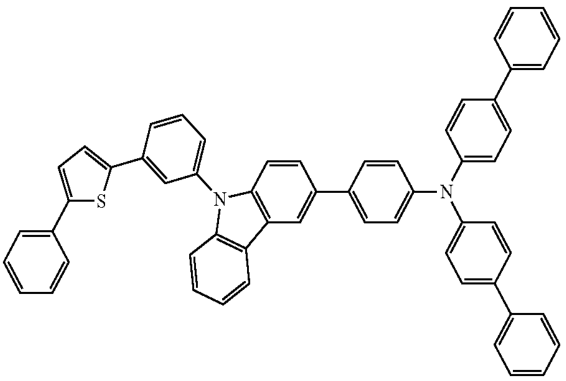
[0070] After the compound D (8 g, 15.6 mmol) that was manufactured in Preparation Example 4-4, N-phenyl-1-naphthyl amine (3.8 g, 17.3 mmol), sodium-tertiary-butoxide (2 g, 20.8 mmol) and bis(tri tertiary-butyl phosphine)palladium (0) (0.08 g, 0.16 mmol) were suspended in xylene (300 ml), they were refluxed while being agitated. After the reaction was finished, it was cooled to normal temperature, an acidic white clay was put thereinto, and they were agitated. After it was filtered, it was distilled under the reduced pressure, and subjected to the column separation by using a tetrahydrofuran/hexane=1/7 solvent to obtain Formula 7 (6.4 g, yield 59%; $[M+H]^+=695$).

Preparation Example 5

Manufacturing of the Compound Represented by Formula 8

[0071]

Formula 8



Preparation Example 5-1

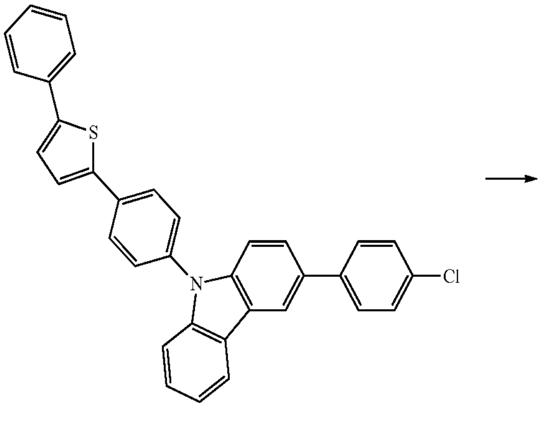
Manufacturing of Formula 8

[0072] After the compound D (8 g, 15.6 mmol) that was manufactured in Preparation Example 4-4, bis(4-biphenylyl) amine (5.5 g, 17.1 mmol), sodium-tertiary-butoxide (2 g, 20.8 mmol) and bis(tri tertiary-butyl phosphine)palladium (0) (0.08 g, 0.16 mmol) were suspended in xylene (250 ml), they were refluxed while being agitated. After the reaction was finished, it was cooled to normal temperature, an acidic white clay was put thereinto, and they were agitated. After it was filtered, it was distilled under the reduced pressure, and recrystallized by using tetrahydrofuran and ethanol to obtain Formula 8 (7.8 g, yield 63%; $[M+H]^+=797$).

Preparation Example 6

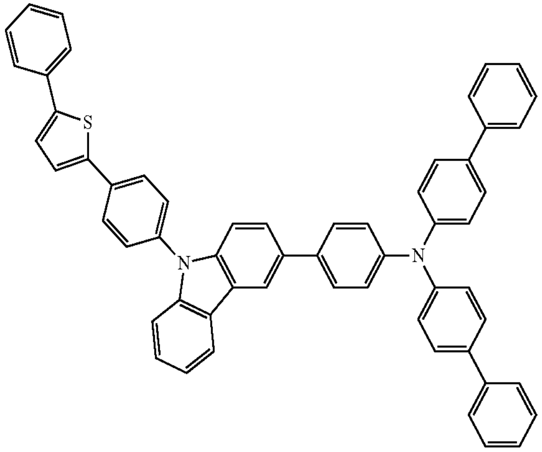
Manufacturing of the Compound Represented by Formula 9

[0073]



compound A

-continued



Formula 9

Preparation Example 6-1

Manufacturing of the Compound A

[0074] The compound E (10 g, 20.8 mmol) that was manufactured in Preparation Example 1-5 and 4-chlorophenyl borate (3.6 g, 23 mmol) were dissolved in tetrahydrofuran (250 ml), 4N potassium carbonate aqueous solution (22 mL) and tetrakis(triphenylphosphine)palladium (0) (0.49 g, 0.42 mmol) and were put thereinto and heated while being agitated. After the reaction was finished, the organic layer was separated and dried by using anhydrous magnesium sulfate. After it was distilled under the reduced pressure, it was recrystallized by using tetrahydrofuran and ethanol to obtain a compound A (7 g, yield 66%; $[M+H]^+=512$).

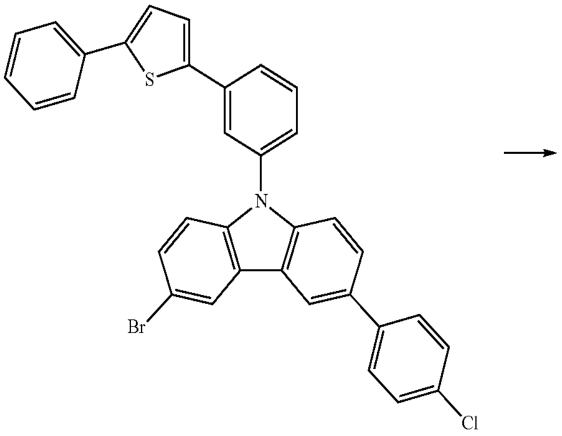
Preparation Example 6-2

Manufacturing of Formula 9

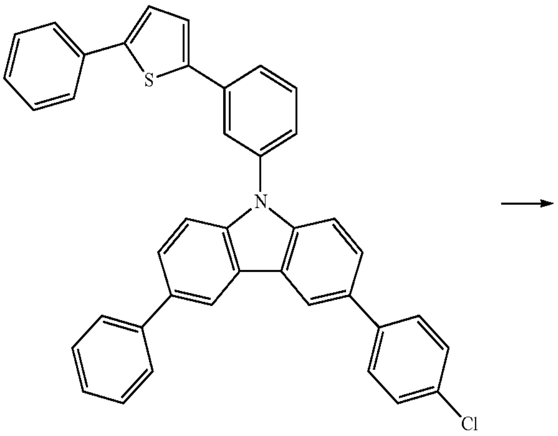
[0075] After the compound A (5 g, 9.7 mmol) that was manufactured in Preparation Example 6-1, bis(4-biphenylyl) amine (3.4 g, 10.6 mmol), sodium-tertiary-butoxide (1.2 g, 12.6 mmol) and his (tri tertiary-butyl phosphine)palladium (0) (0.05 g, 0.1 mmol) were suspended in xylene (150 ml), they were refluxed while being agitated. After the reaction was finished, it was cooled to normal temperature, and the manufactured solide was filtered. After the filtered solide was dissolved in chloroform, an acidic white clay was put thereinto, and they were agitated. After it was filtered, it was distilled under the reduced pressure, and recrystallized by using tetrahydrofuran and ethanol to obtain Formula 9 (5.2 g, yield 67%; $[M+H]^+=797$).

Preparation Example 7
Manufacturing of the Compound Represented by Formula 10

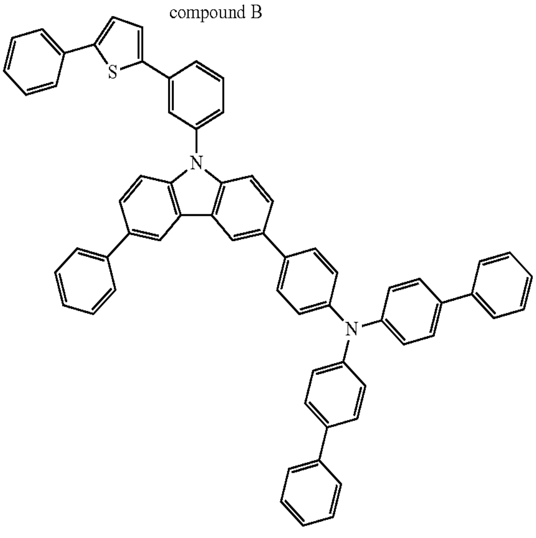
[0076]



compound A



compound B



Formula 10

Preparation Example 7-1
Manufacturing of the Compound A

[0077] The compound D (10 g, 19.5 mmol) that was manufactured in Preparation Example 4-4 was dissolved in chloroform (300 mL), N-bromosuccinimide (3.7 g, 20.8 mmol) was added thereto, and they were agitated at normal temperature. After the reaction was finished, water was poured thereon, the organic layer was separated, and they were dried by using anhydrous magnesium sulfate. It was distilled under the reduced pressure and recrystallized by using tetrahydrofuran and ethanol to obtain a compound A (8.9 g, yield 77%; $[M+H]^+=591$).

Preparation Example 7-2

Manufacturing of the Compound B

[0078] The compound A (8 g, 13.5 mmol) that was manufactured in Preparation Example 7-1 and 4-chlorophenyl borate (2.3 g, 14.7 mmol) were dissolved in tetrahydrofuran (200 ml), 4N potassium carbonate aqueous solution (15 mL) and tetrakis(triphenylphosphine)palladium (0) (0.31 g, 0.27 mmol) and were put thereinto and heated while being agitated. After the reaction was finished, the manufactured solid was filtered. The filtered solid was recrysallized by using tetrahydrofuran and ethanol to obtain a compound B (5.2 g, yield 65%; $[M+H]^+=588$).

Preparation Example 7-3

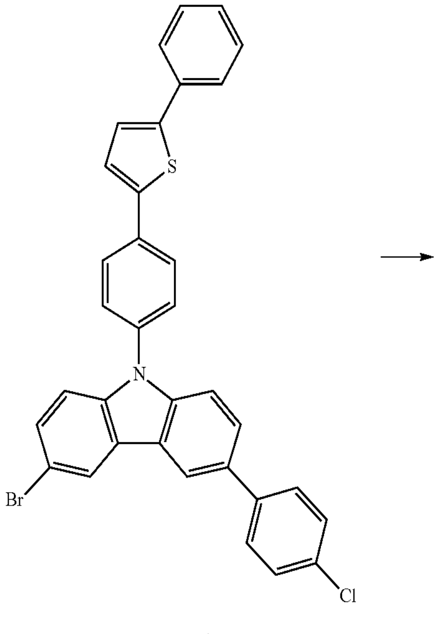
Manufacturing of Formula 10

[0079] After the compound B (5 g, 8.5 mmol) that was manufactured in Preparation Example 7-2, bis(4-biphenylyl) amine (3 g, 9.3 mmol), sodium-tertiary-butoxide (1.1 g, 11.4 mmol) and bis(tri tertiary-butyl phosphine)palladium (0) (0.05 g, 0.1 mmol) were suspended in xylene (150 ml), they were refluxed while being agitated. After the reaction was finished, it was cooled to normal temperature, an acidic white clay was put thereinto, and they were agitated. After it was filtered, it was distilled under the reduced pressure, and recrystallized by using tetrahydrofuran and ethanol to obtain Formula 10 (4.5 g, yield 61%; $[M+H]^+=873$).

Preparation Example 8

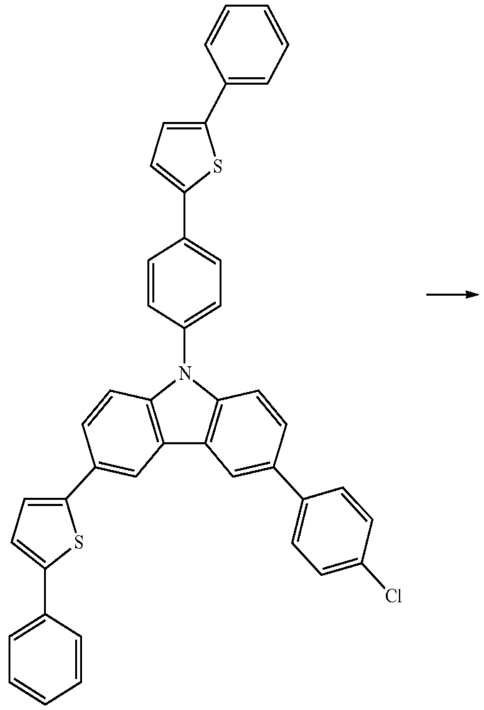
Manufacturing of the Compound Represented by Formula 11

[0080]

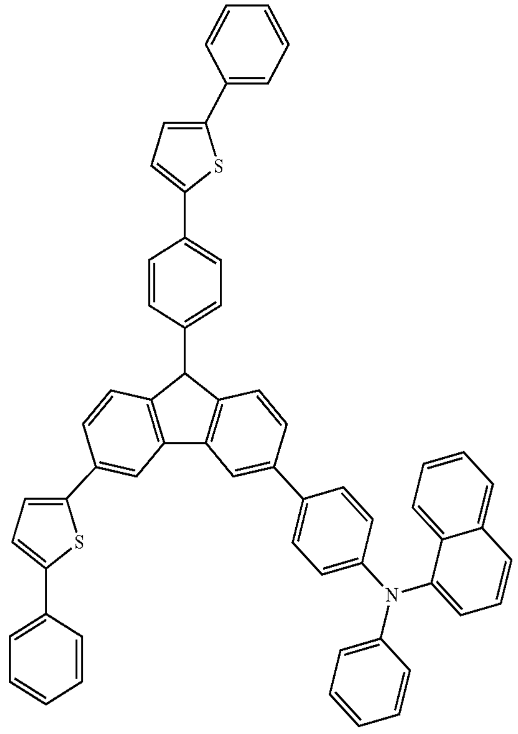


compound A

-continued



compound B



Formula 11

Preparation Example 8-1

Manufacturing of the Compound A

[0081] The compound A (10 g, 19.5 mmol) that was manufactured in Preparation Example 6-1 was dissolved in chloroform (300 mL), N-bromosuccinimide (3.7 g, 20.8 mmol) was added thereto, and they were agitated at normal tempera ture. After the reaction was finished, water was poured thereon, the organic layer was separated, and they were dried by using anhydrous magnesium sulfate. It was distilled under the reduced pressure and recrystallized by using tetrahydrofuran and ethanol to obtain a compound A (9.4 g, yield 82%; $[M+H]^+=591$).

Preparation Example 8-2

Manufacturing of the Compound B

[0082] The compound A (8 g, 13.5 mmol) that was manufactured in Preparation Example 8-1 and the compound B (3 g, 14.7 mmol) that was manufactured in Preparation Example 1-2 were dissolved in tetrahydrofuran (150 ml), 4N potassium carbonate aqueous solution (15 mL) and tetrakis(triphenylphosphine)palladium (0) (0.31 g, 0.27 mmol) and were put thereinto and heated while being agitated. After the reaction was finished, the manufactured solid was filtered. The filtered solid was recrysallized by using tetrahydrofuran and ethanol to obtain a compound B (6.2 g, yield 69%; $[M+H]^+=670$).

Preparation Example 8-3

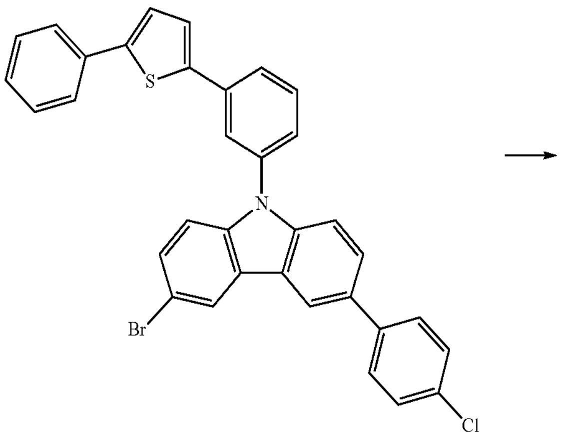
Manufacturing of Formula 11

[0083] After the compound B (6 g, 9 mmol) that was manufactured in Preparation. Example 8-2, N-phenyl-1-naphthyl amine (2.1 g, 9.6 mmol), sodium-tertiary-butoxide (1.1 g, 11.7 mmol) and bis(tri tertiary-butyl phosphine)palladium (0) (0.05 g, 0.1 mmol) were suspended in xylene (100 ml), they were refluxed while being agitated. After the reaction was finished, it was cooled to normal temperature, an acidic white clay was put thereinto, and they were agitated. After it was filtered, it was distilled under the reduced pressure, and subjected to the column separation by using a tetrahydrofuran/hexane=1/6 solvent to obtain Formula 11 (3.8 g, yield 49%; $[M+H]^+=853$).

Preparation Example 9

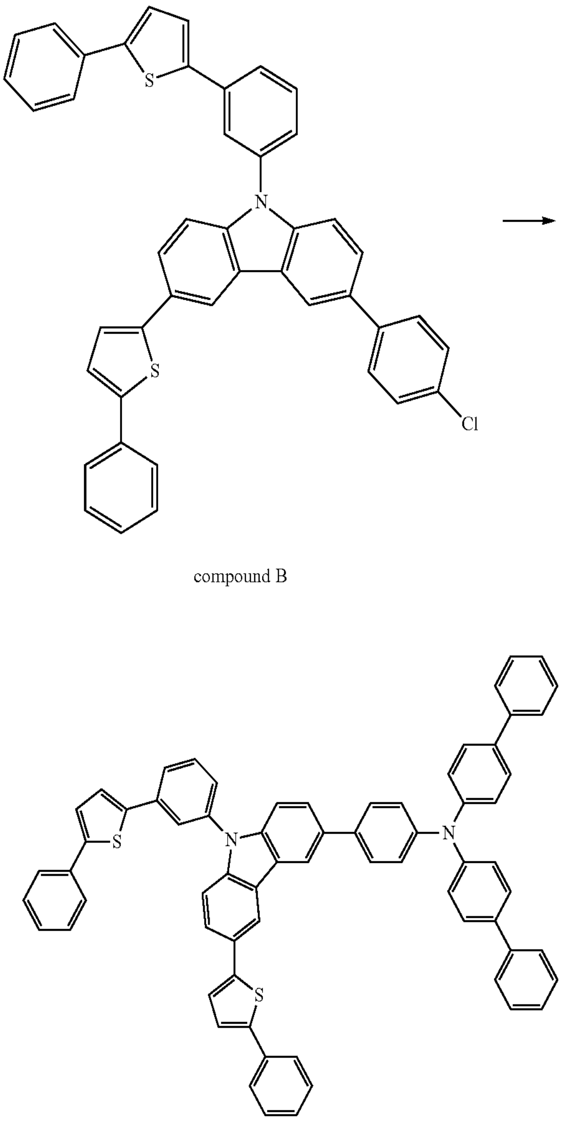
Manufacturing of the Compound Represented by Formula 12

[0084]



compound A

-continued



compound B

Formula 12

Preparation Example 9-1

Manufacturing of the Compound A

[0085] The compound D (10 g, 19.5 mmol) that was manufactured in Preparation Example 4-4 was dissolved in chloroform (300 mL), N-bromosuccinimide (3.7 g, 20.8 mmol) was added thereto, and they were agitated at normal temperature. After the reaction was finished, water was poured thereon, the organic layer was separated, and they were dried by using anhydrous magnesium sulfate. It was distilled under the reduced pressure and recrystallized by using tetrahydrofuran and ethanol to obtain a compound A (9.1 g, yield 79%; $[M+H]^+=591$).

Preparation Example 9-2

Manufacturing of the Compound B

[0086] The compound A (9 g, 15.2 mmol) that was manufactured in Preparation Example 9-1 and the compound B (3.4 g, 16.7 mmol) that was manufactured in Preparation Example 1-2 were dissolved in tetrahydrofuran (150 ml), 4N potassium carbonate aqueous solution (18 mL) and tetrakis (triphenylphosphine)palladium (0) (0.35 g, 0.3 mmol) and were put thereinto and heated while being agitated. After the reaction was finished, the manufactured solid was filtered. The filtered solid was recrysallized by using tetrahydrofuran and ethanol to obtain a compound B (7.3 g, yield 72%; $[M+H]^+=670$).

Preparation Example 9-3

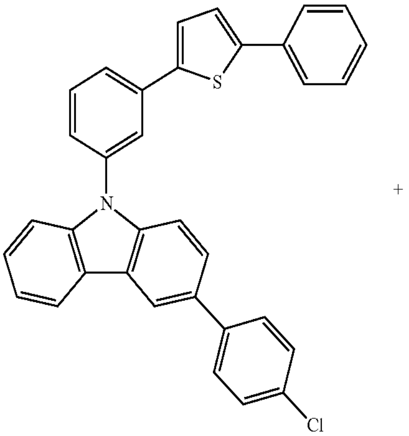
Manufacturing of Formula 12

[0087] After the compound B (6 g, 9 mmol) that was manufactured in Preparation Example 9-2, bis(4-biphenylyl)amine (3 g, 9.3 mmol), sodium-tertiary-butoxide (1.1 g, 11.4 mmol) and bis(tri tertiary-butyl phosphine)palladium (0) (0.05 g, 0.1 mmol) were suspended in xylene (150 ml), they were refluxed while being agitated. After the reaction was finished, it was cooled to normal temperature, and the manufactured solid was filtered. The filtered solid was dissolved in chloroform, an acidic white clay was put thereinto, and they were agitated and filtered. After it was distilled under the reduced pressure, and recrystallized by using tetrahydrofuran and ethanol to obtain Formula 12 (5.6 g, yield 65%; $[M+H]^+=955$).

Preparation Example 10

Manufacturing of Formula 13

[0088]



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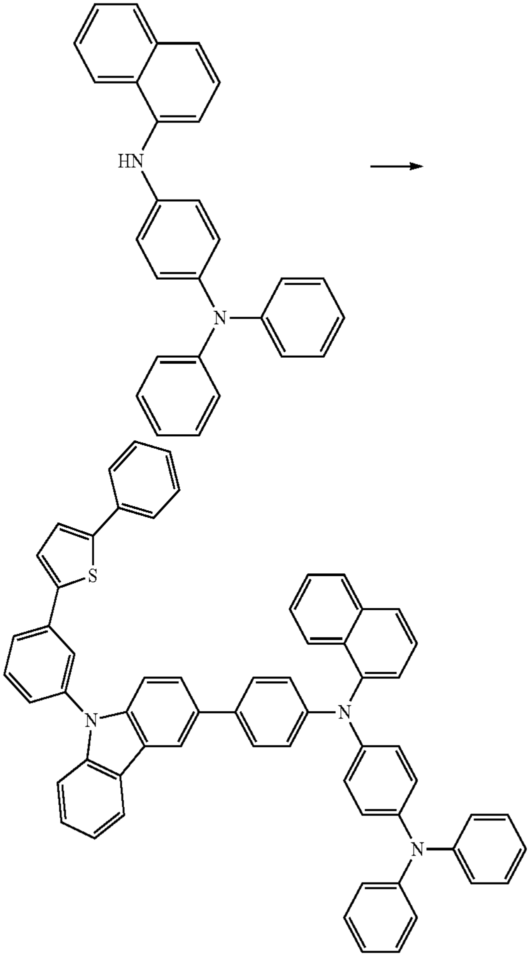


Formula 13

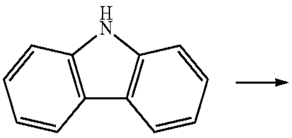
[0089] The compound A (4 g, 7.8 mmol) of the Preparation Example 6 and the amine compound (3.17 g, 8.2 mmol) were dissolved in 150 ml of xylene, sodium-tertiary-butoxide (1.9 g, 19.5 mmol), and 20 mg of $Pd[P(t\text{-}Bu)_3]_2$ (0.06 mmol) were added, and refluxed for 5 hours under the nitrogen atmosphere.

[0090] Distilled water was put in the reaction solution, the reaction was finished, and the organic layer was extracted. It was subjected to the column separation by using a normal-hexane/tetrahydrofuran=10/1 solvent, agitated in petroleum ether, and vacuum dried to obtain Formula 13 (3.4 g, yield 50%). MS: $[M+H]^+=861$

Preparation Example 11

Manufacturing of Formula 14

[0091]



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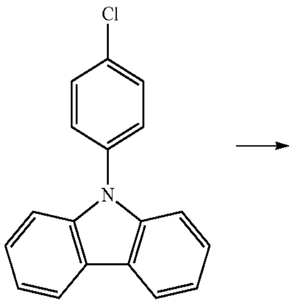
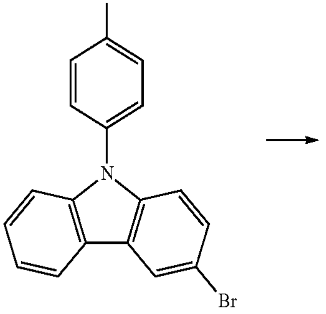
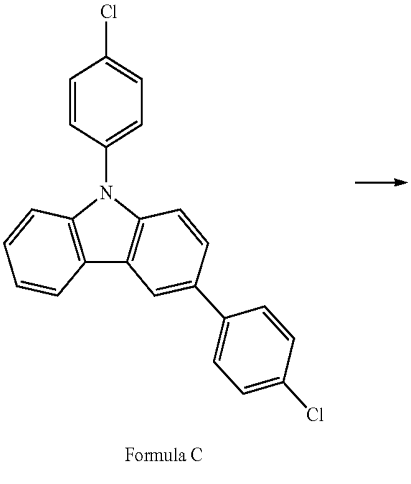


Formula A

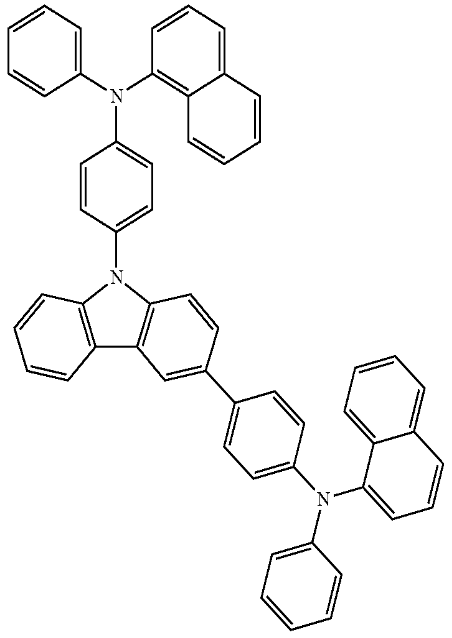


Formula B



Formula C

-continued



Formula 14

[0092] (1) Manufacturing of Formula A

[0093] Carbazole (17.5 g, 104.8 mmol) was dissolved in dimethylacetamide (100 mL), and 4-chloroiodobenzene (25 g, 104.8 mmol), Cu (13.3 g, 209.6 mmol), K_2CO_3 (43.5 g, 314.4 mmol) were put thereinto, and they were refluxed for 12 hours.

[0094] After the reaction solution was filtered, concentrated, and recrystallized by using EtOH to obtain Formula A (24.8 g, yield 85%). MS: $[M+H]^+=278$

[0095] (2) Manufacturing of Formula B

[0096] Formula A (24.8 g, 89.3 mmol) that was manufactured in step (1) was dissolved in chloroform (200 mL), N-bromosuccinic imide (15.9 g, 89.3 mmol) was added thereto, and they were agitated for 5 hours at normal temperature.

[0097] Distilled water was put thereinto the reaction solution, the reaction was finished, and the organic layer was extracted. After the reaction solution was concentrated, the next reaction was performed without the purification process. MS: $[M+H]^+=357$

[0098] (3) Manufacturing of Formula C

[0099] Formula B (31.7 g, 89 mmol) that was manufactured in step (2) and 4-chlorophenyl boronic acid (15.3 g, 97.9 mmol) were dissolved in THF (150 mL), and $Pd(PPh_3)_4$ (2.1 g, 1.78 mmol) and the K_2CO_3/H_2O aqueous solution (6 g/100 mL, 356 mmol) were put thereinto, and they were refluxed for 24 hours.

[0100] Distilled water was put thereinto the reaction solution, the reaction was finished, and the organic layer was extracted. After the reaction solution was concentrated and subjected to the column separation by using a normal-hexane/tetrahydrofuran=10/1 solvent, they were agitated in EtOH, filtered, and vacuum dried to obtain Formula C (8.9 g, yield 26%). MS: $[M+H]^+=388$

[0101] (4) Manufacturing of Formula 14

[0102] Formula C (4.9 g, 12.6 mmol) that was manufactured in step (3) and N-phenyl-1-naphthyl amine (6.9 g, 31.5 mmol) were dissolved in 150 ml of xylene, sodium-tertiary-butoxide (3 g, 31.5 mmol), bisdibenzylidene acetone palladium (0) (0.28 g, 0.5 mmol), and 50 wt % tri-tertiary-butylphosphine toluene solution (0.24 ml, 0.5 mmol) were added thereto, and refluxed for 5 hours under the nitrogen atmosphere.

[0103] Distilled water was put in the reaction solution, the reaction was finished, and the organic layer was extracted. It was subjected to the column separation by using a normal-hexane/tetrahydrofuran=10/1 solvent, agitated in EtOH, filtered, and vacuum dried to obtain Formula 14 (1.8 g, yield 19%). MS: $[M+H]^+=754$

Preparation Example 12

Manufacturing of Formula 15

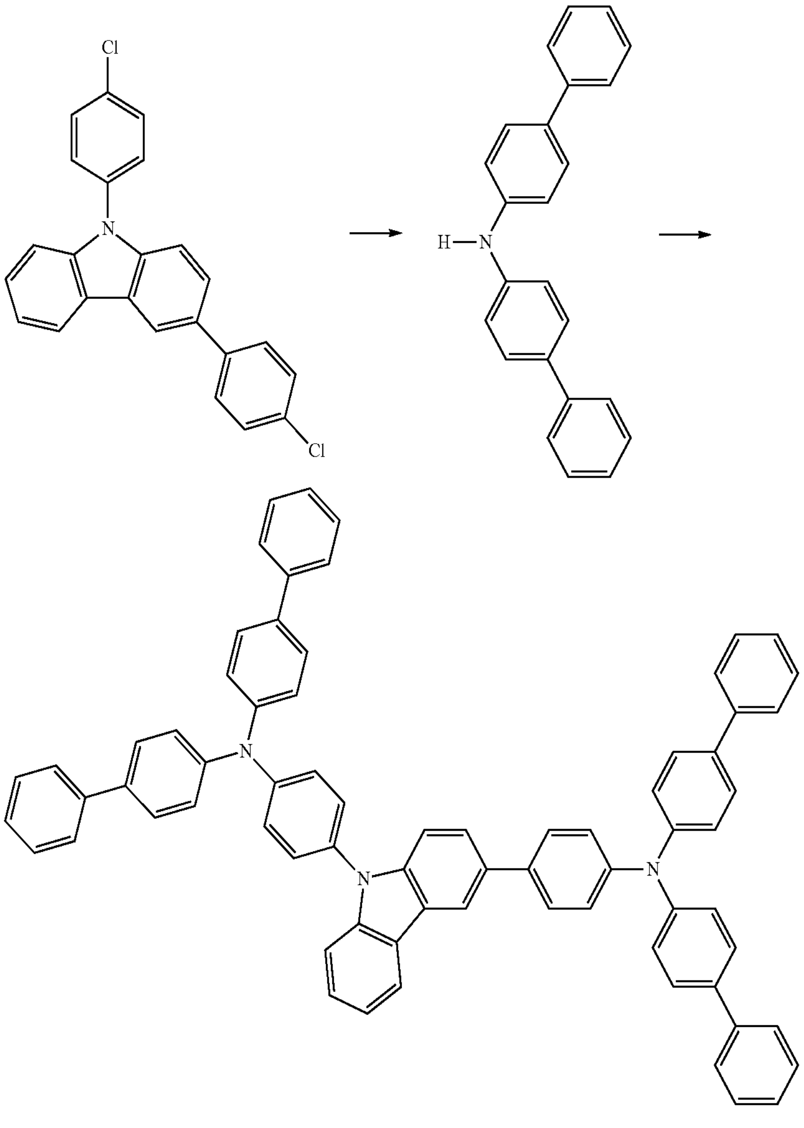
[0104]

[0105] Formula C (4 g, 10.3 mmol) that was manufactured in step (3) of Preparation Example 11 and bisdiphenylamine (8.28 g, 25.8 mmol) were dissolved in 150 ml of xylene, sodium-tertiary-butoxide (2.47 g, 25.8 mmol), and Pd[P(t-Bu)$_3$]$_2$ (0.2 g, 0.4 mmol) were added thereto, and refluxed for 5 hours under the nitrogen atmosphere.

[0106] Distilled water was put in the reaction solution, the reaction was finished, and the organic layer was extracted. It was subjected to the column separation by using a normal-hexane/tetrahydrofuran=10/1 solvent, agitated in petroleum ether, and vacuum dried to obtain Formula 15 (6.9 g, yield 70%). MS: $[M+H]^+=958$

Experimental Example 1

[0107] A glass substrate, on which ITO (indium tin oxide) was applied to a thickness of 1500 Å to form a thin film, was put in distilled water, in which a detergent was dissolved, and washed using ultrasonic waves. In connection with this, a

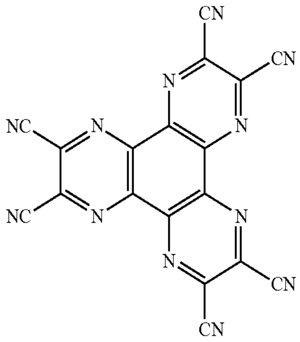


Formula 15

product manufactured by Fischer Inc. was used as the detergent, and distilled water was produced by filtering twice using a filter manufactured by Millipore Inc. After ITO was washed for 30 min, ultrasonic washing was conducted twice using distilled water for 10 min. After the washing using distilled water was completed, ultrasonic washing was conducted using isopropyl alcohol, acetone, and methanol solvents, and drying was then conducted. Next, it was transported to a plasma washing machine. In addition, the substrate was washed using oxygen plasma 85 W for 5 min, and then transported to a vacuum evaporator.

[0108] Hexanitrile hexaazatriphenylene (hereinafter, referred to as "HAT") of the following Formula was vacuum deposited to a thickness of 500 Å by heating on a transparent ITO electrode, which was prepared through the above procedure, so as to form a hole injection layer.

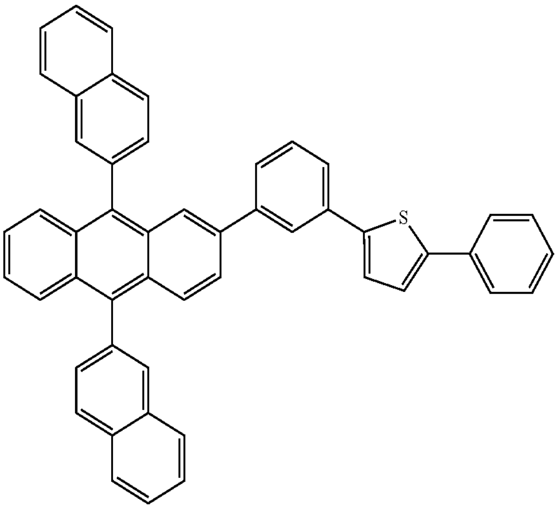
[HAT]



[0109] The compound of Formula 4, which was prepared in Example 1, was vacuum deposited to a thickness of 400 Å by heating on the hole injection layer so as to form a hole transport layer.

[0110] Subsequently, on the hole transport layer, GH and GD as described below were vacuum deposited to a film thickness of 300 Å at a film thickness ratio of 20:1 so as to form a light emitting layer.

[GH]



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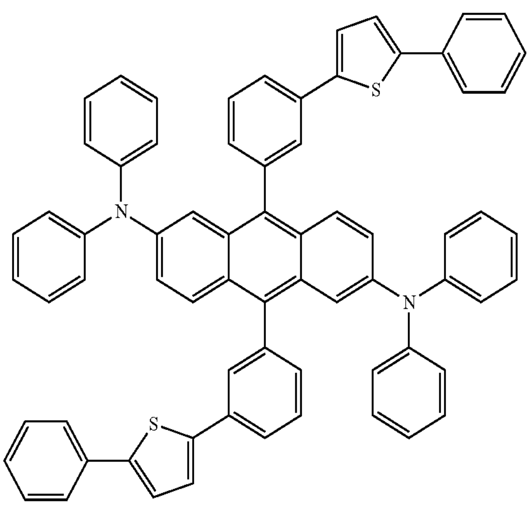
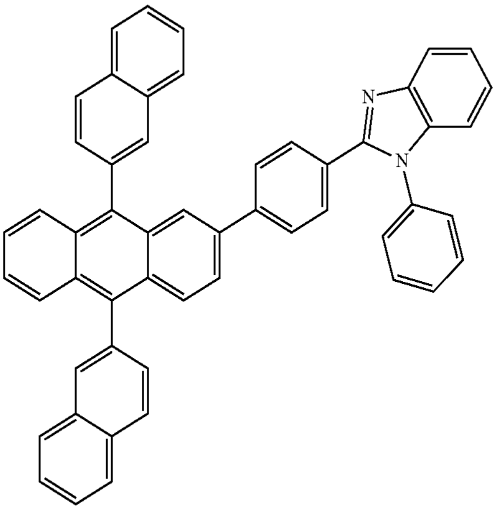
[GD]



[0111] On the light emitting layer, the electron transport material as described below was vacuum deposited to a thickness of 200 Å so as to form an electron injection layer and a electron transport layer.

[0112] [Electron Transport Material]



[0113] Lithium fluoride (LiF) having a thickness of 12 Å and aluminum having a thickness of 2000 Å were sequentially deposited on the electron injection layer and the electron transport layer to form a cathode.

[0114] In the above procedure, the deposition speed of an organic material was maintained at 0.4 to 0.7 Å/sec, lithium fluoride and aluminum were deposited at speeds of 0.3 Å/sec and 2 Å/sec, respectively, on the cathode, and in the deposition, a vacuum was maintained at 2×10^{-7} to 5×10^{-8} torr.

[0115] A forward current density of 4.8 V was applied to the light emitting device manufactured in the above, and as a result, the green light in which the color coordinate was (0.32, 0.66) at a current density of 50 mA/cm^2 was observed at 26 cd/A, and a life span to the luminance of 90% was 180 hours.

Experimental Example 2

[0116] The same process was performed to manufacture an organic EL device, except that the compound of Formula 5 was used instead of the compound of Formula 4 in Experimental Example 1.

[0117] A forward current density of 4.7 V was applied to the light emitting device manufactured in the above, and as a result, the green light in which the color coordinate was (0.33, 0.64) at a current density of 50 mA/cm^2 was observed at 27 cd/A, and a life span to the luminance of 90% was 200 hours.

Experimental Example 3

[0118] The same process was performed to manufacture an organic EL device, except that the compound of Formula 6 was used instead of the compound of Formula 4 in Experimental Example 1.

[0119] A forward current density of 4.8 V was applied to the light emitting device manufactured in the above, and as a result, the green light in which the color coordinate was (0.33, 0.65) at a current density of 50 mA/cm^2 was observed at 29 cd/A, and a life span to the luminance of 90% was 210 hours.

Experimental Example 4

[0120] The same process was performed to manufacture an organic EL device, except that the compound of Formula 7 was used instead of the compound of Formula 4 in Experimental Example 1.

[0121] A forward current density of 4.6 V was applied to the light emitting device manufactured in the above, and as a result, the green light in which the color coordinate was (0.32, 0.65) at a current density of 50 mA/cm^2 was observed at 28 cd/A, and a life span to the luminance of 90% was 190 hours.

Experimental Example 5

[0122] The same process was performed to manufacture an organic EL device, except that the compound of Formula 8 was used instead of the compound of Formula 4 in Experimental Example 1.

[0123] A forward current density of 4.7 V was applied to the light emitting device manufactured in the above, and as a result, the green light in which the color coordinate was (0.32, 0.64) at a current density of 501 mA/cm^2 was observed at 30 cd/A, and a life span to the luminance of 90% was 250 hours.

Experimental Example 6

[0124] The same process was performed to manufacture an organic EL device, except that the compound of Formula 9 was used instead of the compound of Formula 4 in Experimental Example 1.

[0125] A forward current density of 4.6 V was applied to the light emitting device manufactured in the above, and as a result, the green light in which the color coordinate was (0.31, 0.65) at a current density of 50 mA/cm^2 was observed at 29 cd/A, and a life span to the luminance of 90% was 240 hours.

Experimental Example 7

[0126] The same process was performed to manufacture an organic EL device, except that the compound of Formula 10 was used instead of the compound of Formula 4 in Experimental Example 1.

[0127] A forward current density of 4.5 V was applied to the light emitting device manufactured in the above, and as a result, the green light in which the color coordinate was (0.32, 0.65) at a current density of 50 mA/cm^2 was observed at 31 cd/A, and a life span to the luminance of 90% was 270 hours.

Experimental Example 8

[0128] The same process was performed to manufacture an organic EL device, except that the compound of Formula 11 was used instead of the compound of Formula 4 in Experimental Example 1.

[0129] A forward current density of 4.4 V was applied to the light emitting device manufactured in the above, and as a result, the green light in which the color coordinate was (0.32, 0.66) at a current density of 50 mA/cm^2 was observed at 31 cd/A, and a life span to the luminance of 90% was 270 hours.

Experimental Example 9

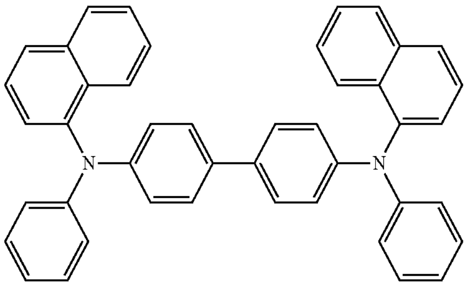
[0130] The same process was performed to manufacture an organic EL device, except that the compound of Formula 12 was used instead of the compound of Formula 4 in Experimental Example 1.

[0131] A forward current density of 4.4 V was applied to the light emitting device manufactured in the above, and as a result, the green light in which the color coordinate was (0.33, 0.65) at a current density of 50 mA/cm^2 was observed at 32 cd/A, and a life span to the luminance of 90% was 280 hours.

Comparative Example 1

[0132] The same process was performed to manufacture an organic EL device, except that 4,4'-bis[N-(1-naphthyl)-N-phenylamino]biphenyl (NPB) of the following Formula was used instead of the compound of Formula 4 in Experimental Example 1.

[NPB]



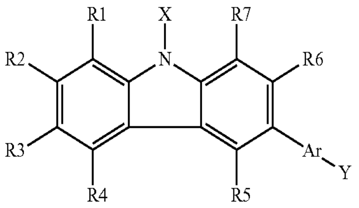
[0133] A forward current density of 4.6 V was applied to the light emitting device manufactured in the above, and as a result, the green light in which the color coordinate was (0.32, 0.64) at a current density of 50 mA/cm^2 was observed at 26 cd/A, and a life span to the luminance of 90% was 140 hours.

INDUSTRIAL APPLICABILITY

[0134] A compound according to the present invention is configured so that stability in respects to a hole and an electron is increased while properties of carbazole are not largely changed by introducing heavy hydrogen to carbazole. These compounds may be used as an organic material layer material, particularly, a hole injection material and/or a hole transport material in an organic light emitting device, and in the case of when it is used in the organic light emitting device, a driving voltage of the device may be reduced, light efficiency may be improved, and a life span property of the device may be improved because of thermal stability of the compound.

1. A compound of the following Formula 1:

[Formula 1]



wherein X is $-(A)_m-(B)_n$,

Y is $-(B)_p$,

Ar is an arylene group having 6 to 40 carbon atoms, which is substituted or unsubstituted with one or more substituent groups selected from the group consisting of nitro, nitrile, halogen, an alkyl group, an alkoxy group and an amino group; or a divalent hetero ring group, which is substituted or unsubstituted with one or more substituent groups selected from the group consisting of nitro, nitrile, halogen, an alkyl group, an alkoxy group and an amino group;

A is an aryl group, which is substituted or unsubstituted with one or more substituent groups selected from the group consisting of a halogen group, an alkyl group, an alkenyl group, an alkoxy group, a substituted or unsubstituted arylamine group, a substituted or unsubstituted aryl group, a substituted or unsubstituted arylalkyl group, a substituted or unsubstituted arylalkenyl group, a substituted or unsubstituted hetero ring group, a nitrile group and an acetylene group,

B is an arylamine group, which is substituted or unsubstituted with one or more substituent groups selected from the group consisting of a halogen group, an alkyl group, an alkenyl group, an alkoxy group, a substituted or unsubstituted arylamine group, a substituted or unsubstituted aryl group, a substituted or unsubstituted arylalkyl group, a substituted or unsubstituted arylalkenyl group, a substituted or unsubstituted hetero ring group, a nitrile group and an acetylene group; or a hetero ring group including O, N or S as a heteroatom, which is substituted or unsubstituted with one or more substituent groups selected from the group consisting of a halogen group, an alkyl group, an alkenyl group, an alkoxy group, a substituted or unsubstituted arylamine group, a substituted or unsubstituted aryl group, a substituted or unsubstituted arylalkyl group, a substituted or unsubstituted arylalkenyl group, a substituted or unsubstituted hetero ring group, a nitrile group and an acetylene group,

m and n are an integer in the range of 1 to 10 and an integer in the range of 0 to 10, respectively, p is an integer in the range of 1 to 10, and

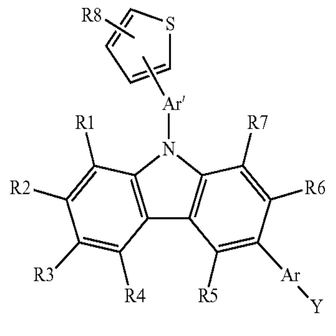
R1 to R7 are each independently selected from the group consisting of hydrogen; an alkyl group, which is substituted or unsubstituted with one or more substituent groups selected from the group consisting of a halogen group, an alkyl group, an alkenyl group, an alkoxy group, a substituted or unsubstituted aryl group, a substituted or unsubstituted arylalkyl group, a substituted or unsubstituted arylalkenyl group, a substituted or unsubstituted hetero ring group, a nitrile group and an acetylene group; an alkoxy group, which is substituted or unsubstituted with one or more substituent groups selected from the group consisting of a halogen group, an alkyl group, an alkenyl group, an alkoxy group, a substituted or unsubstituted aryl group, a substituted or unsubstituted arylalkyl group, a substituted or unsubstituted arylalkenyl group, a substituted or unsubstituted hetero ring group, a nitrile group and an acetylene group; an aryl group, which is substituted or unsubstituted with one or more substituent groups selected from the group consisting of a halogen group, an alkyl group, an alkenyl group, an alkoxy group, a substituted or unsubstituted aryl group, a substituted or unsubstituted arylalkyl group, a substituted or unsubstituted arylalkenyl group, a substituted or unsubstituted hetero ring group, a nitrile group and an acetylene group; an amino group, which is substituted with one or more substituent groups selected from the group consisting of an alkyl group, an alkenyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted arylalkyl group, and a substituted or unsubstituted arylalkenyl group; a nitro group; and a halogen group, and said R1 to R7 may form an aliphatic or hetero condensation ring in conjunction with adjacent groups.

2. The compound of Formula 1 as set forth in claim **1**, wherein A of Formula 1 is selected from the group consisting of a phenyl group, a biphenyl group, a terphenyl group, a stilbene group, a naphthyl group, an anthracenyl group, a phenanthrene group, a pyrenyl group and a perylenyl group.

3. The compound of Formula 1 as set forth in claim **1**, wherein when B of Formula 1 is a hetero ring, it is selected from the group consisting of a thiophene group, a furan group, a pyrrolyl group, an imidazolyl group, a thiazolyl group, an oxazolyl group, an oxadiazolyl group, a triazolyl group, a pyridyl group, a pyradazine group, a quinolinyl group, an isoquinoline group, and an acridyl group.

4. The compound of Formula 1 as set forth in claim **1**, wherein the compound of Formula 1 is represented by any one of the following Formula 2 and Formula 3:

[Formula 2]



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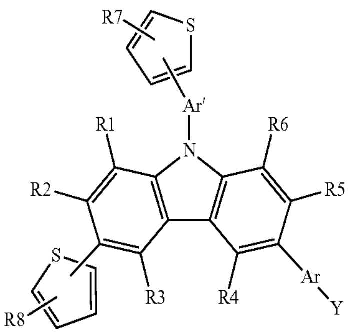
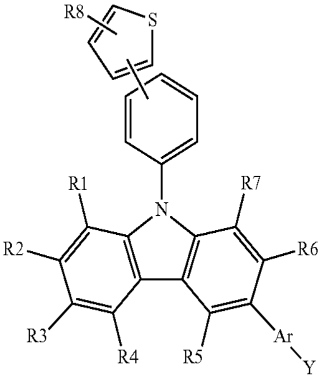
[Formula 3]



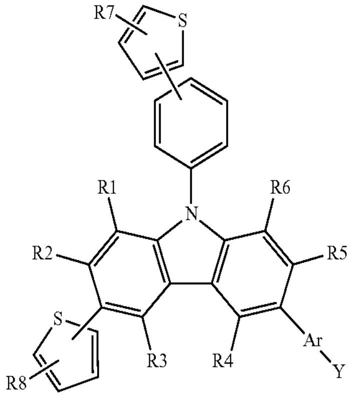
wherein Ar's are each independently selected from the group consisting of a phenyl group, a biphenyl group, a terphenyl group, a stilbene group, a naphthyl group, an anthracenyl group, a phenanthrene group, a pyrenyl group, a perylenyl group, and Ar, Y and R1 to R8 are the same as the definitions in respect to Ar, Y and R1 to R7 of Formula 1.

5. The compound of Formula 1 as set forth in claim **1**, wherein the compound of Formula 1 is represented by any one of the following Formula 2-1 and Formula 3-1:

[Formula 2-1]



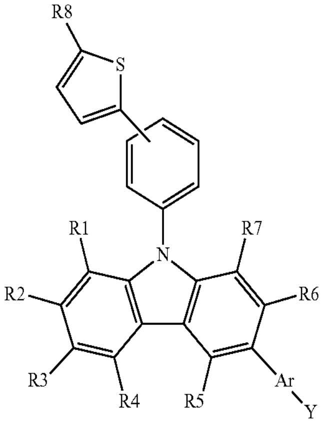
[Formula 3-1]



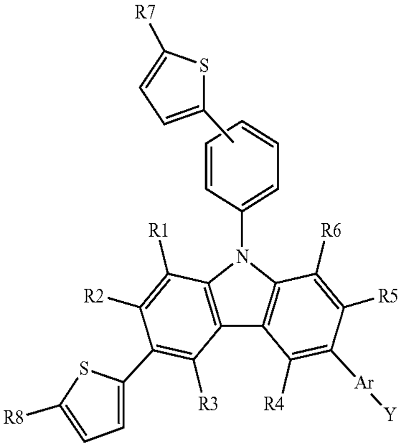
wherein Ar, Y and R1 to R8 are the same as the definitions in respect to Ar, Y and R1 to R7 of Formula 1.

6. The compound of Formula 1 as set forth in claim **1**, wherein the compound of Formula 1 is represented by any one of the following Formula 2-2 and Formula 3-2:

[Formula 2-2]



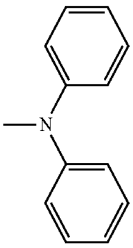
[Formula 3-2]



wherein Ar, Y and R1 to R8 are the same as the definitions in respect to Ar, Y and R1 to R7 of Formula 1.

7. The compound of Formula 1 as set forth in claim **1**, wherein when B of Formula 1 is arylamine, it is any one of the following groups:

1



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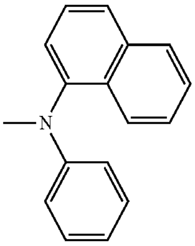

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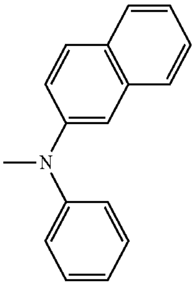

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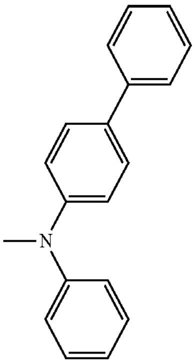

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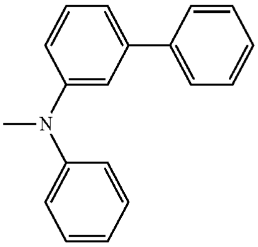

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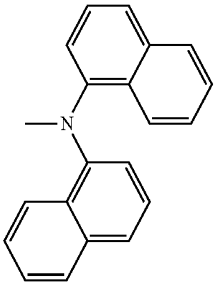

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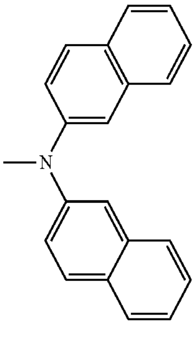

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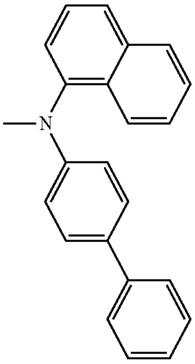

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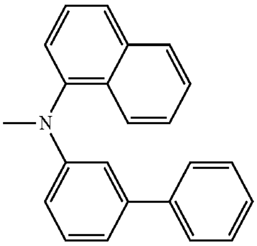

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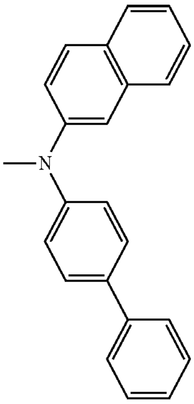

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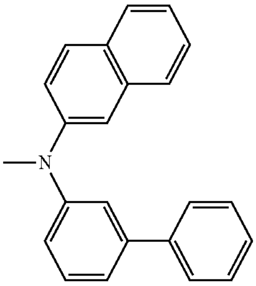

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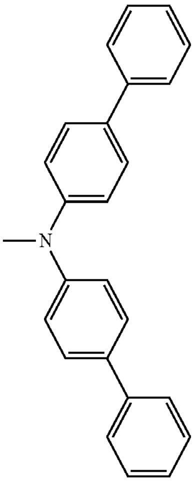

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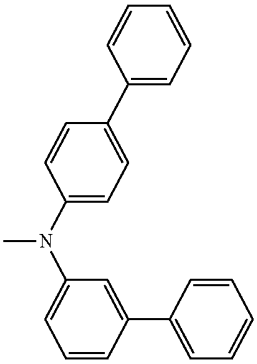

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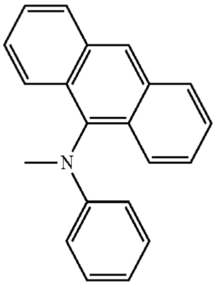

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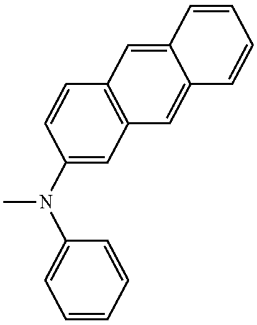

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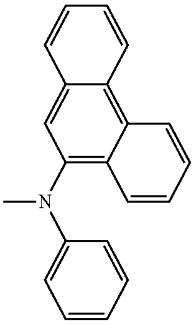

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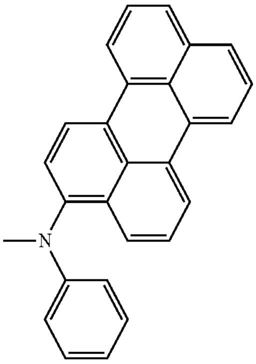

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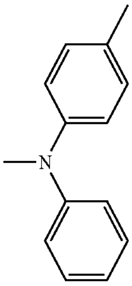

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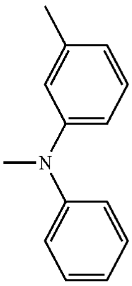

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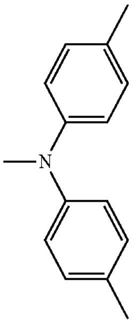

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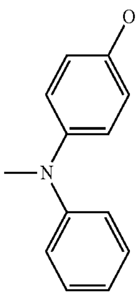

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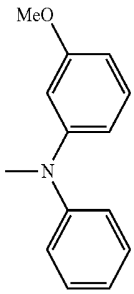

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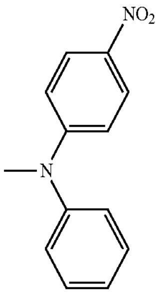

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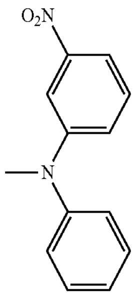

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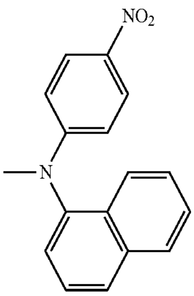

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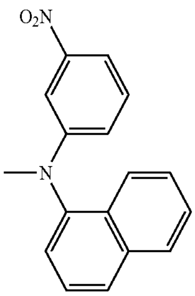

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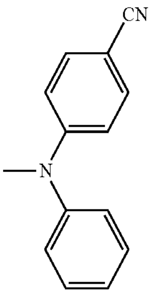

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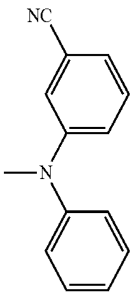

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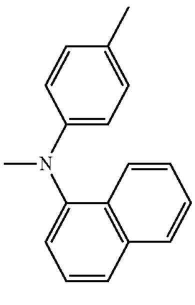

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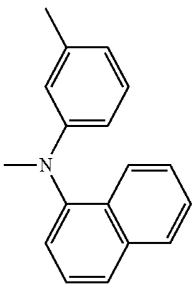

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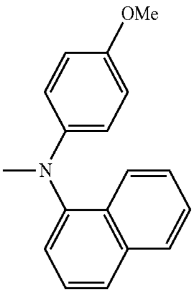

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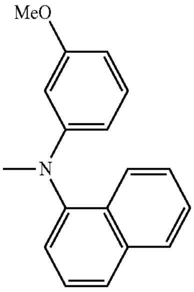

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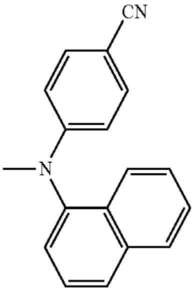

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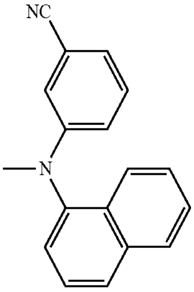

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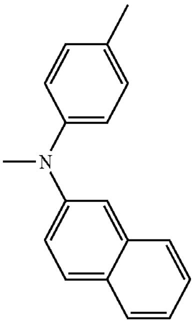

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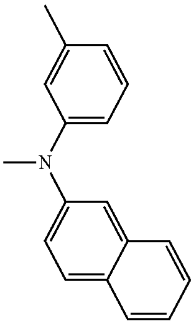

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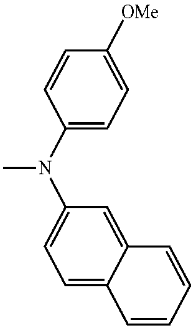

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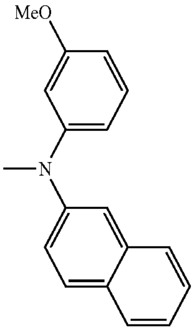

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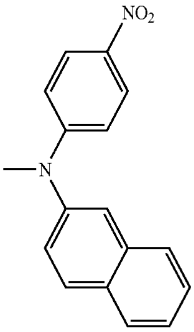

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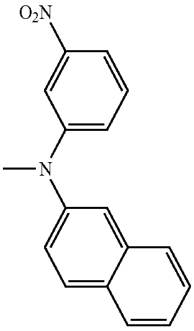

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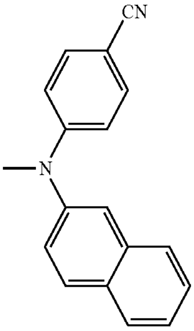

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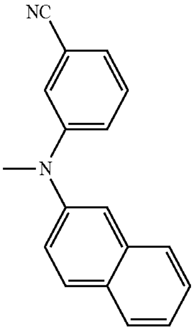

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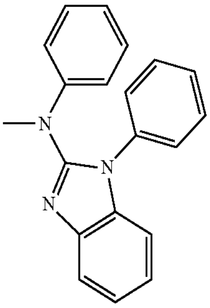

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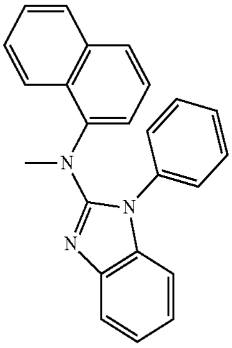

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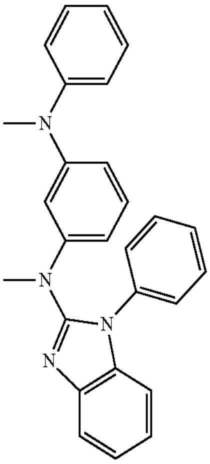

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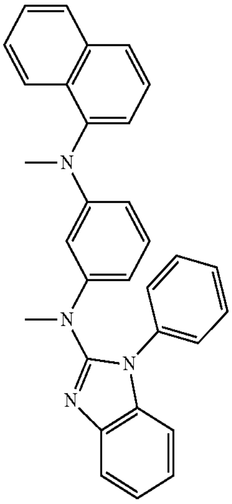

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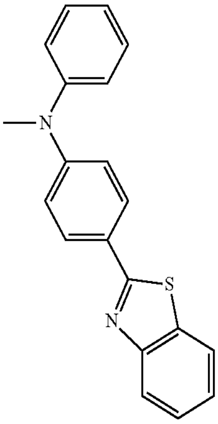

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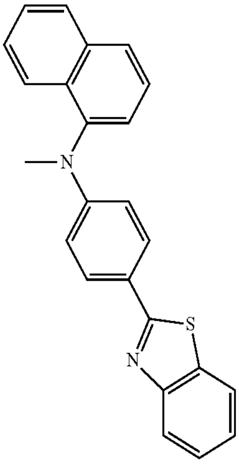

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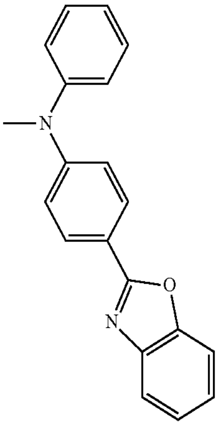

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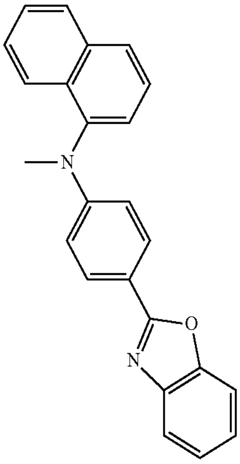

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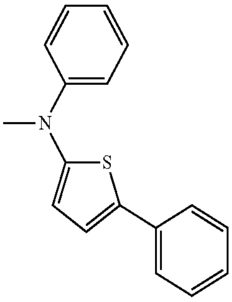

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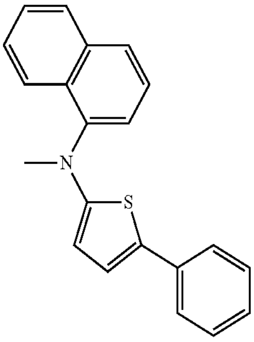

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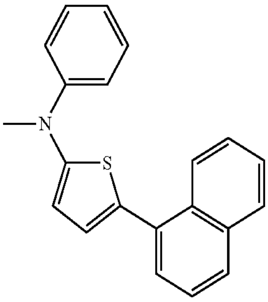

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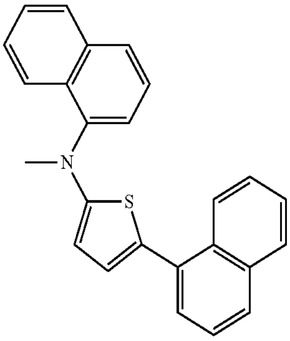

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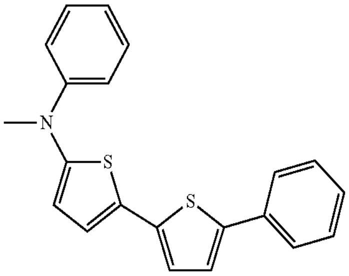

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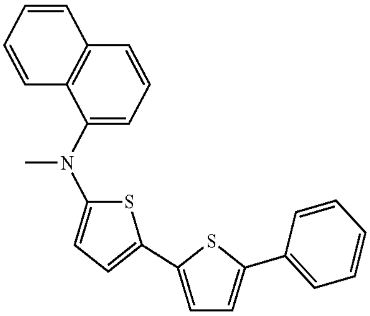

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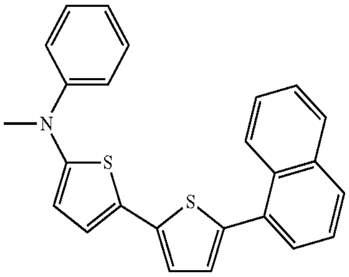

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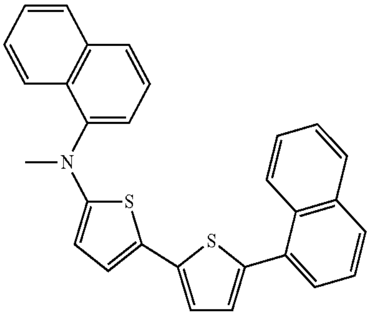

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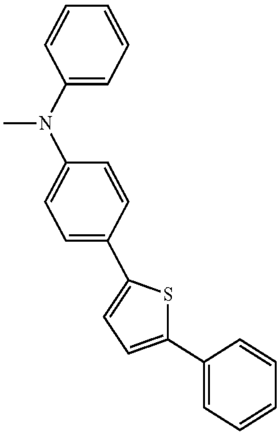

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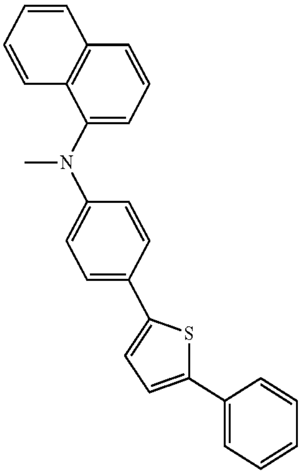

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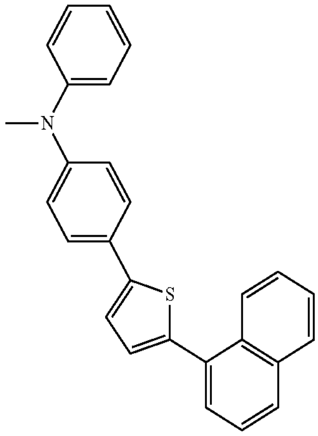

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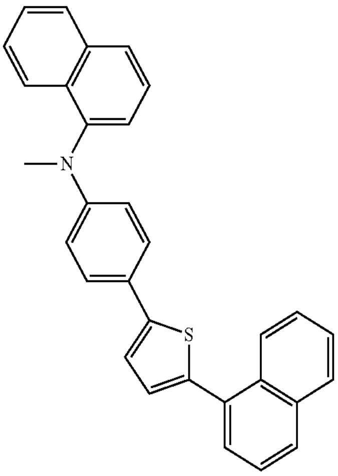

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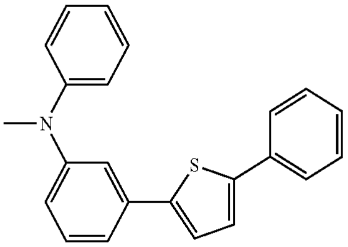

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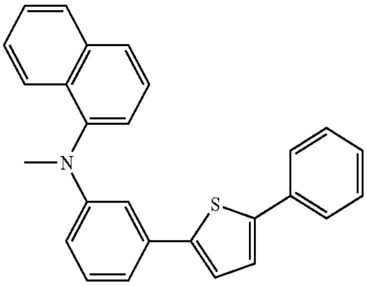

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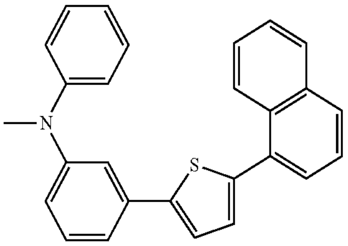

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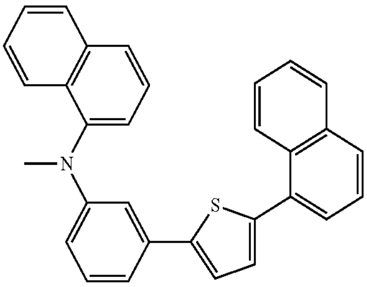

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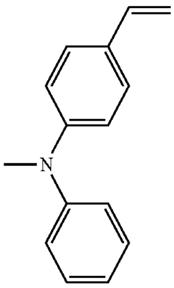

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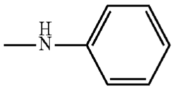

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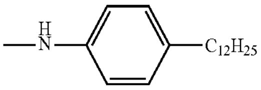

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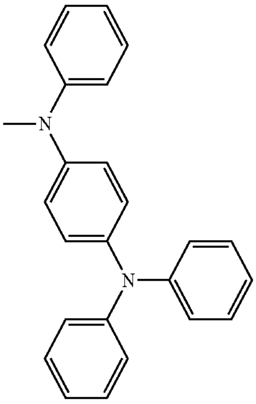

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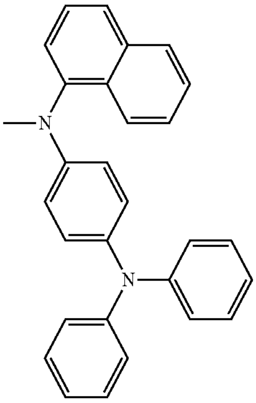

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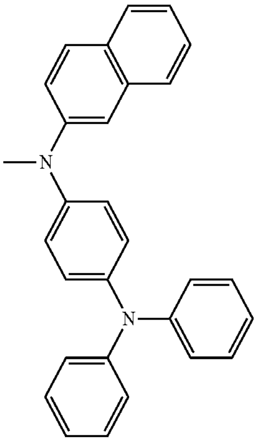

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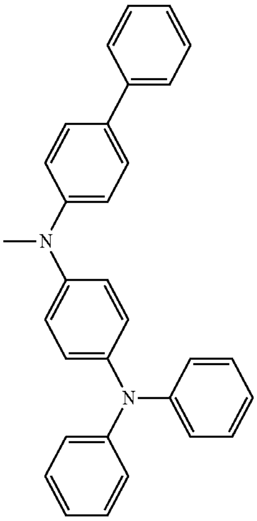

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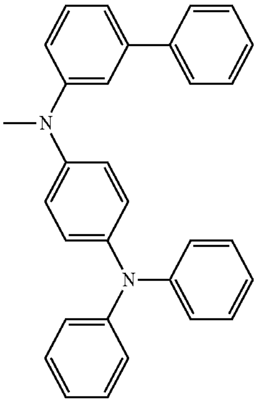

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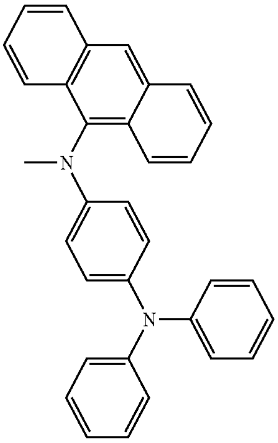

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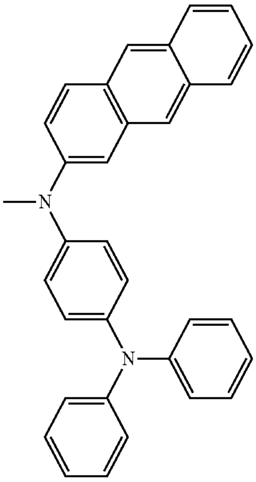

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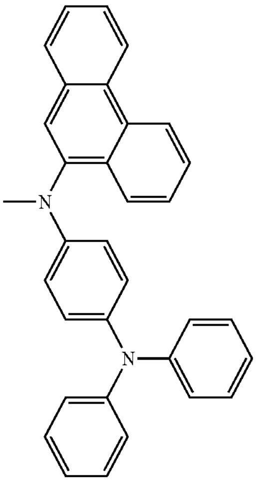

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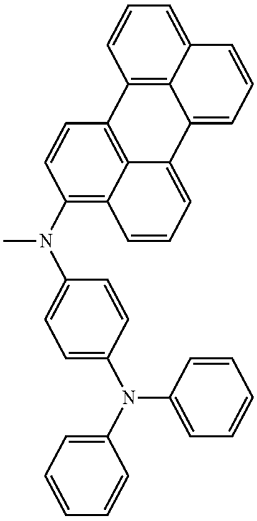

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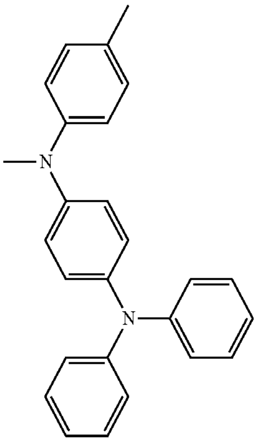

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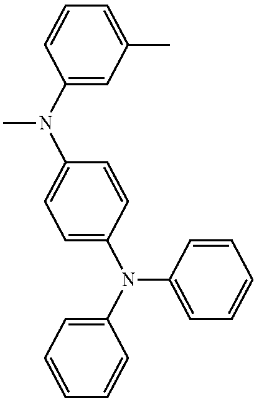

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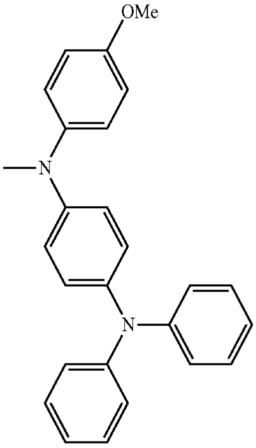

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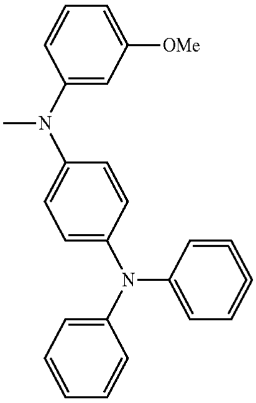

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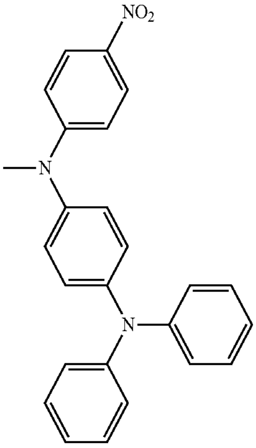

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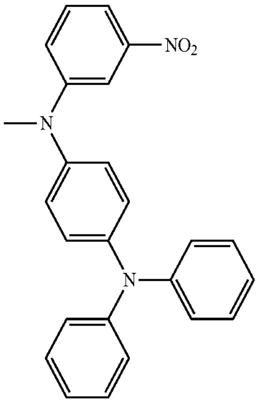

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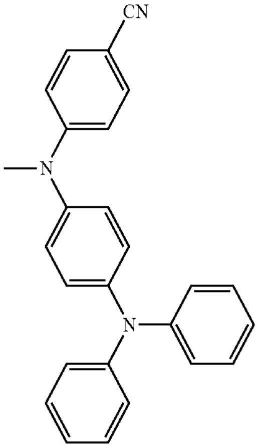

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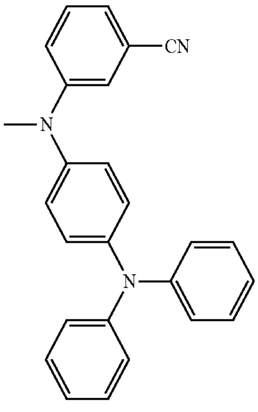

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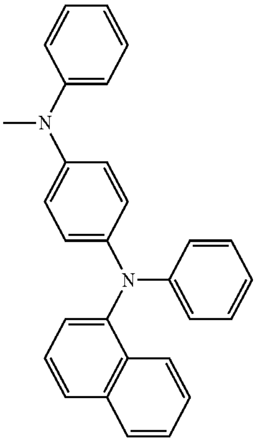

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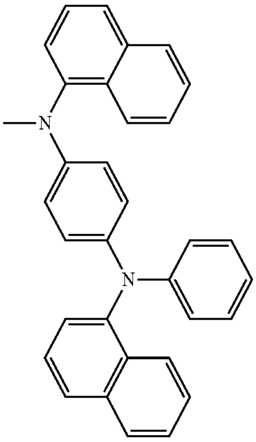

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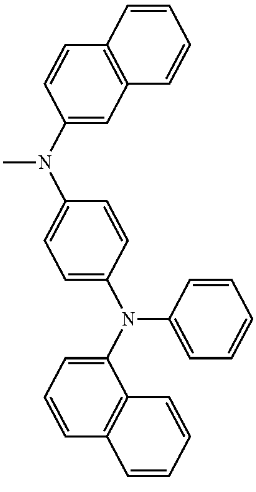

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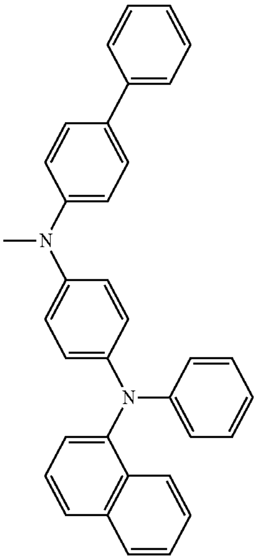

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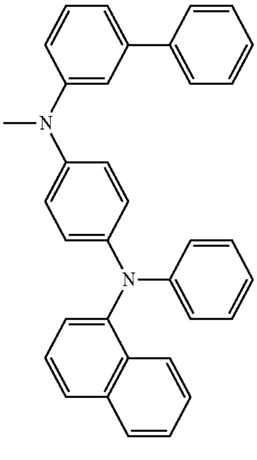

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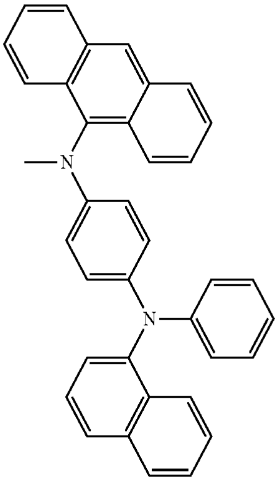

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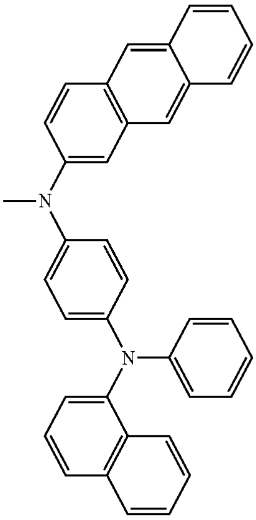

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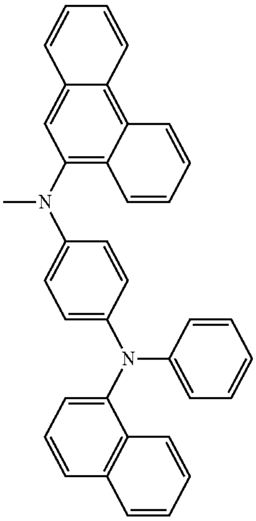

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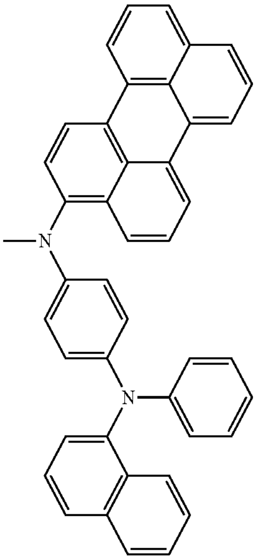

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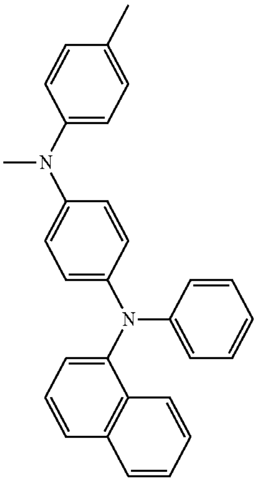

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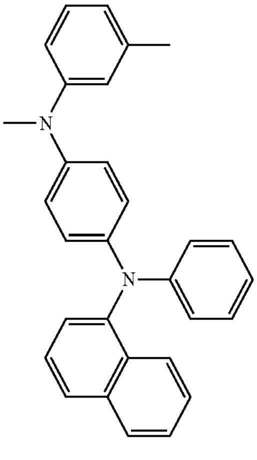

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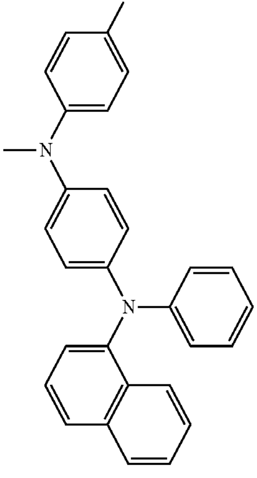

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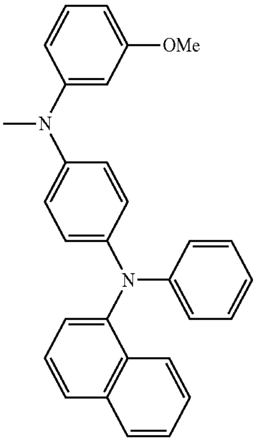

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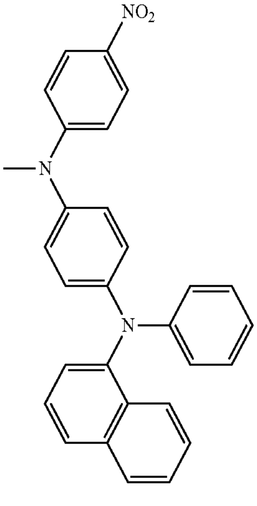

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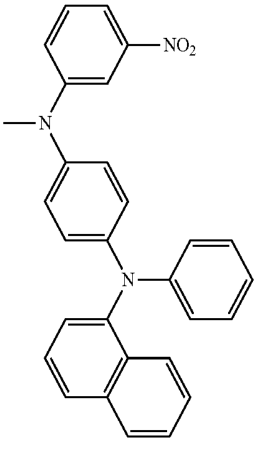

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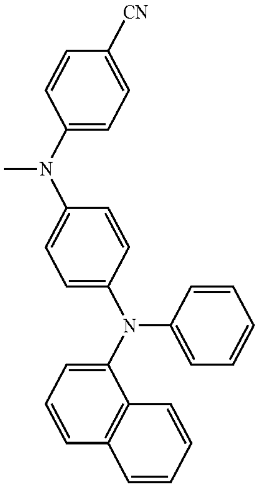

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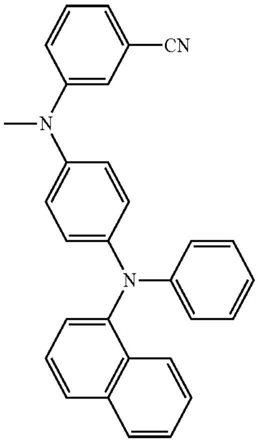

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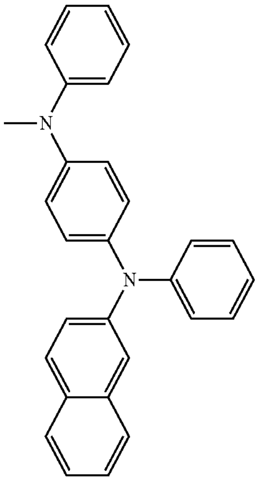

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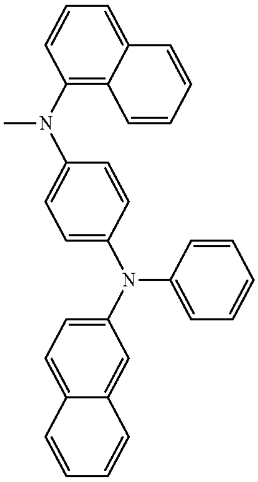

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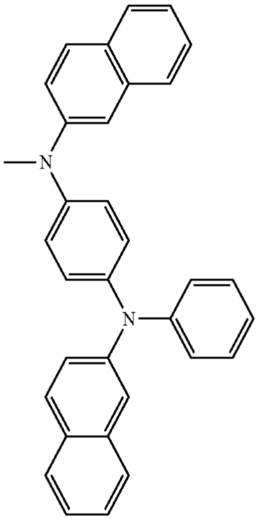

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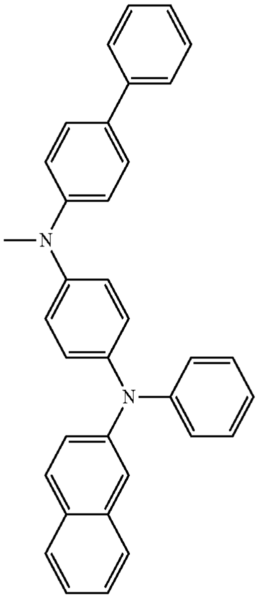

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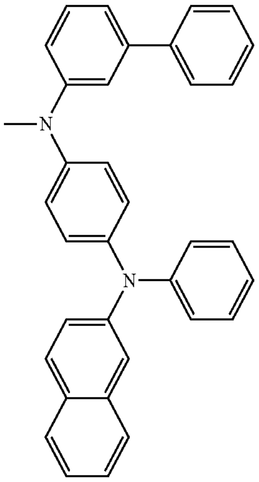

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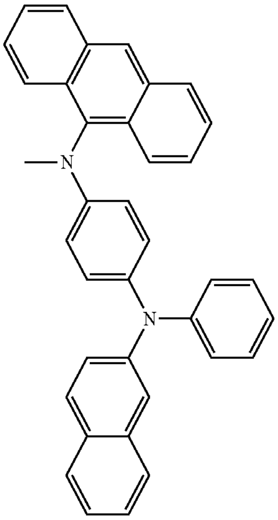

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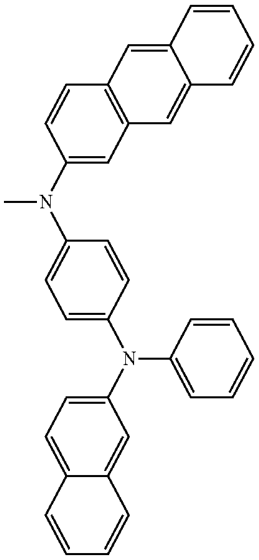

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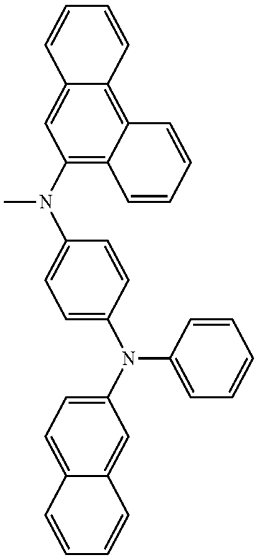

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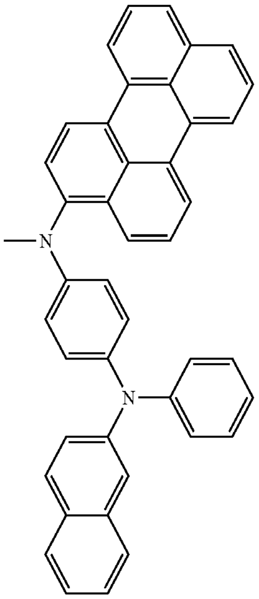

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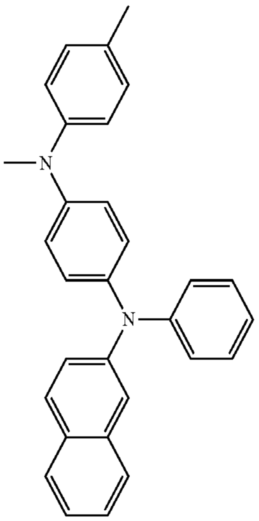

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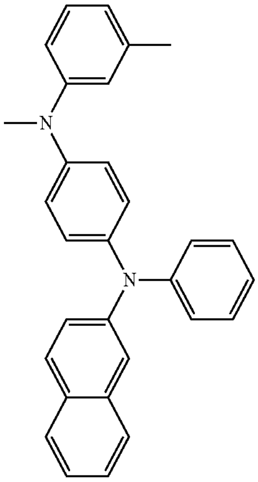

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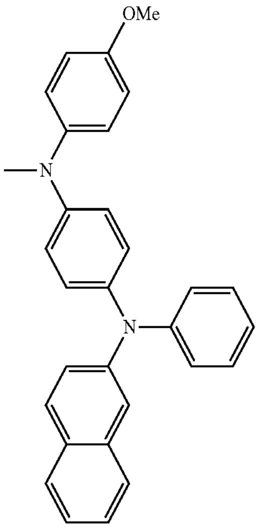

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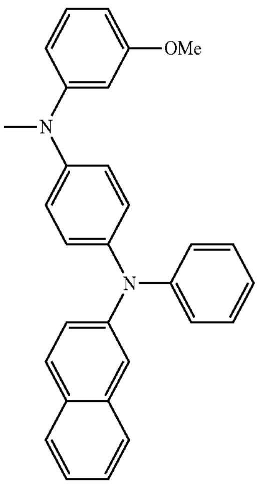

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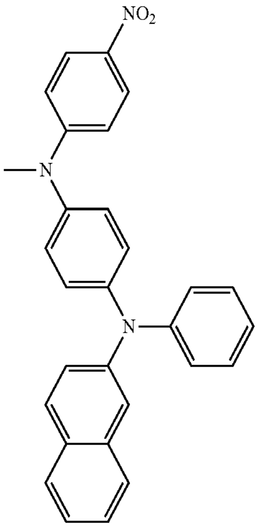

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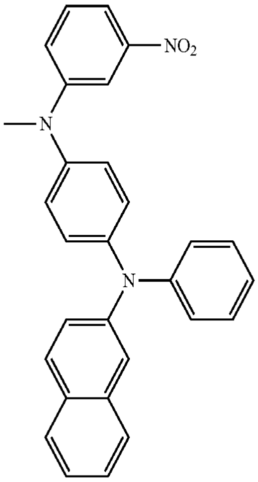

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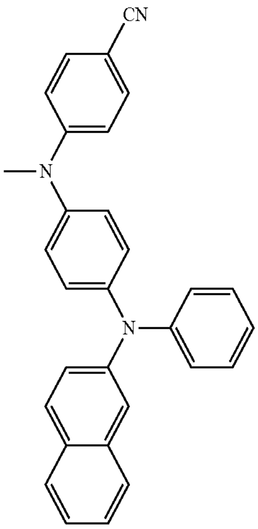

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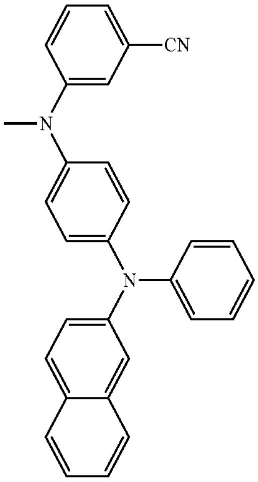

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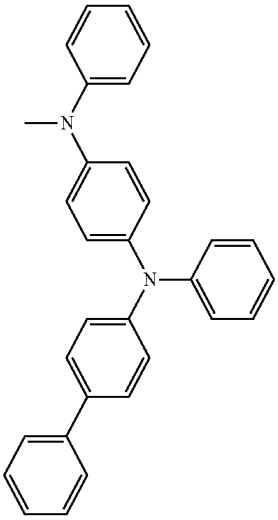

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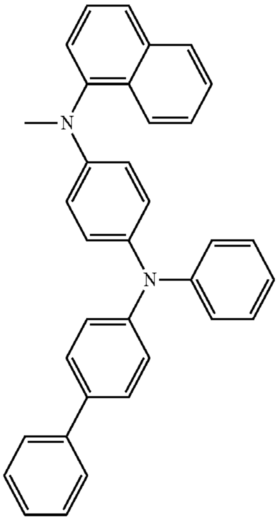

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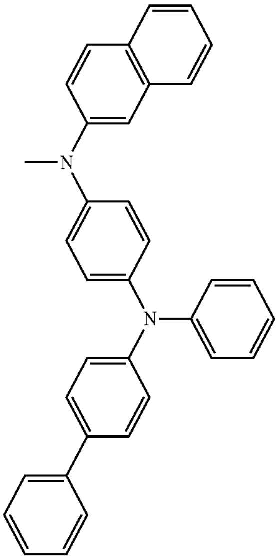

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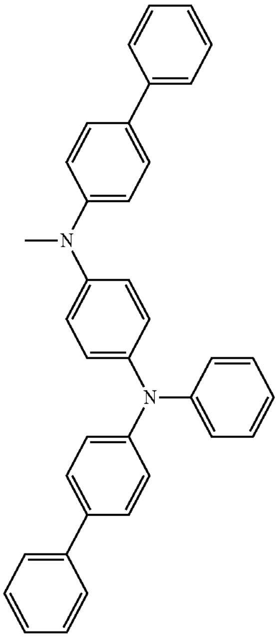

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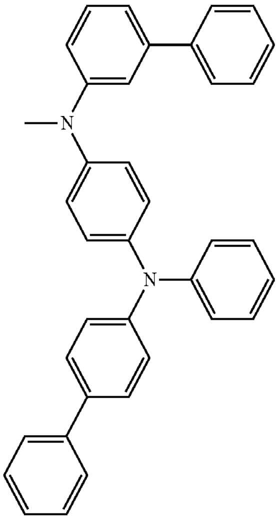

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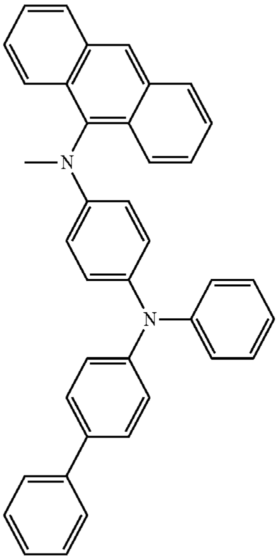

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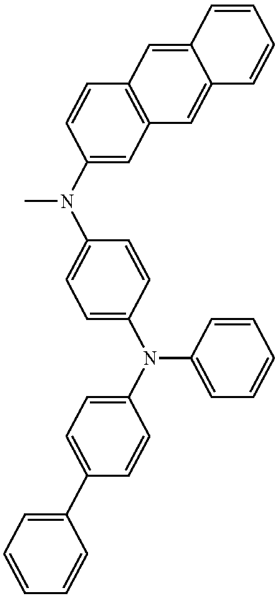

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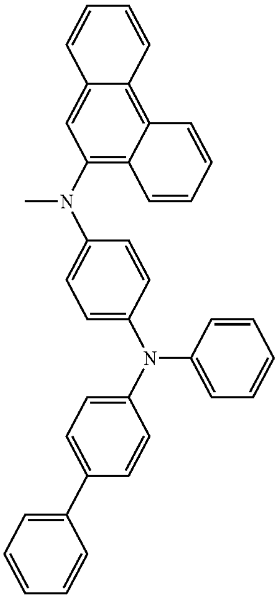

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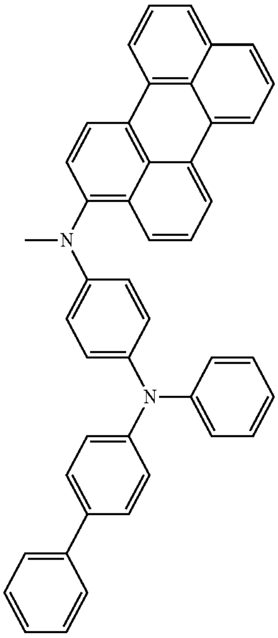

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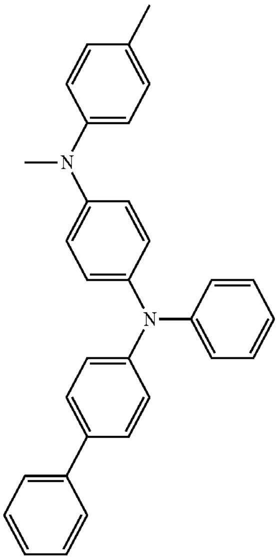

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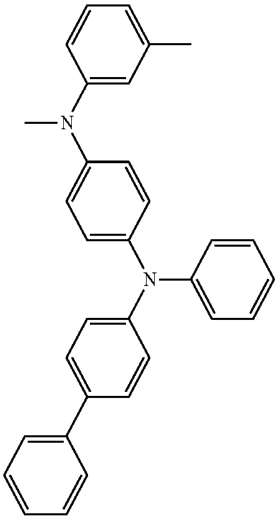

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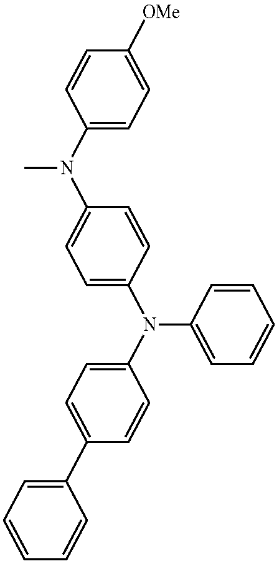

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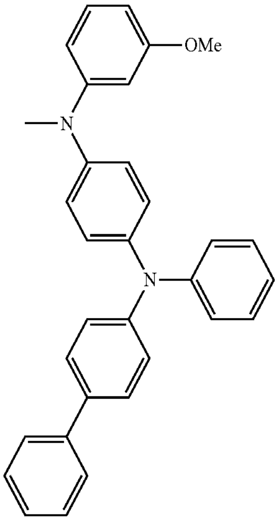

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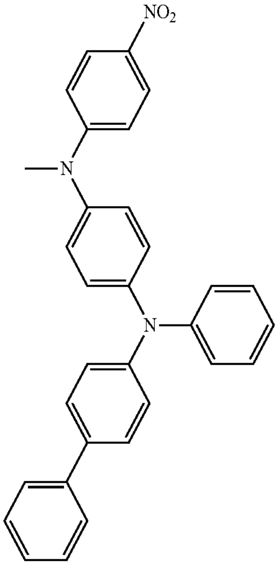

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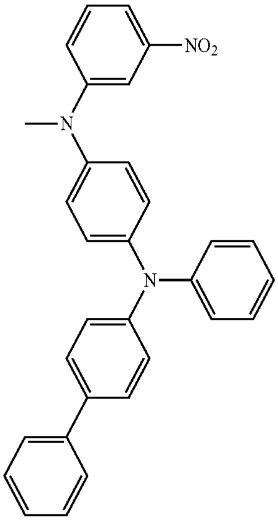

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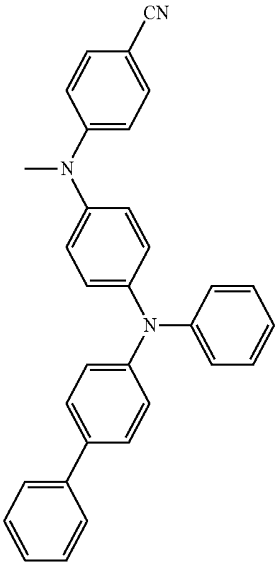

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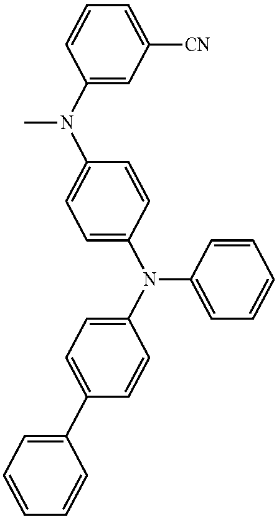

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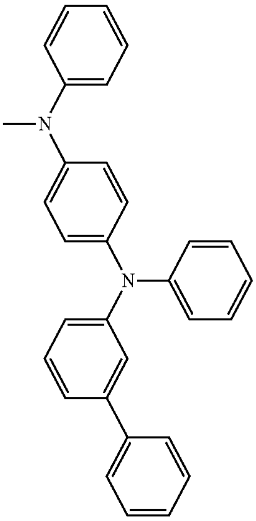

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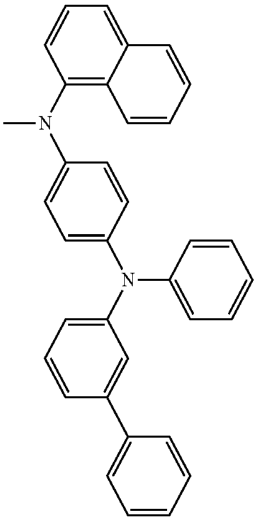

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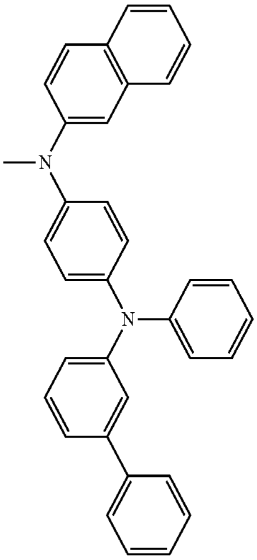

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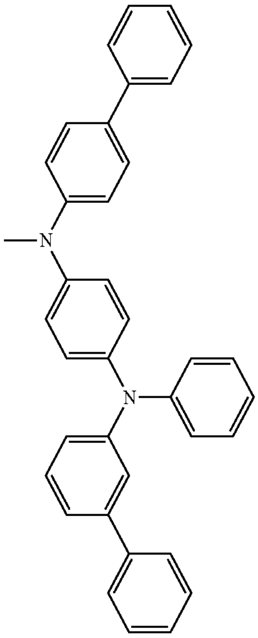

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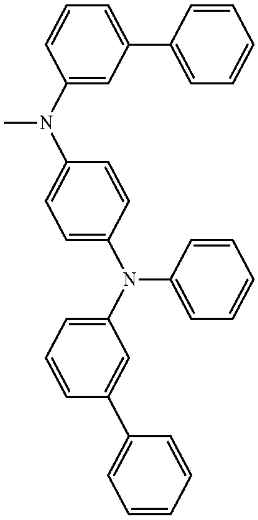

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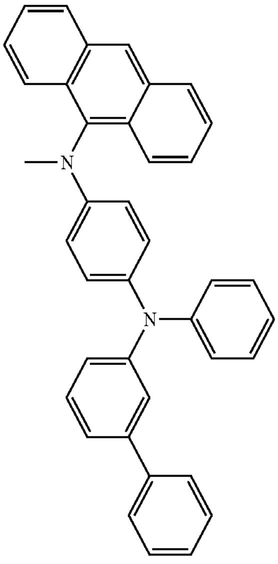

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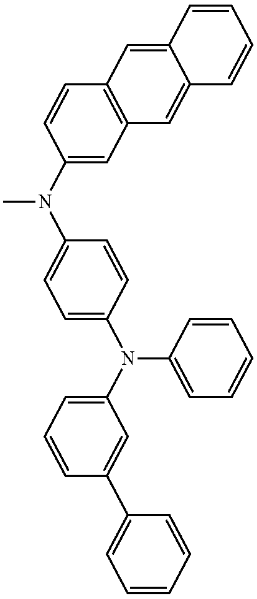

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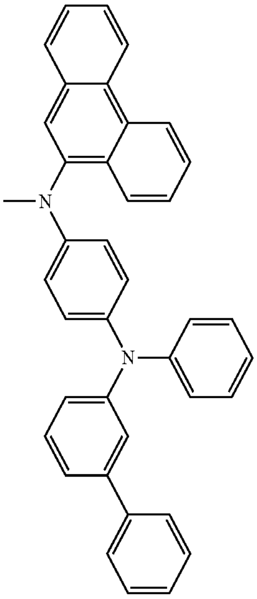

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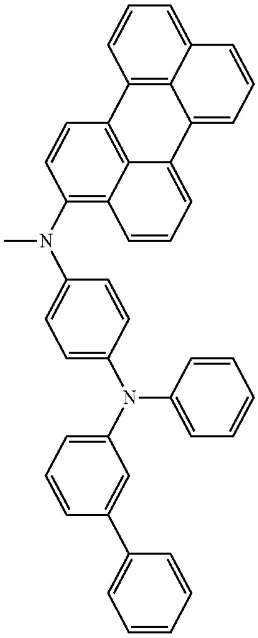

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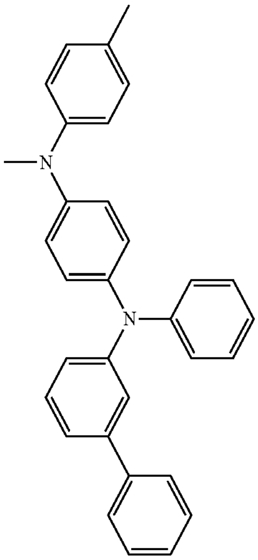

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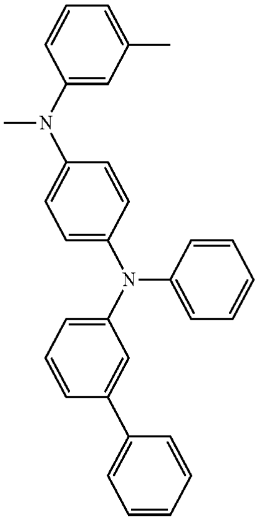

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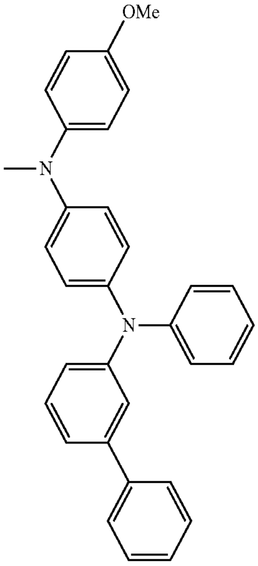

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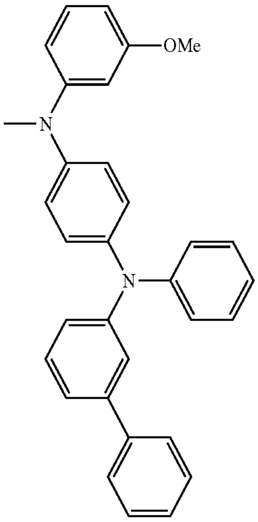

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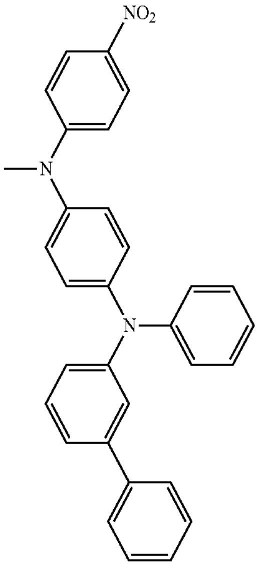

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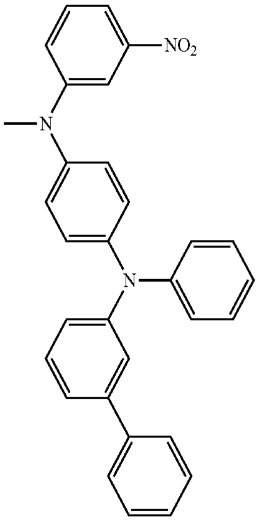

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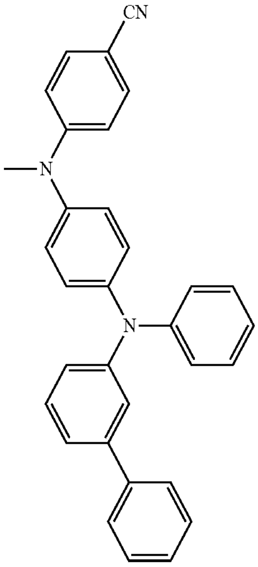

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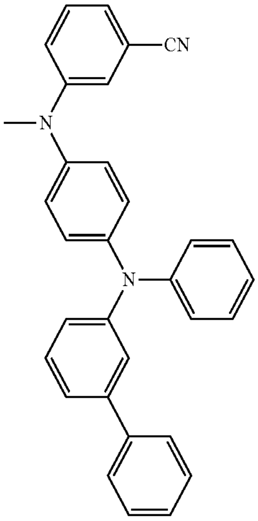

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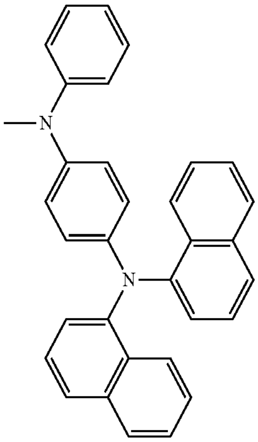

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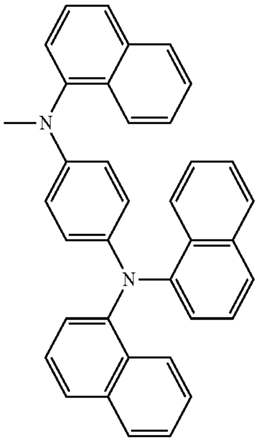

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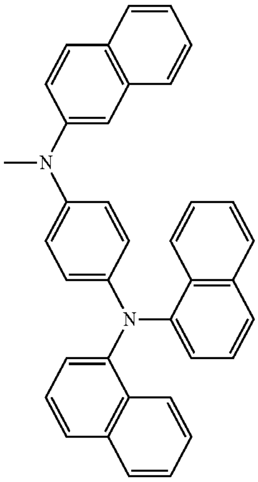

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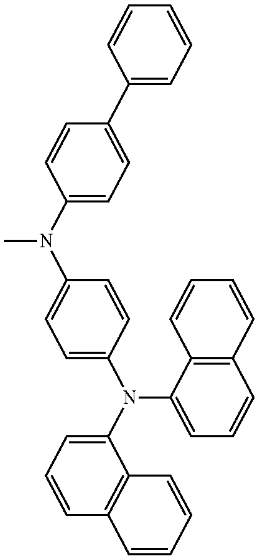

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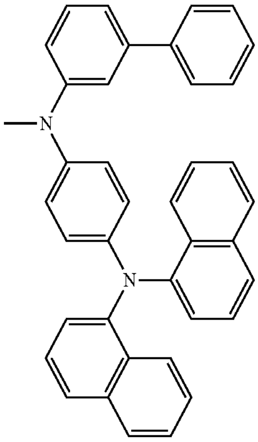

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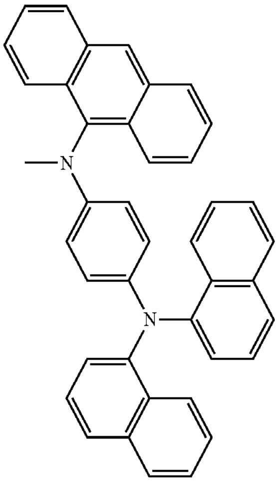

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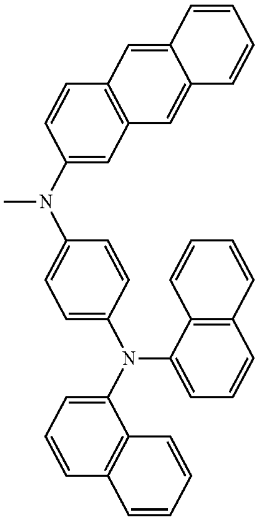

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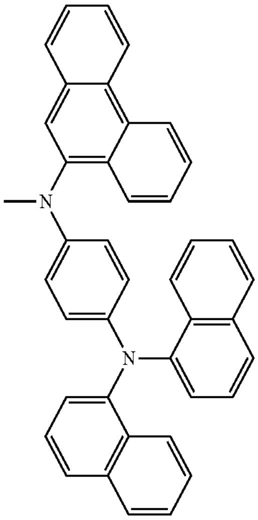

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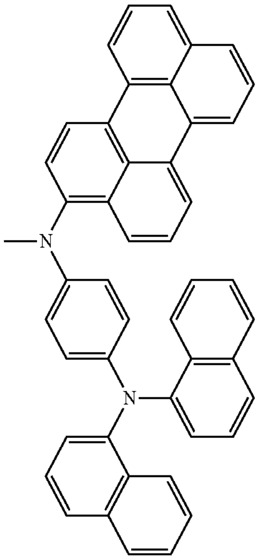

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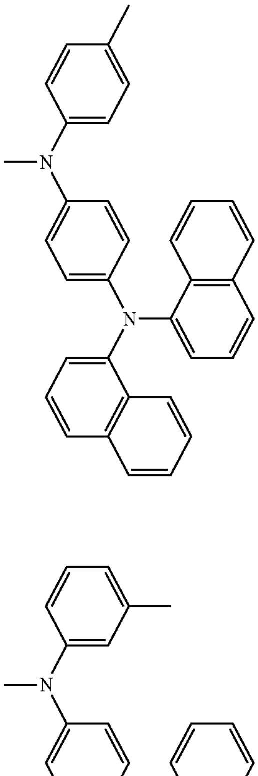

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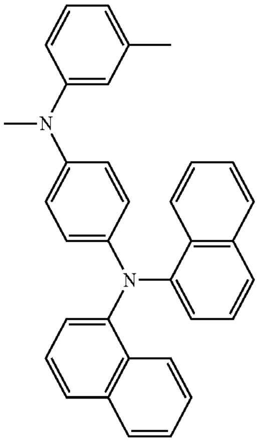

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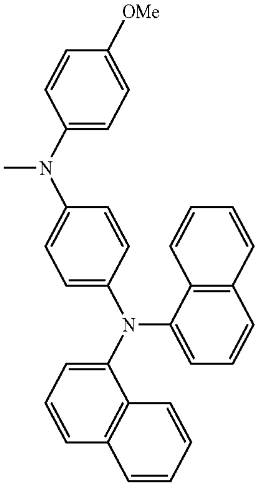

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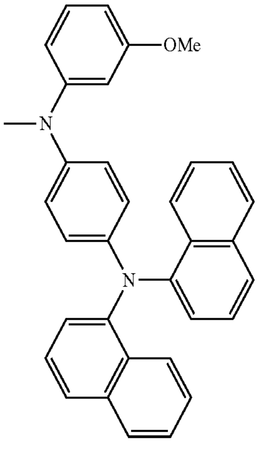

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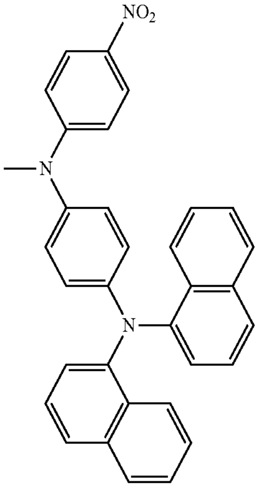

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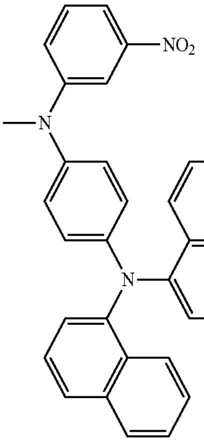

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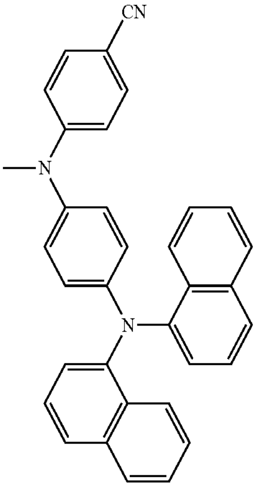

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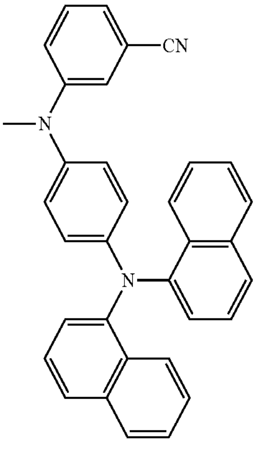

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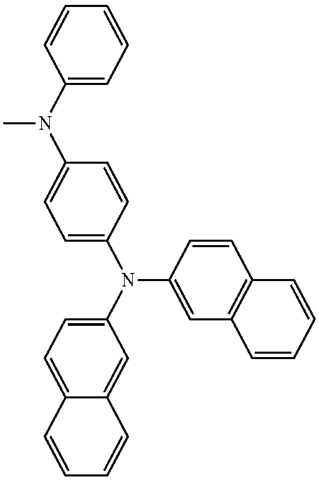

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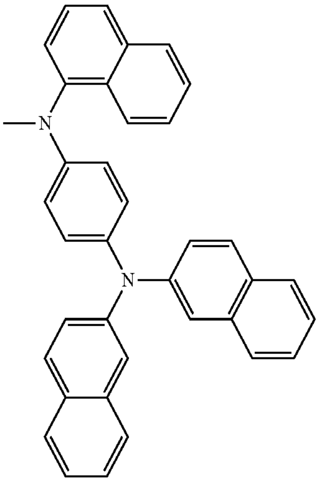

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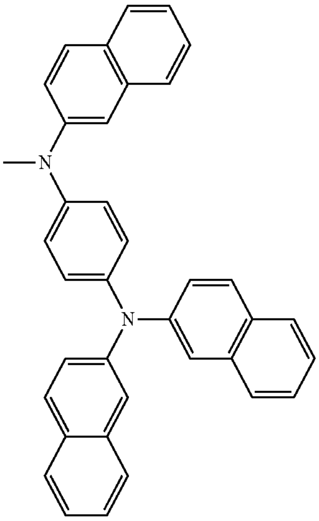

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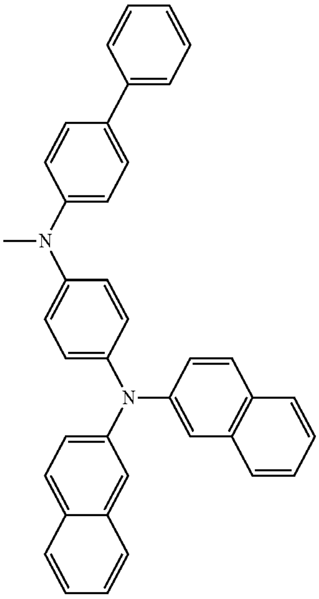

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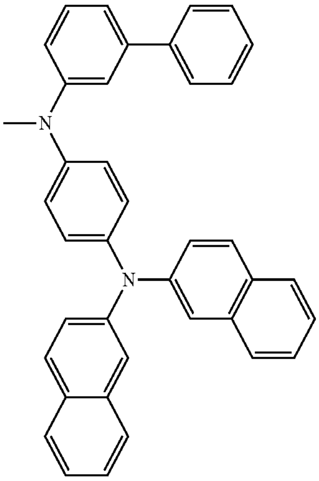

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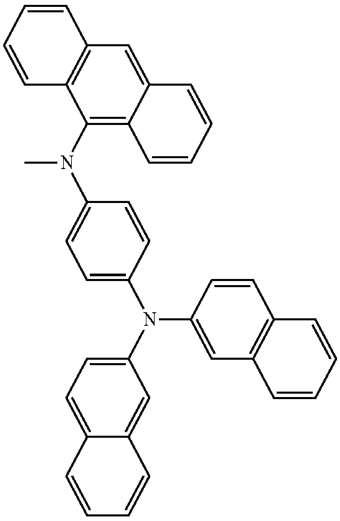

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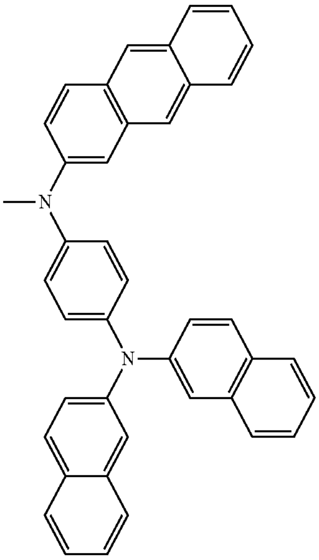

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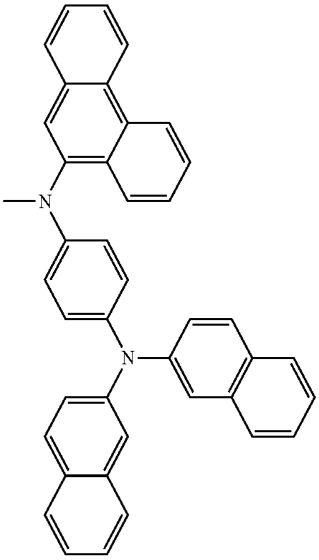

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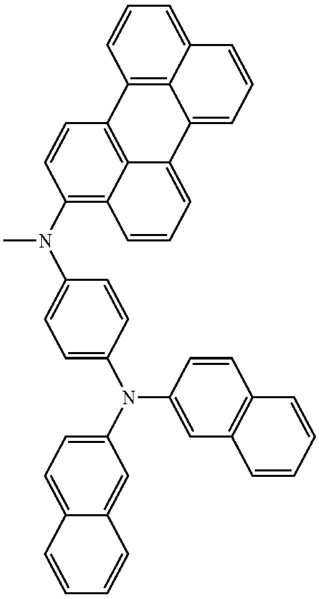

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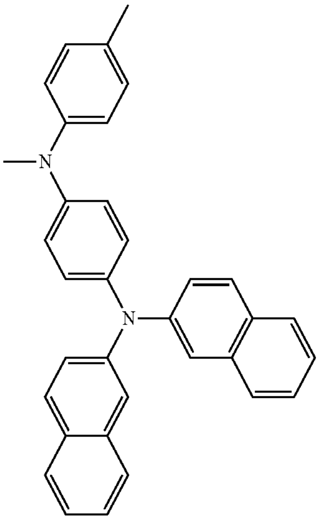

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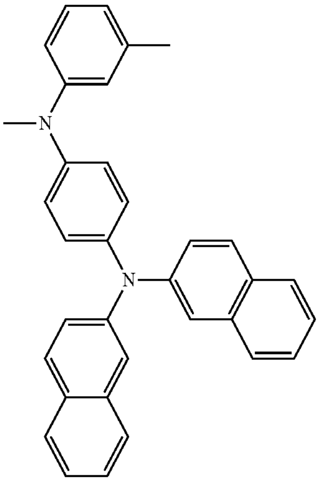

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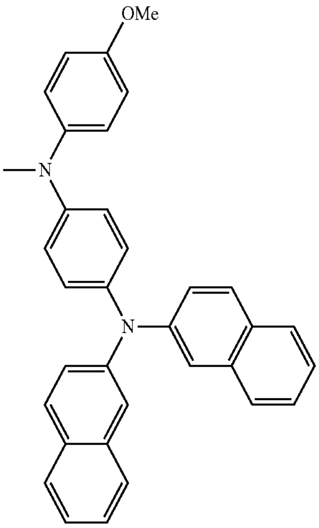

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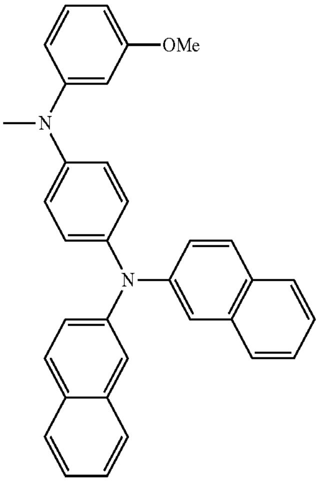

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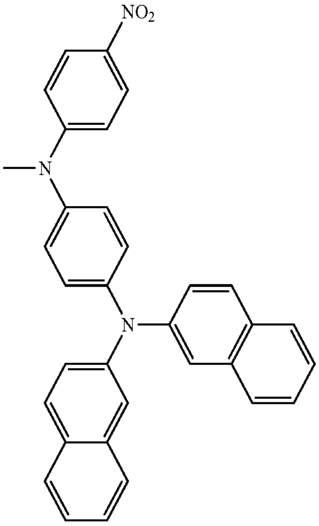

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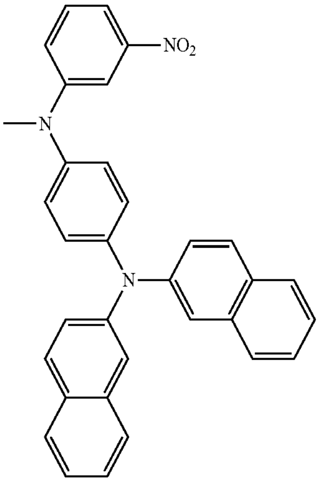

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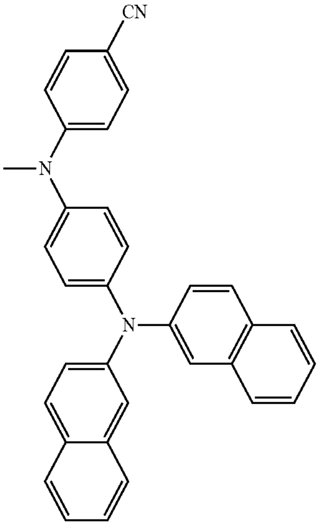

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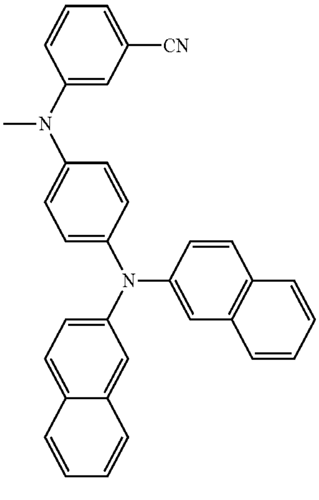

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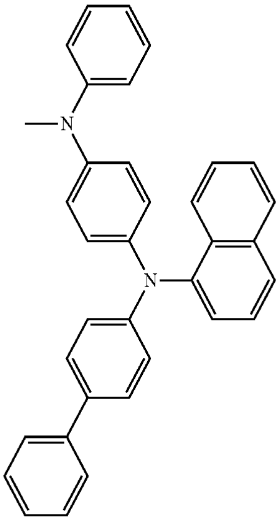

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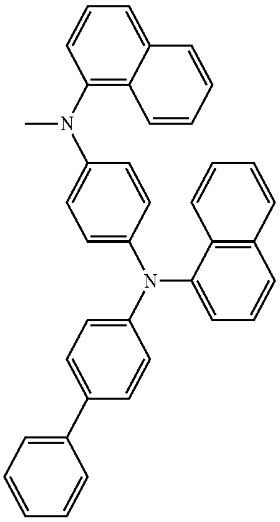

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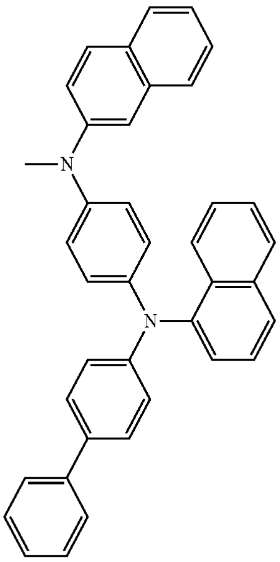

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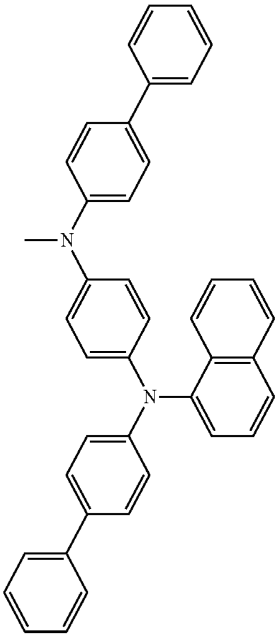

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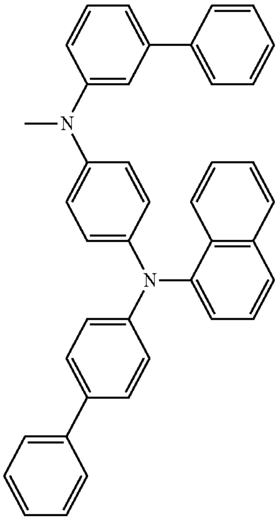

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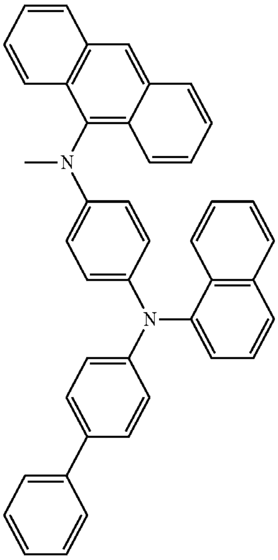

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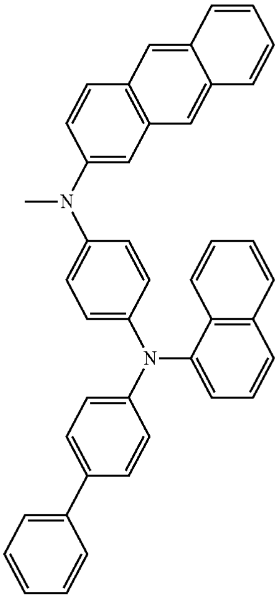

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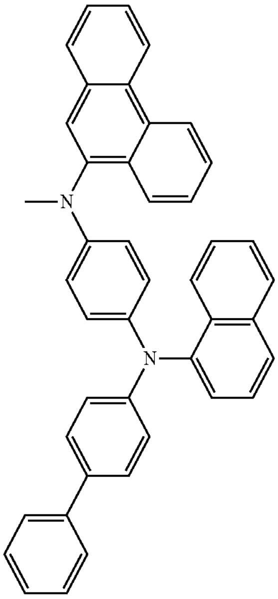

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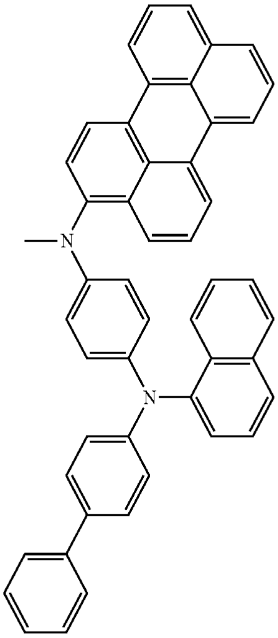

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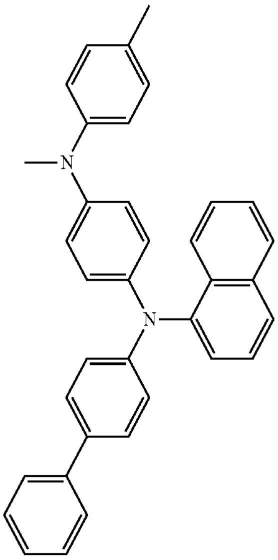

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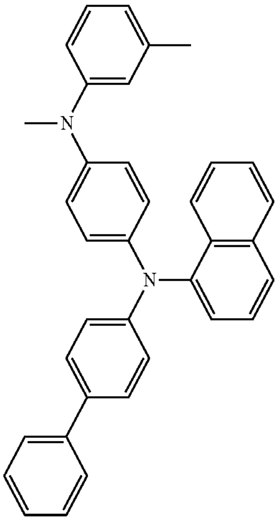

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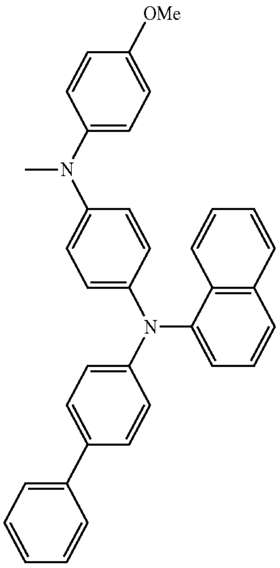

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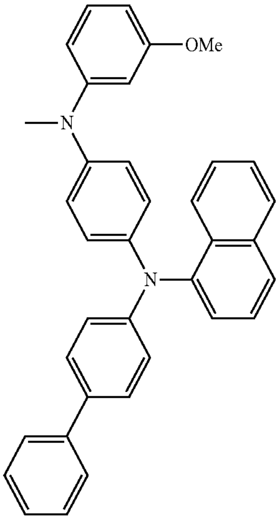

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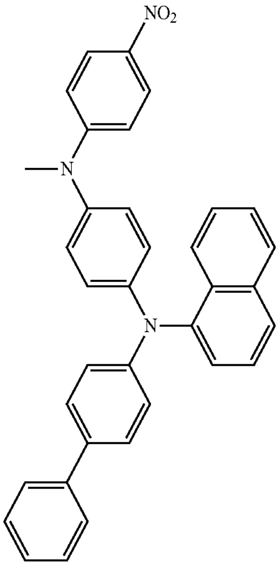

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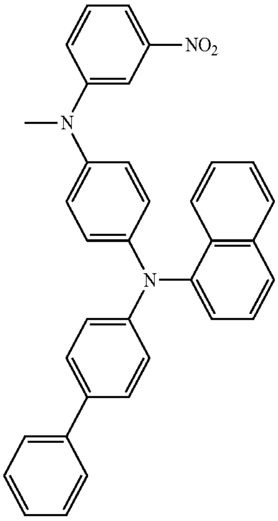

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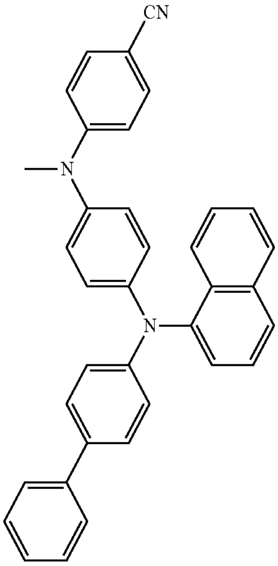

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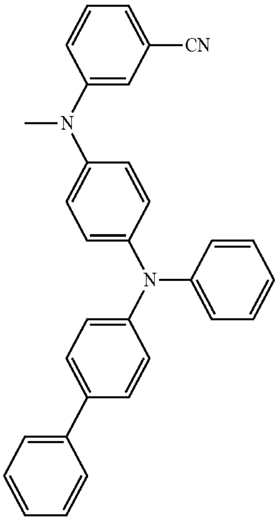

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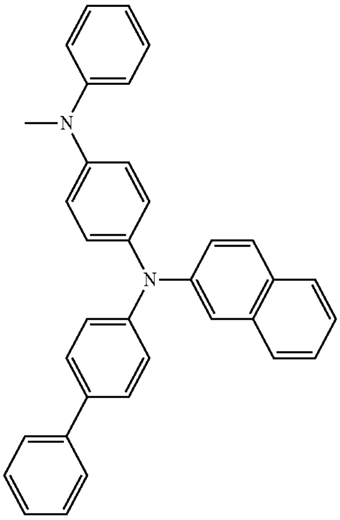

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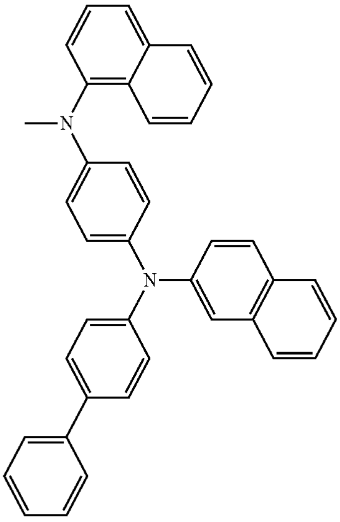

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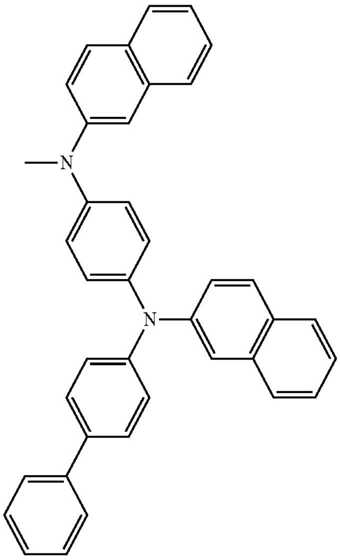

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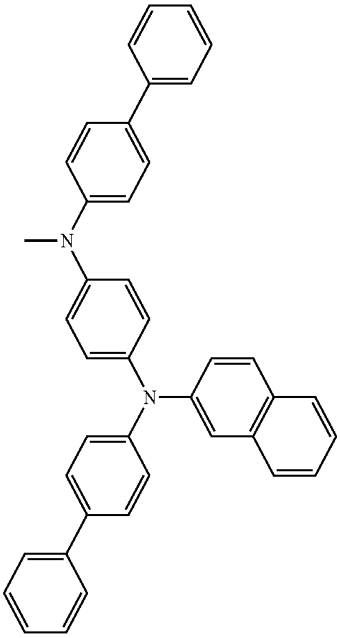

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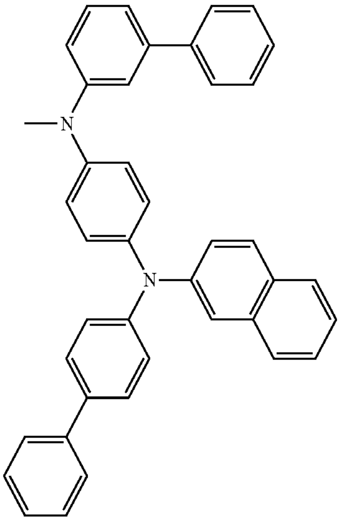

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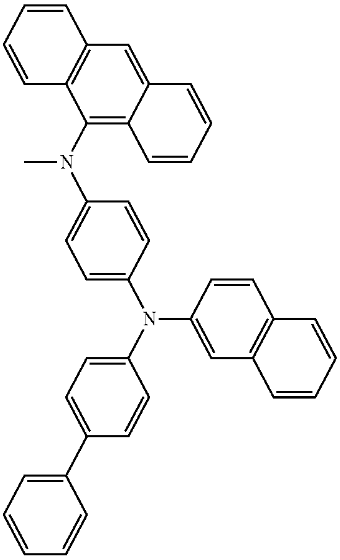

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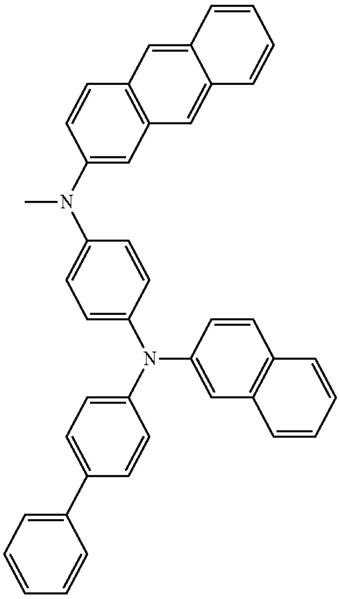

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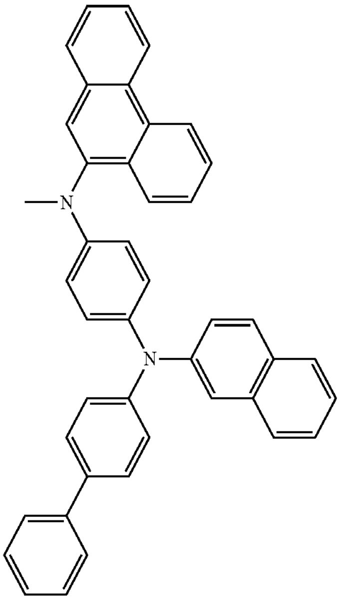

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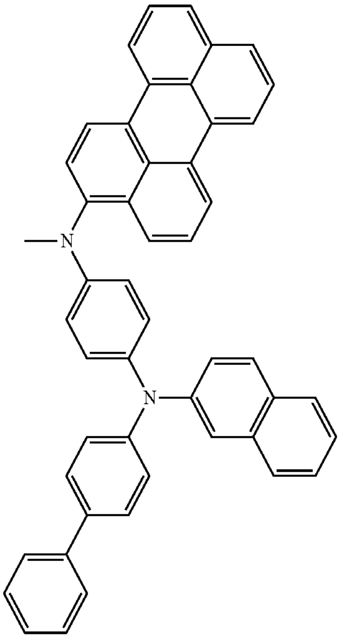

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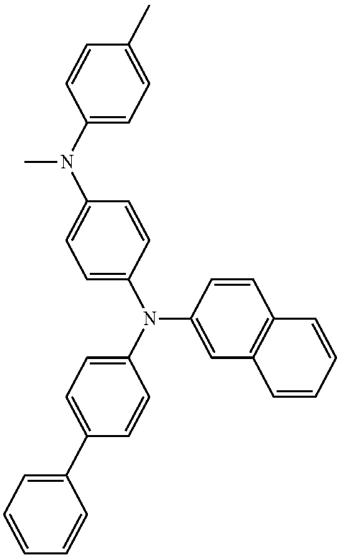

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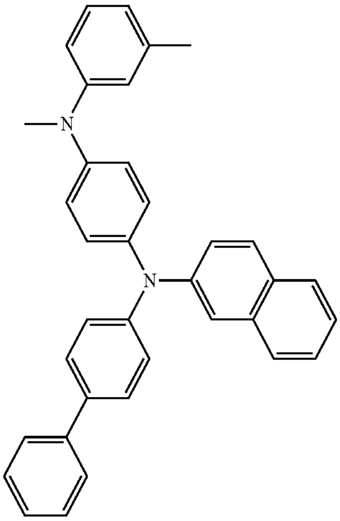

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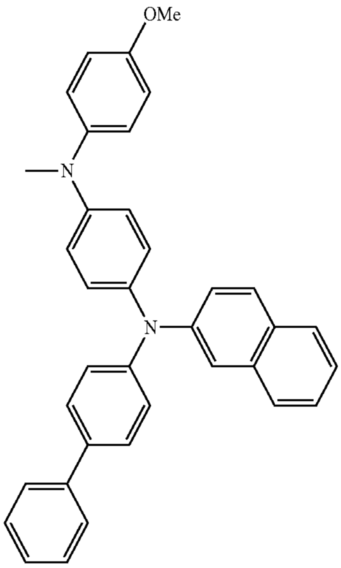

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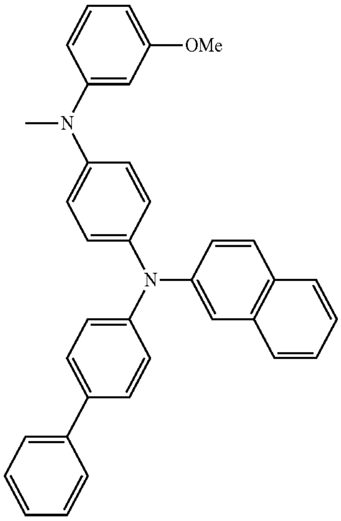

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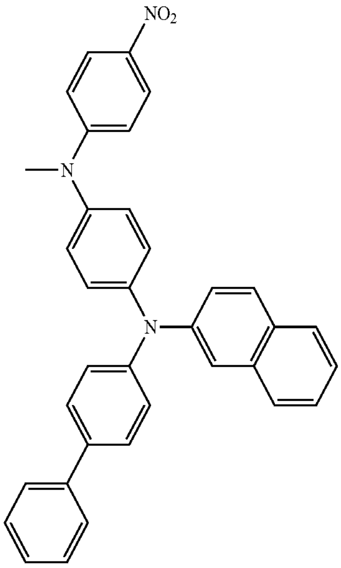

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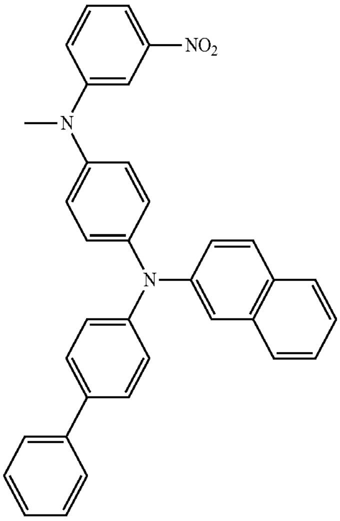

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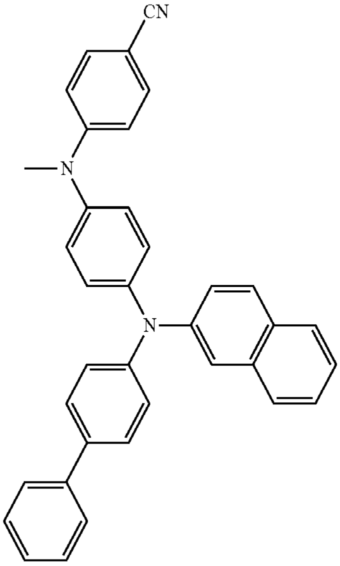

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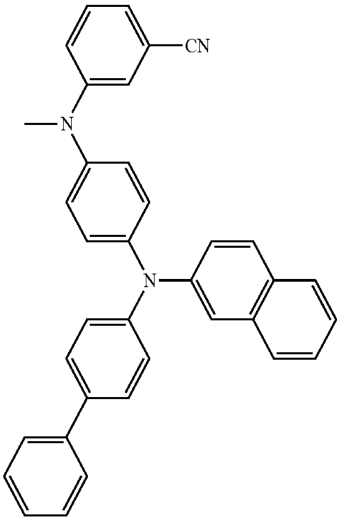

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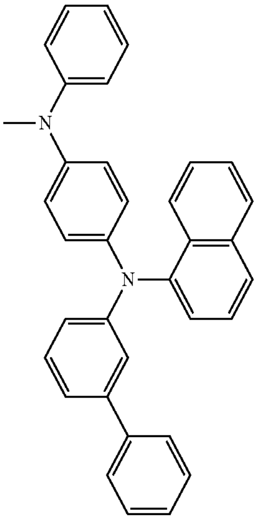

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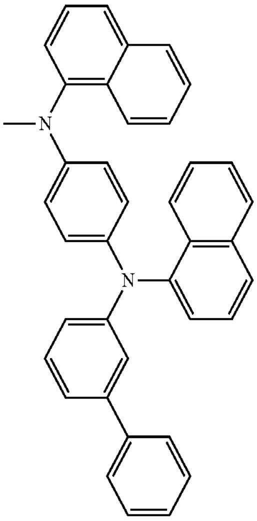

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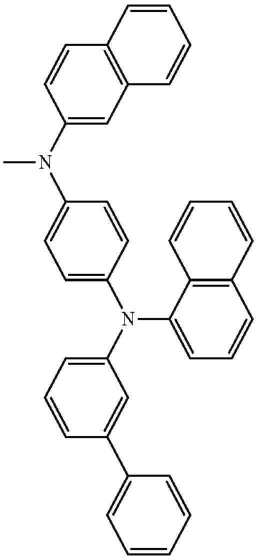

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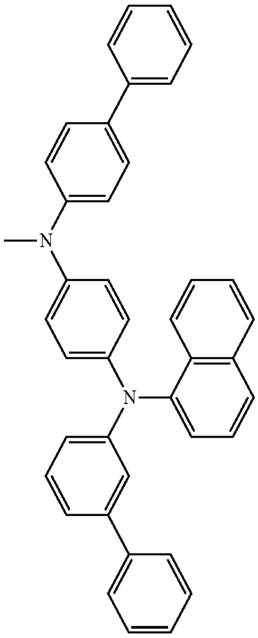

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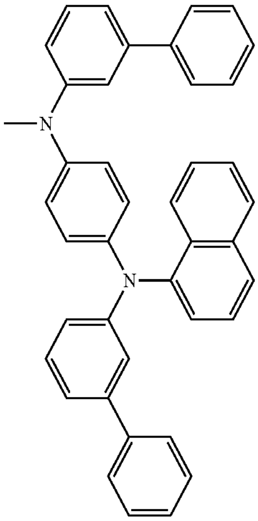

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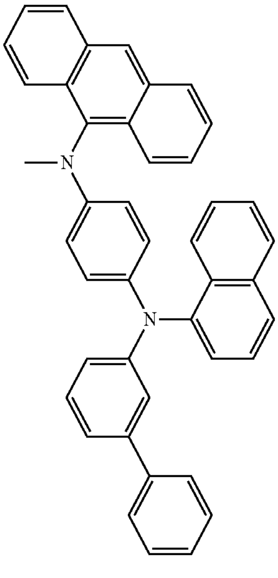

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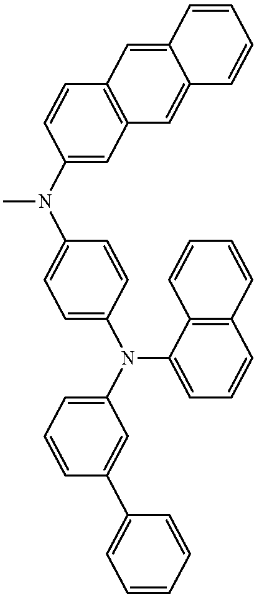

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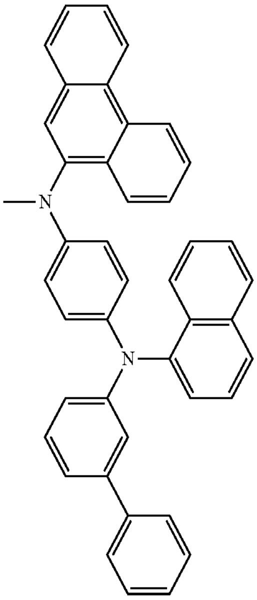

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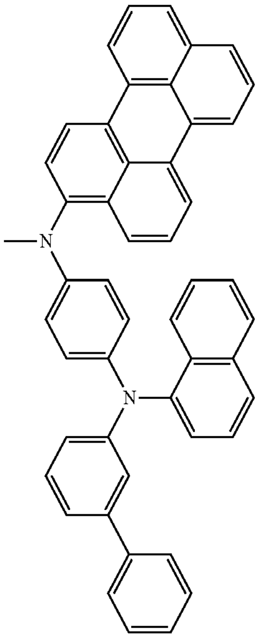

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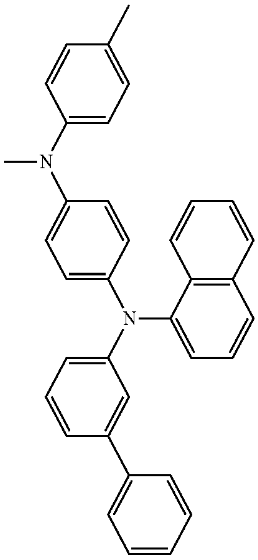

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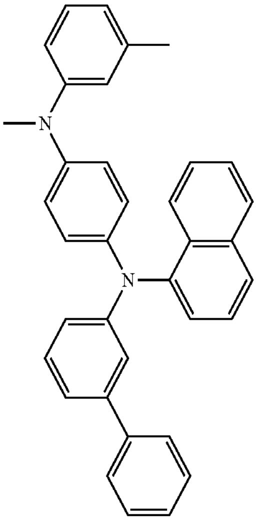

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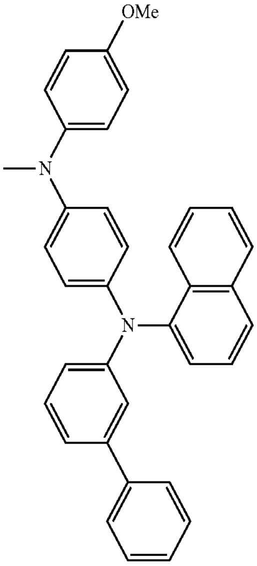

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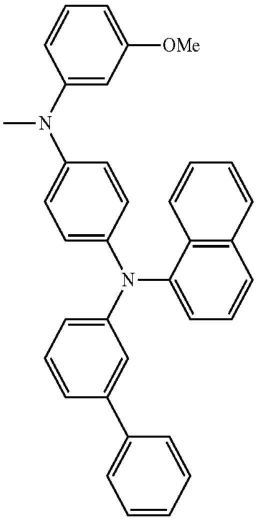

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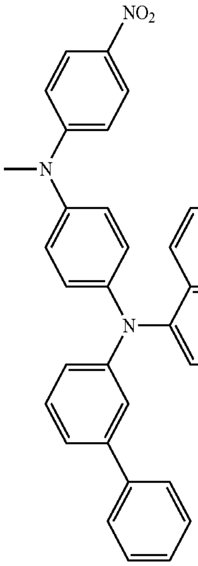

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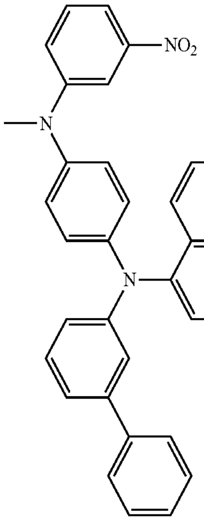

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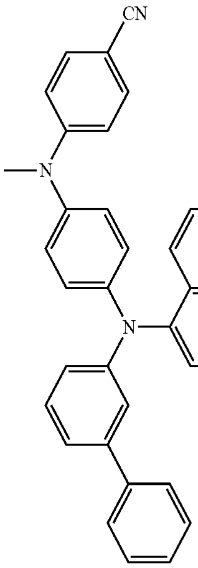

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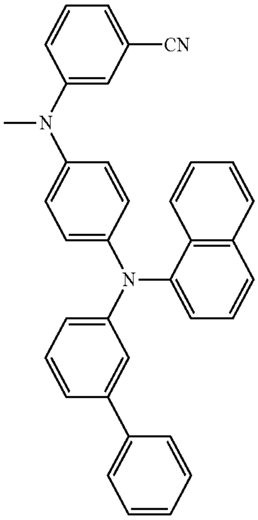

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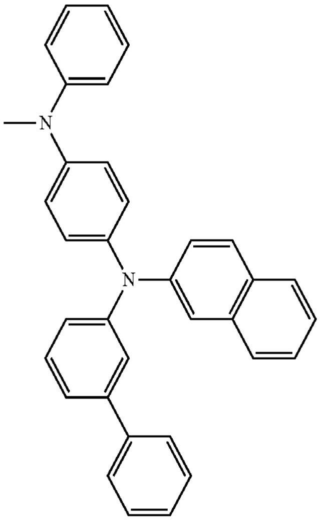

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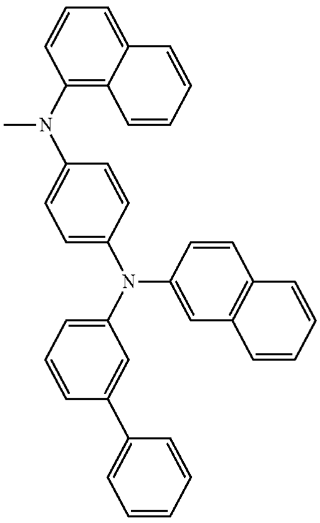

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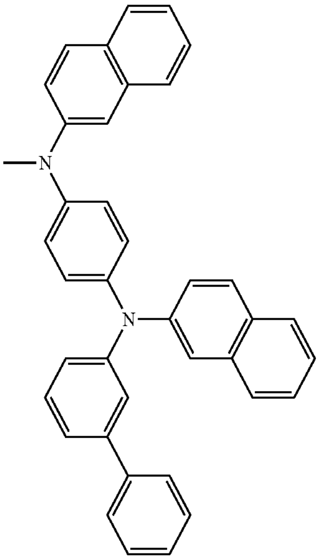

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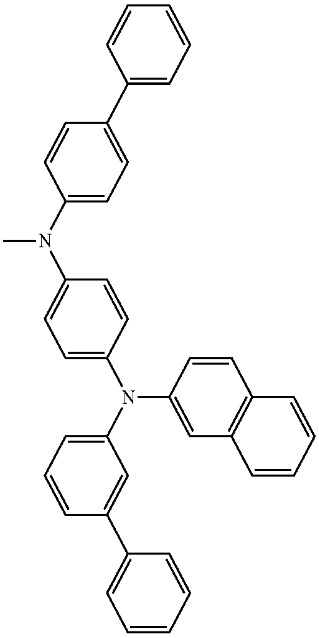

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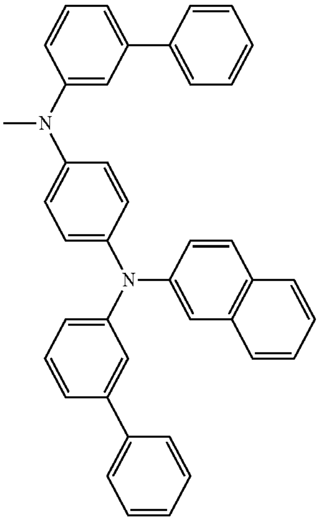

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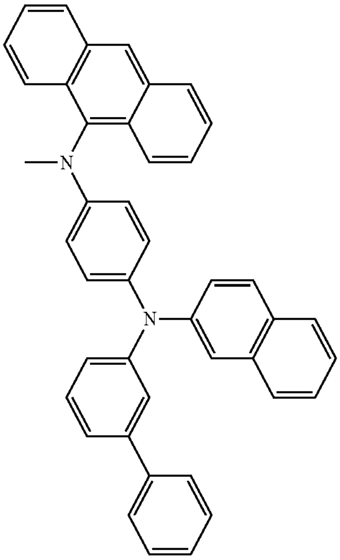

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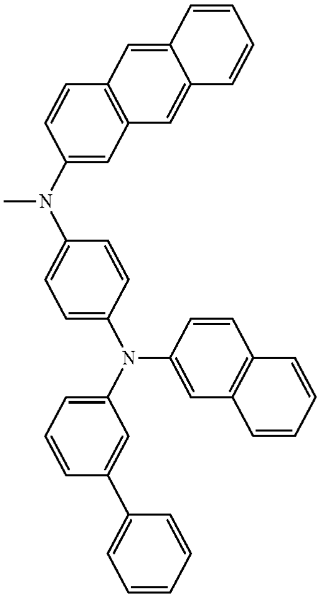

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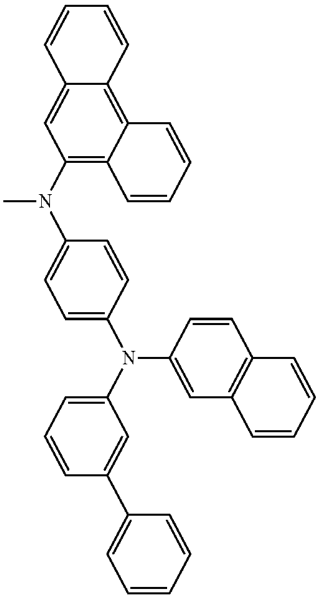

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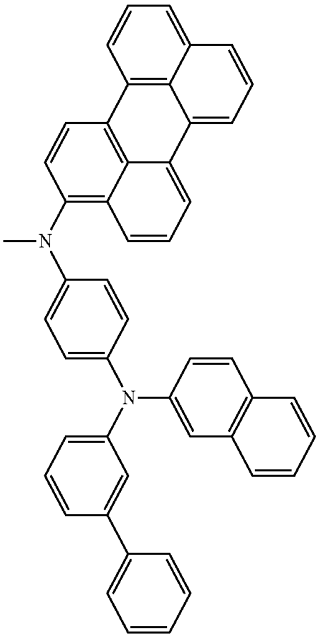

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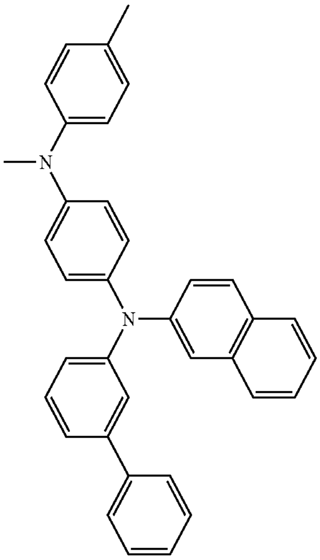

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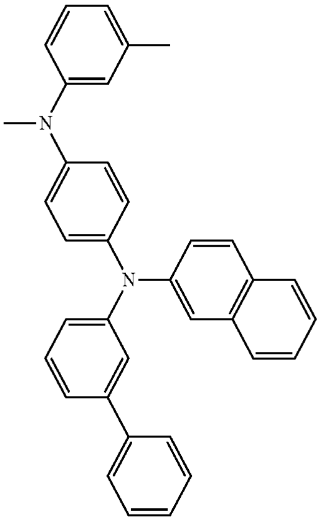

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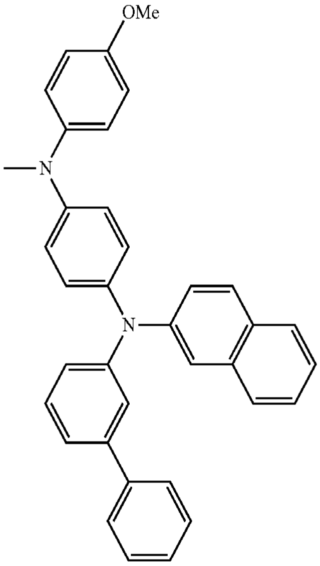

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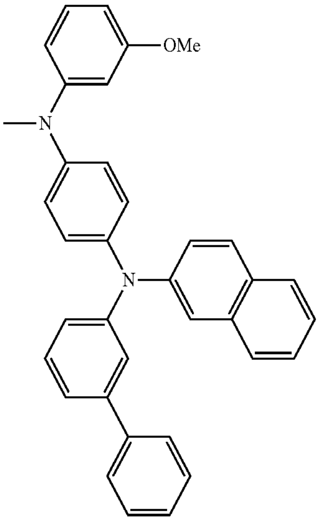

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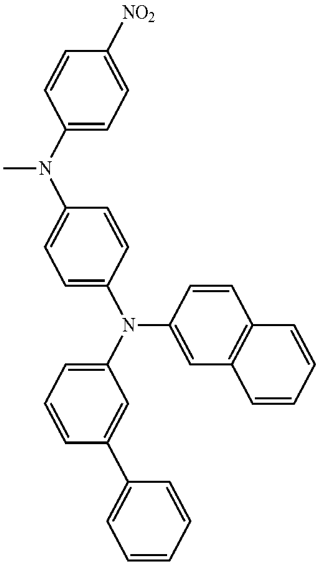

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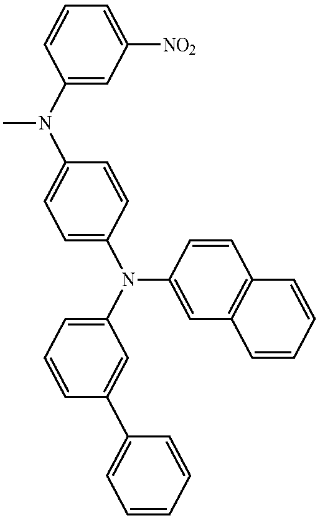

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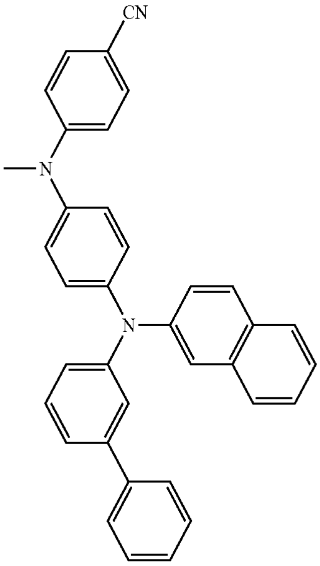

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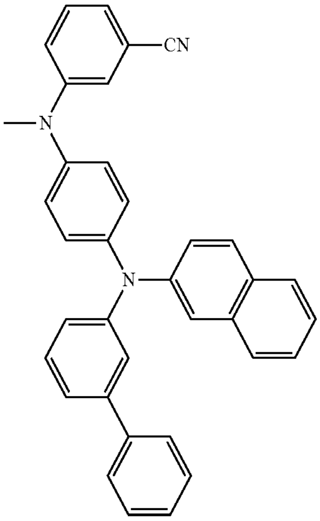

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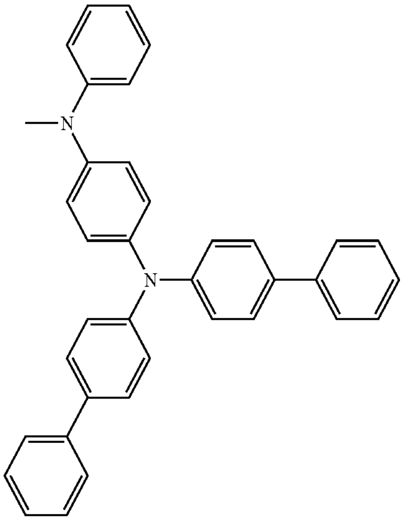

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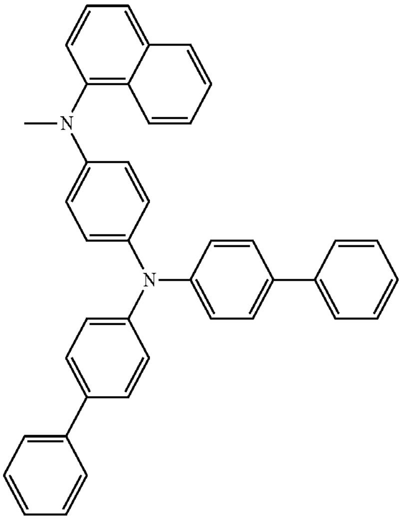

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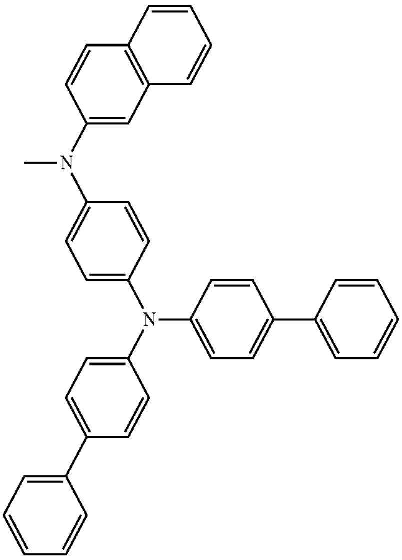

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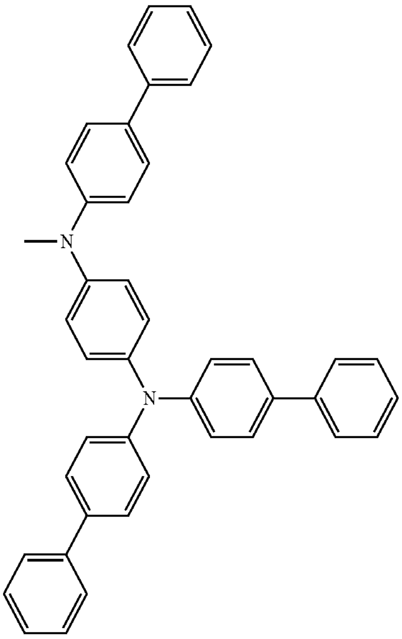

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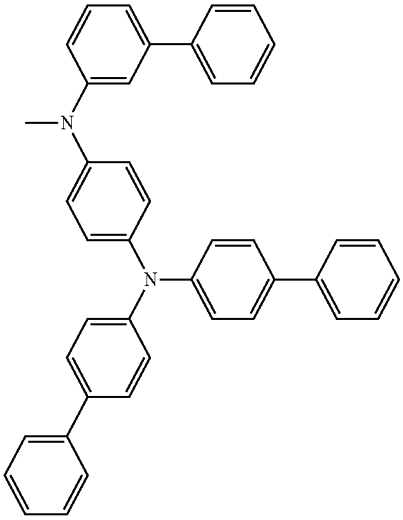

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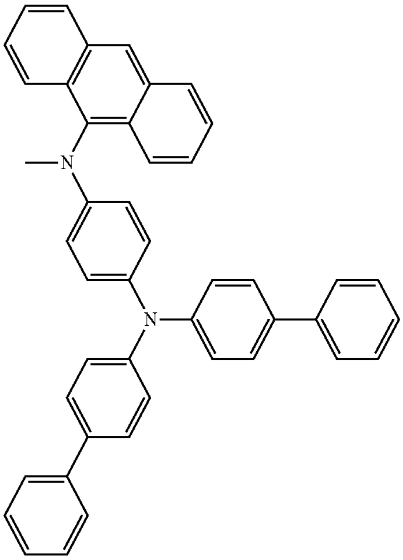

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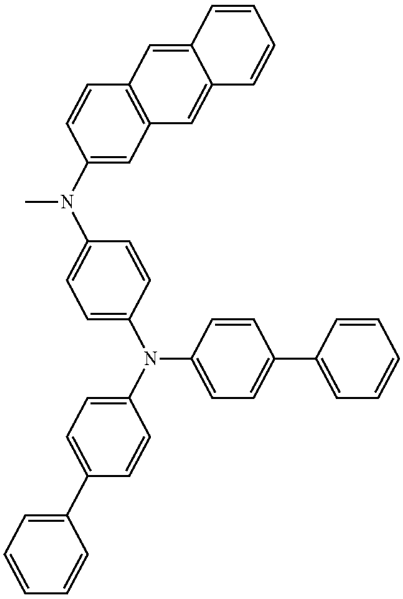

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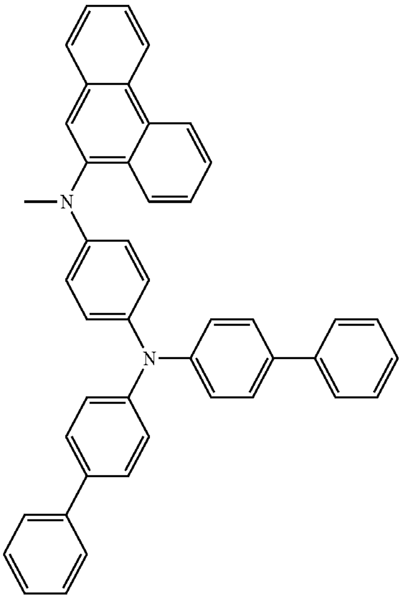

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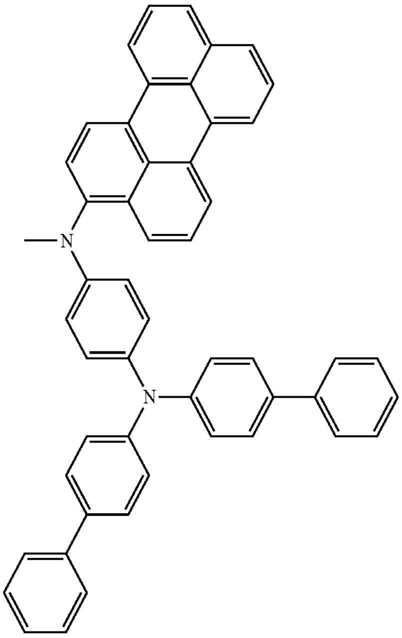

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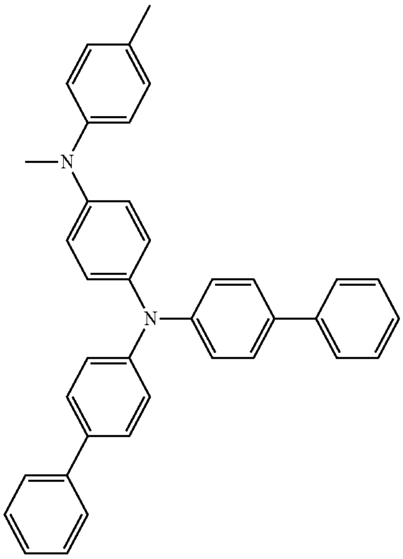

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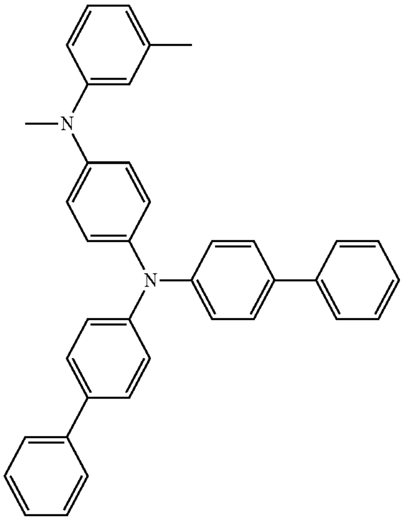

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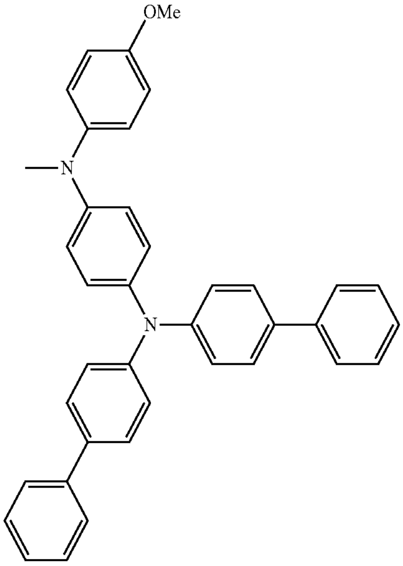

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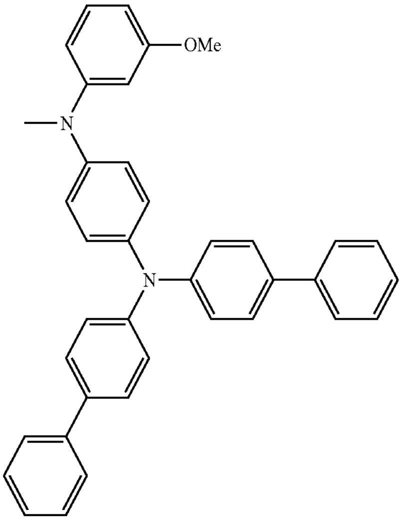

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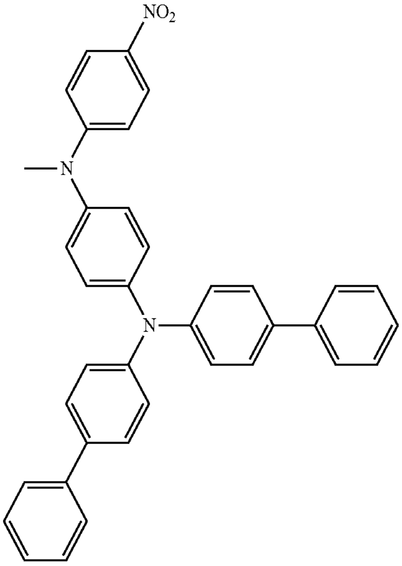

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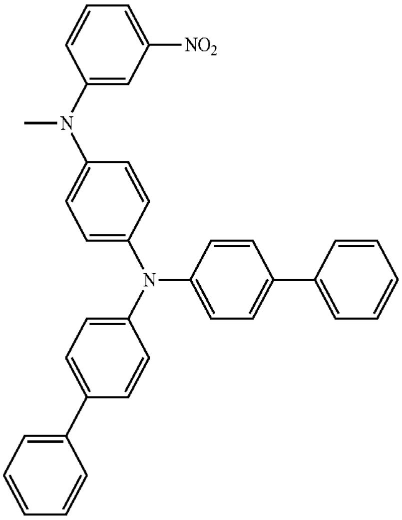

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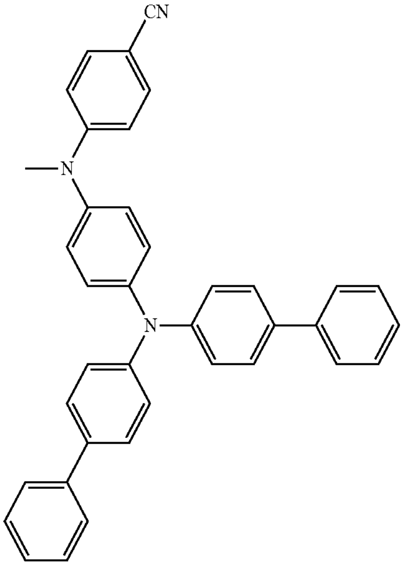

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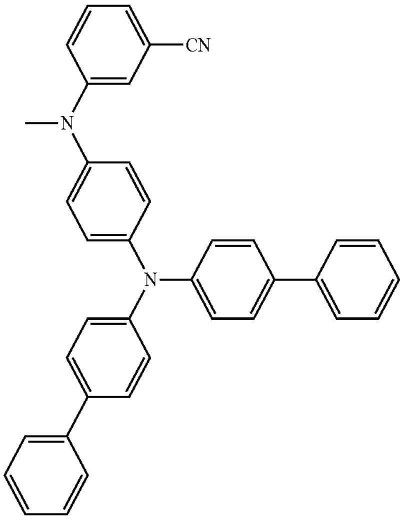

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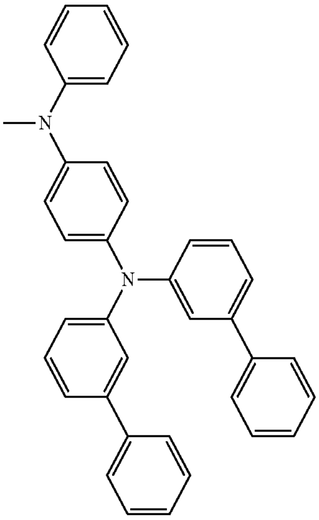

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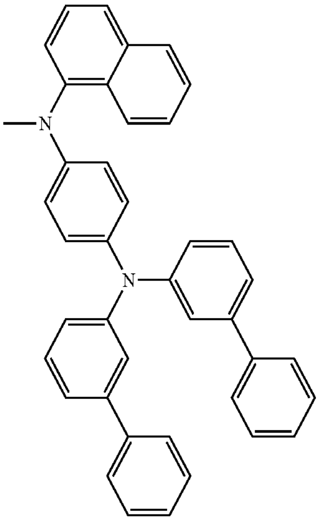

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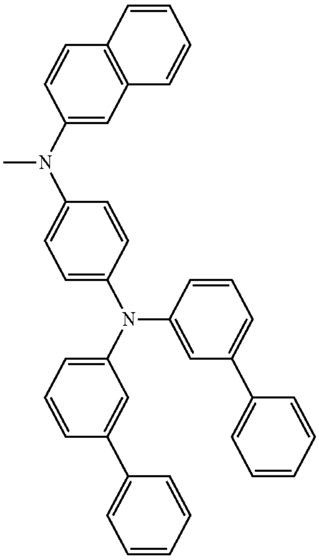

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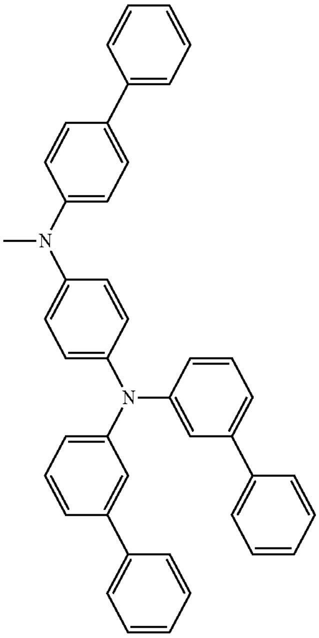

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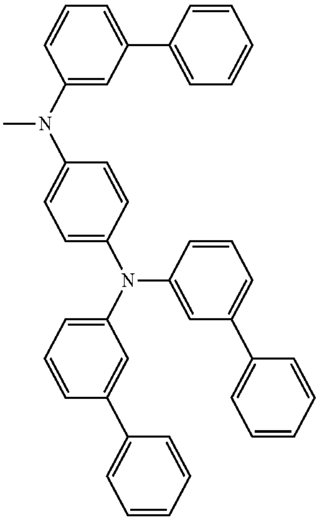

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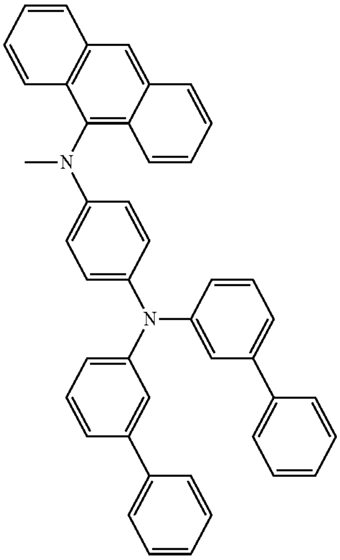

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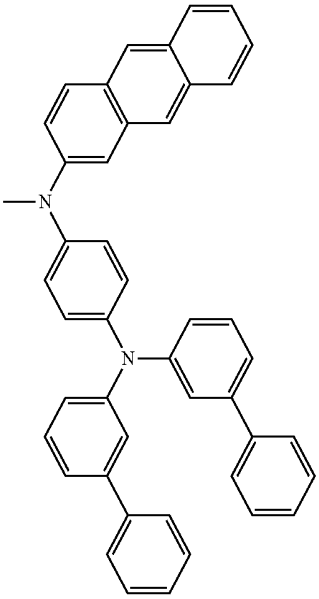

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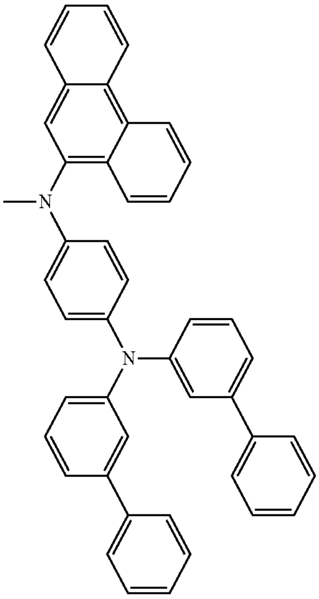

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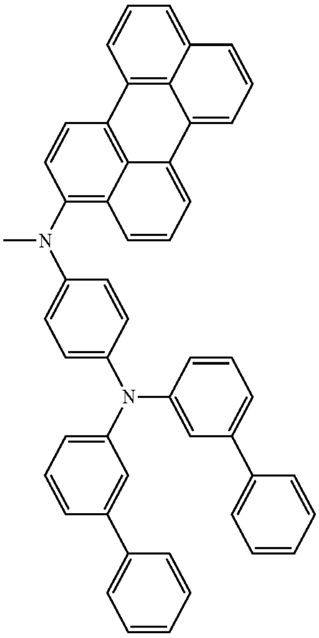

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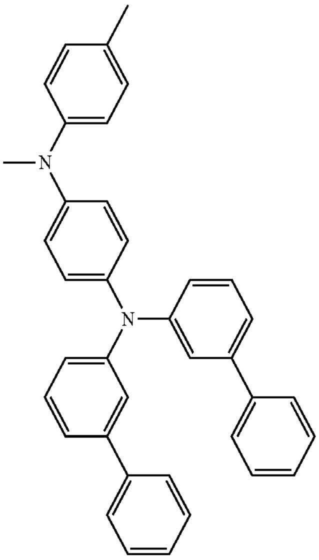

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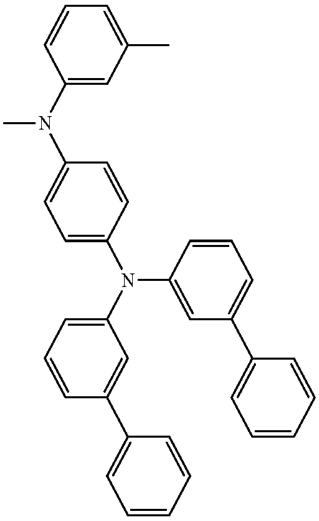

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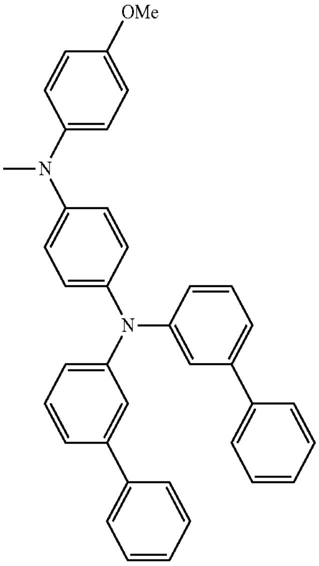

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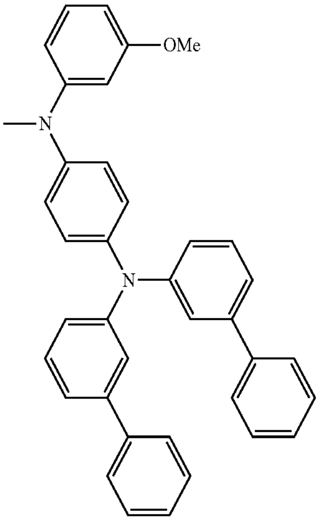

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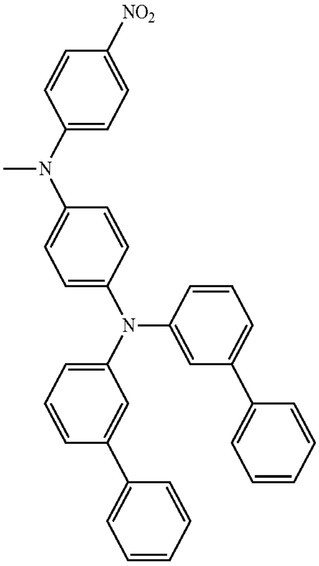

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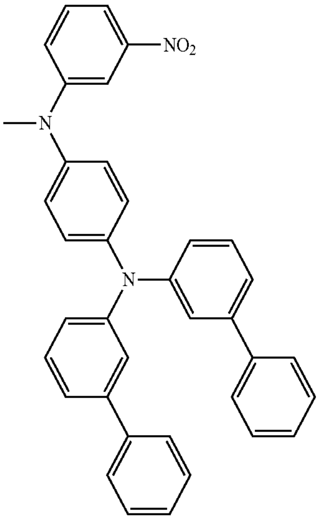

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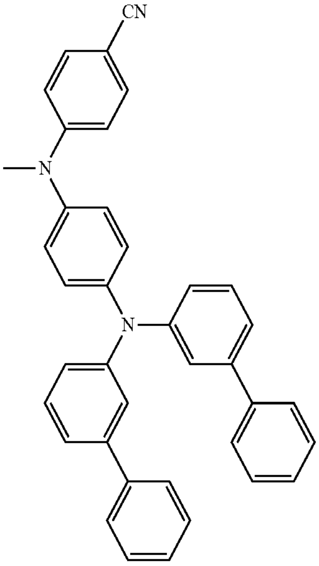

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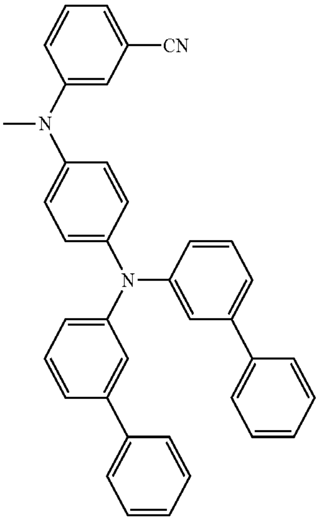

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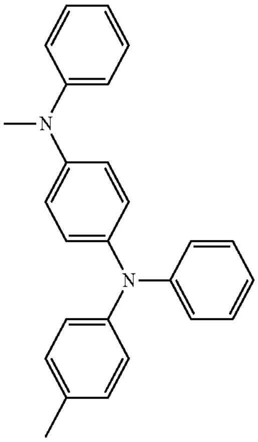

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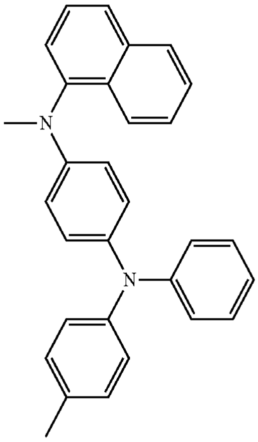

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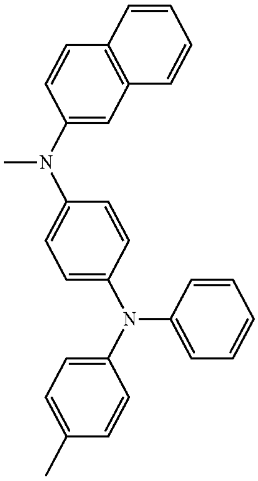

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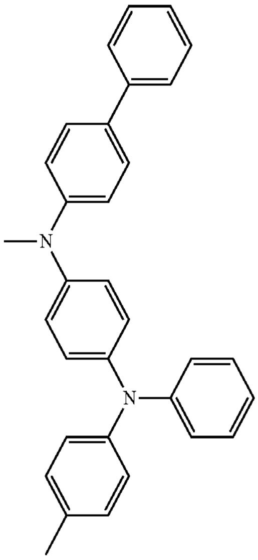

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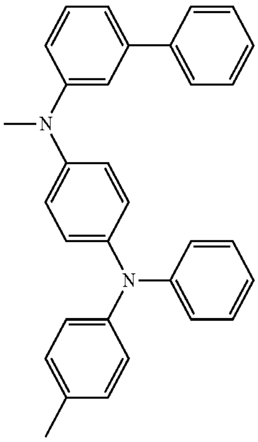

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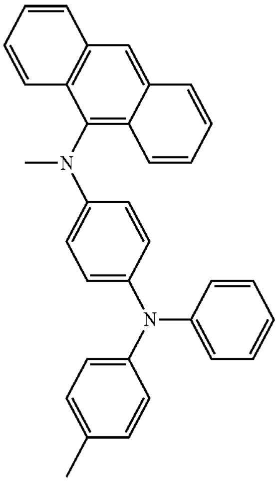

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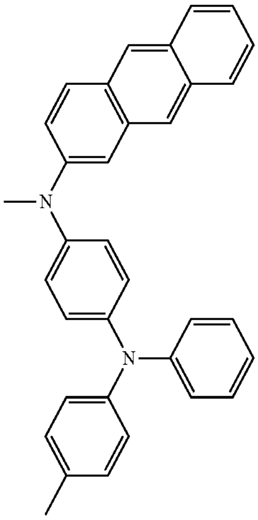

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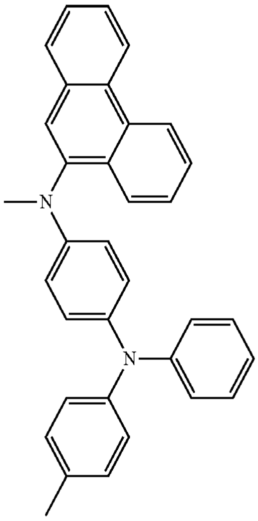

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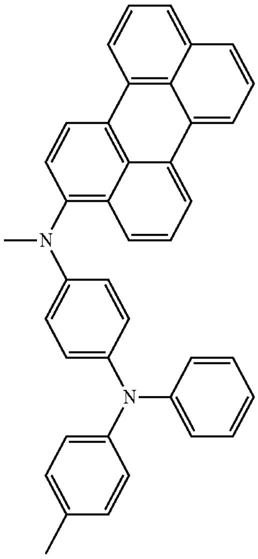

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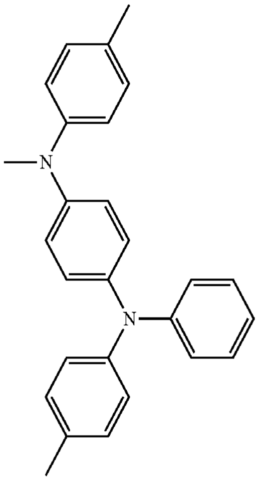

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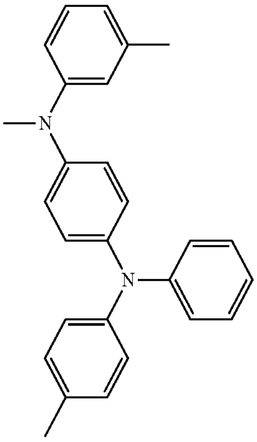

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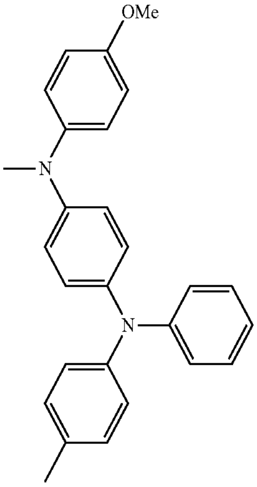

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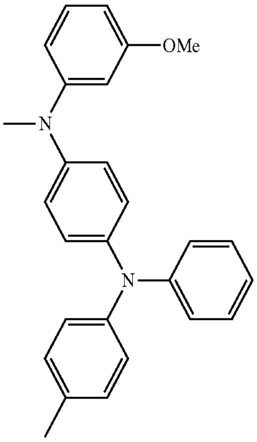

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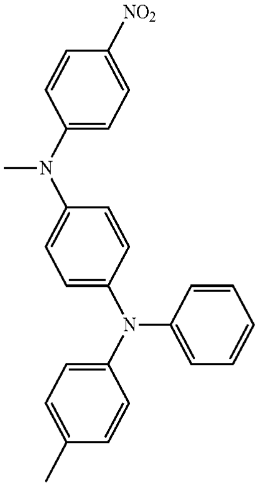

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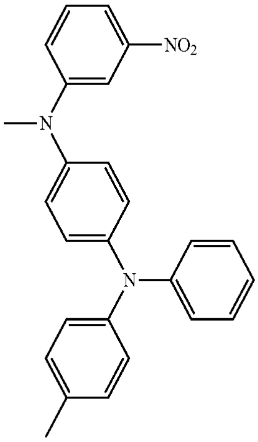

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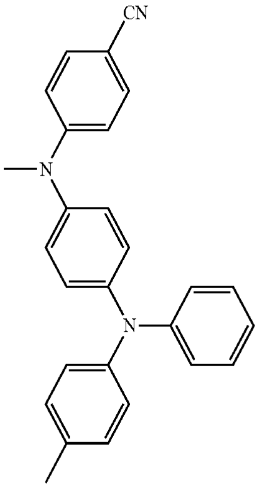

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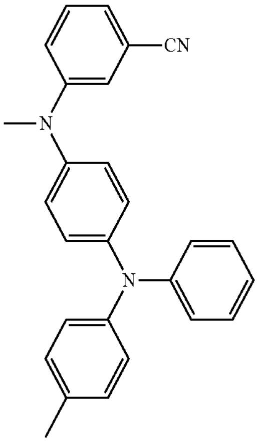

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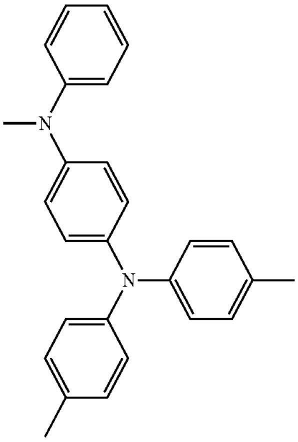

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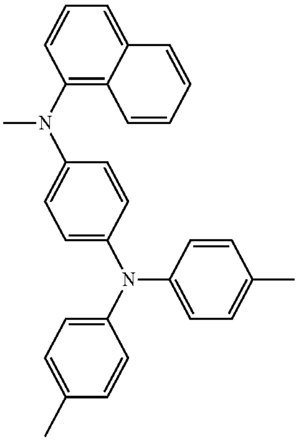

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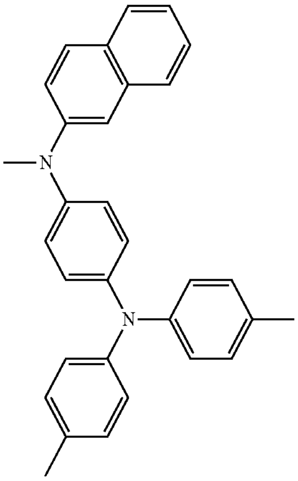

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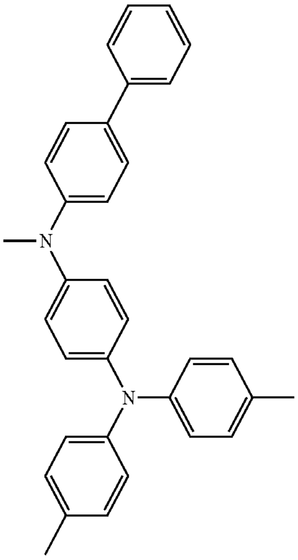

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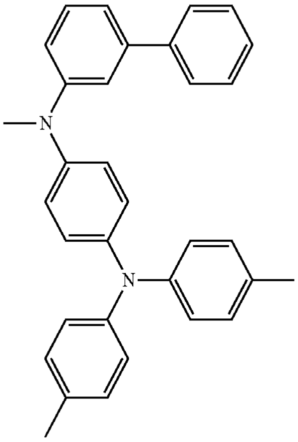

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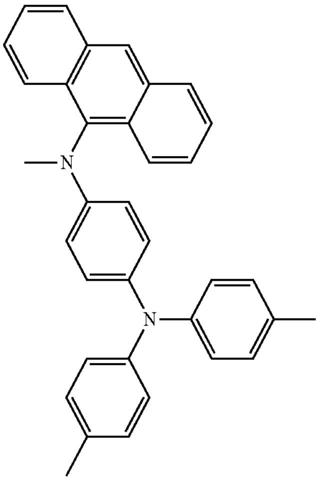

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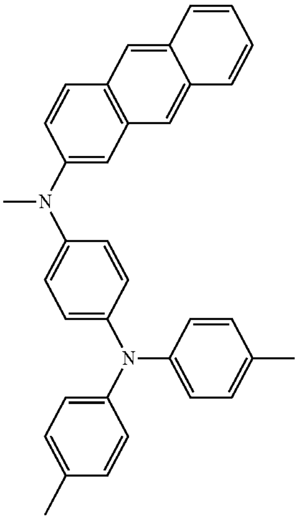

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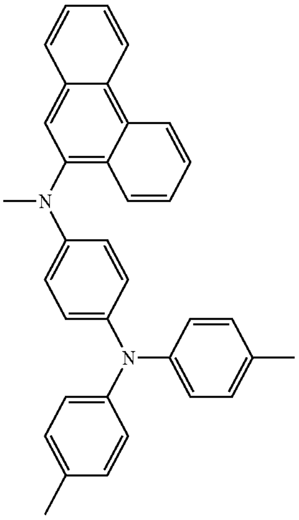

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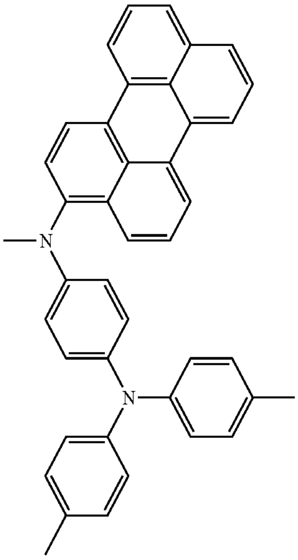

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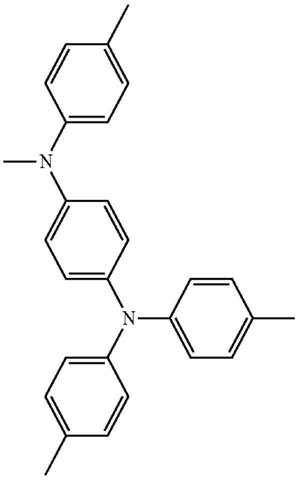

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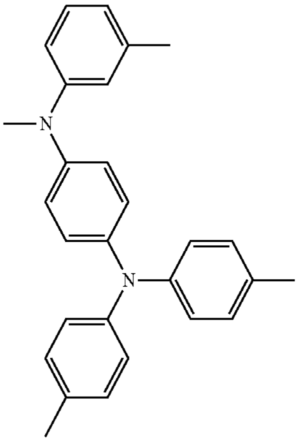

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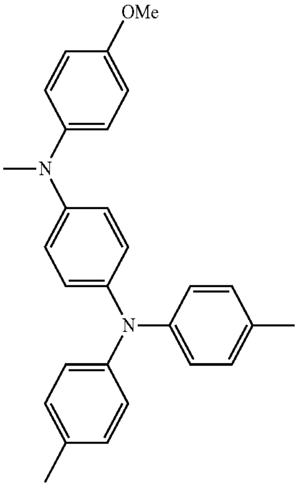

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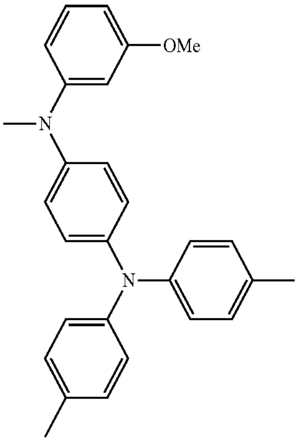

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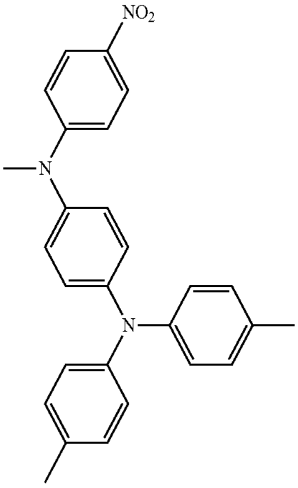

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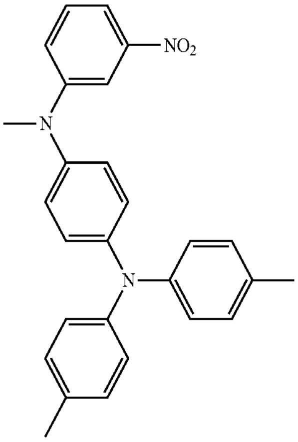

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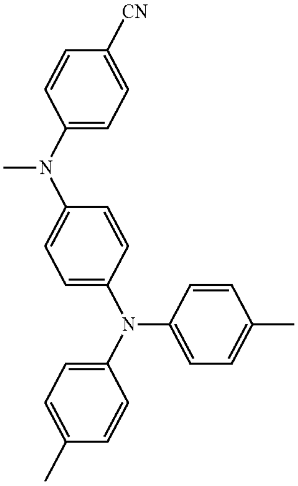

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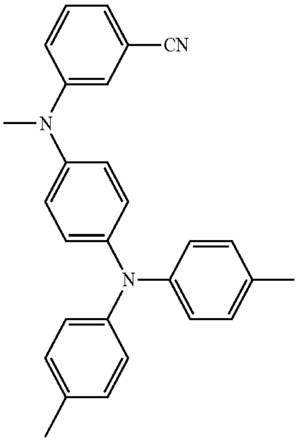

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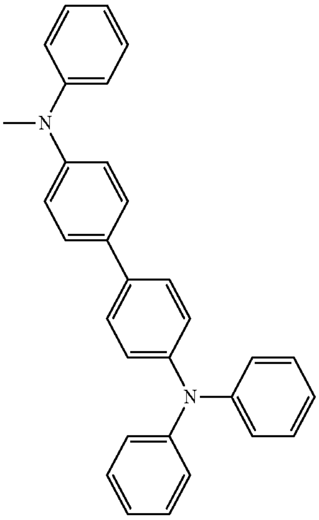

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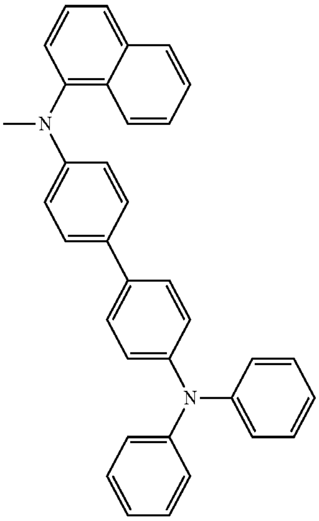

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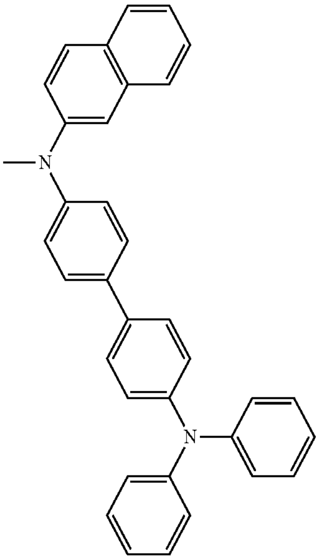

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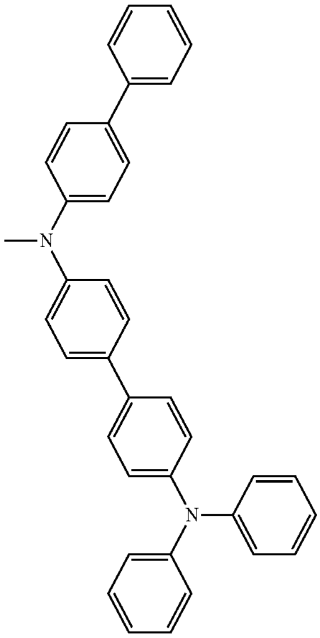

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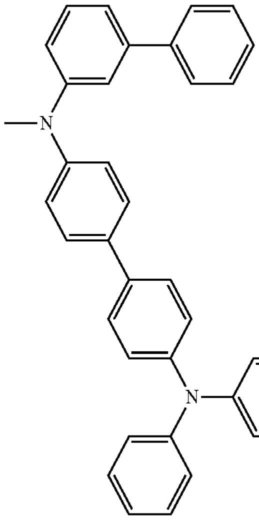

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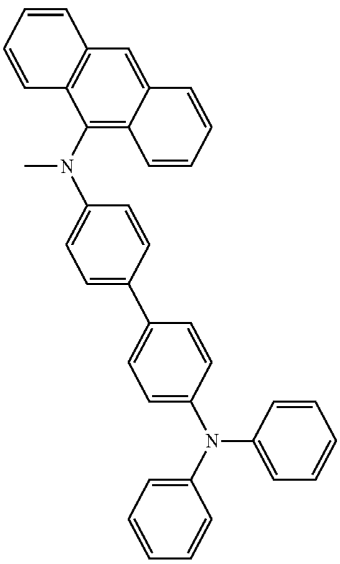

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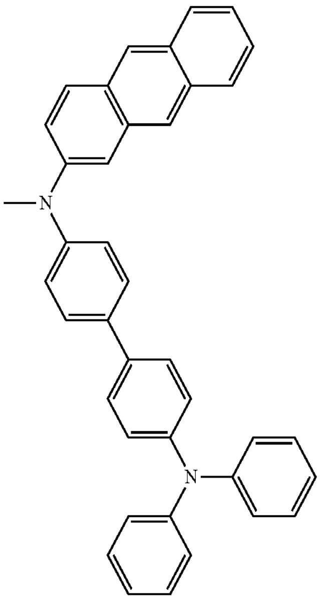

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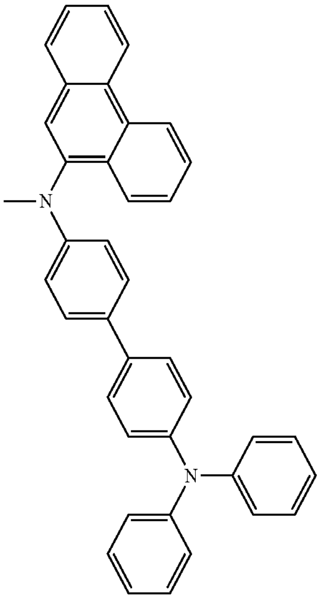

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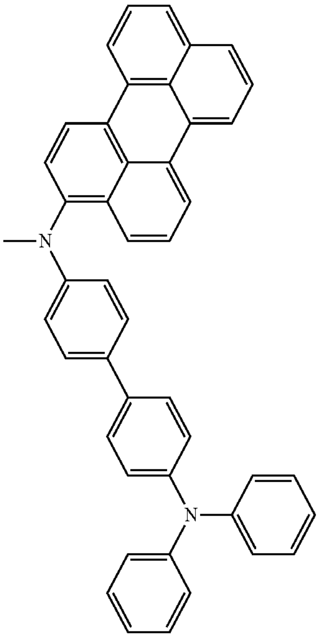

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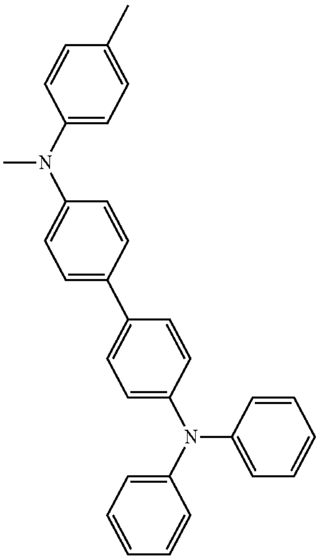

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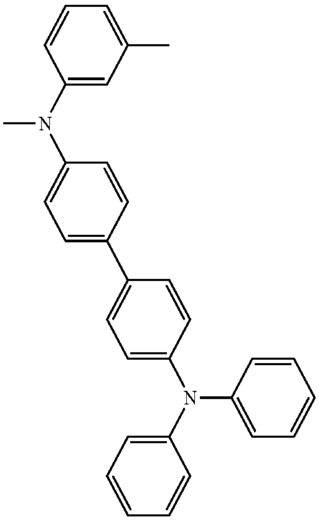

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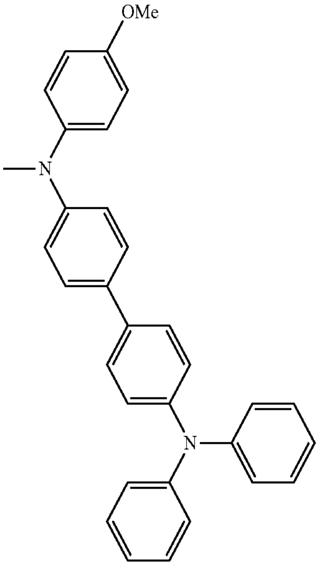

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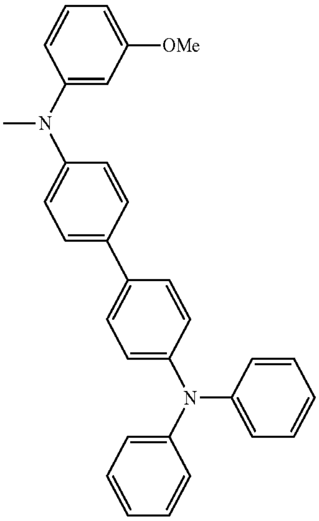

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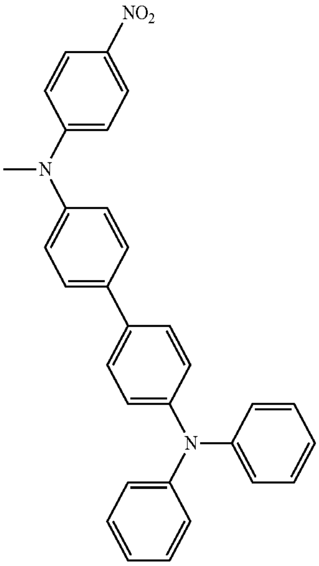

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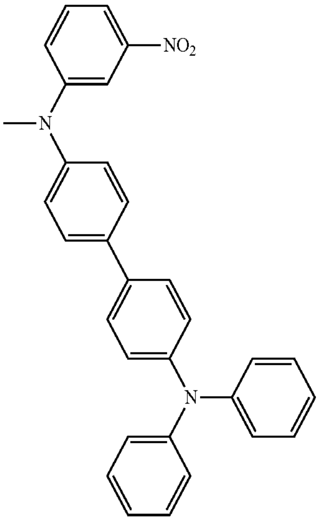

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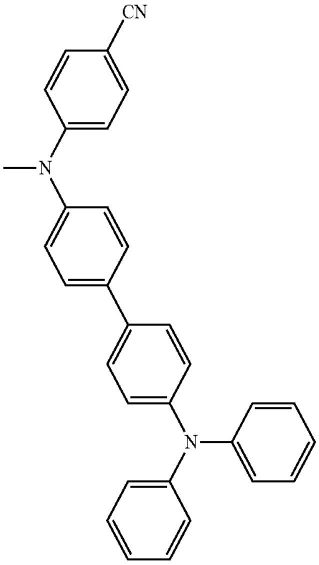

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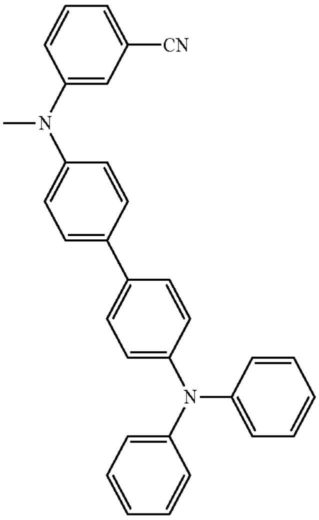

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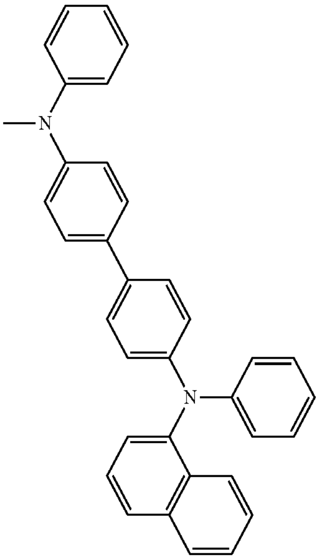

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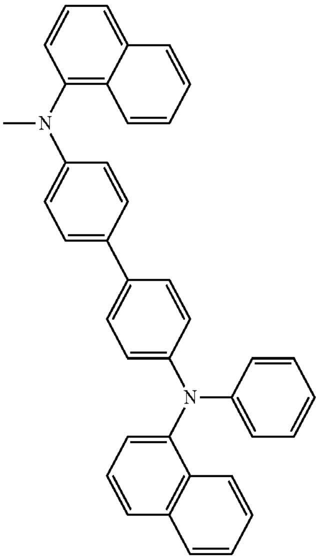

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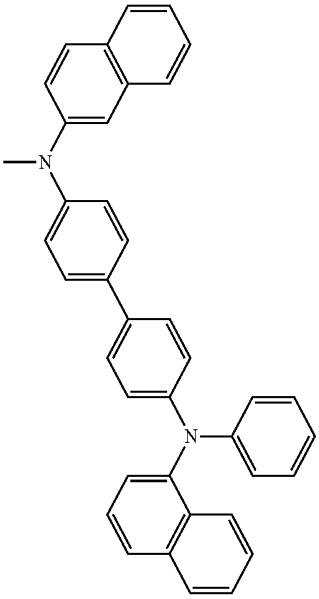

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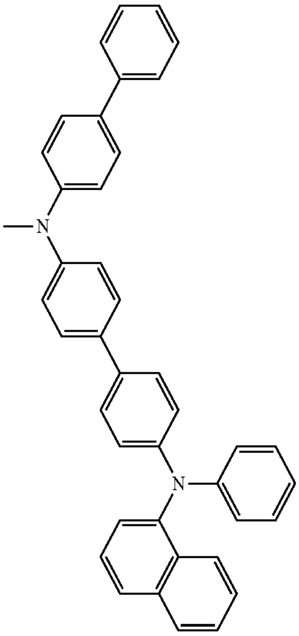

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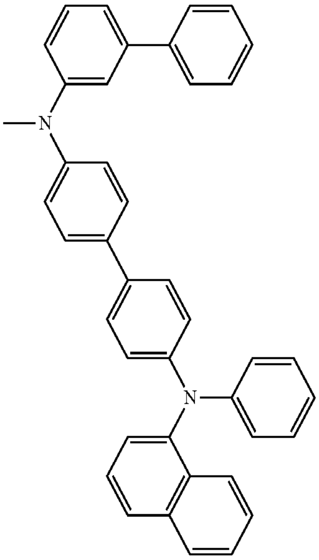

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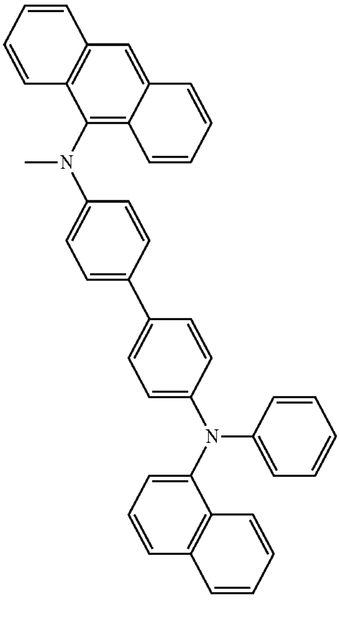

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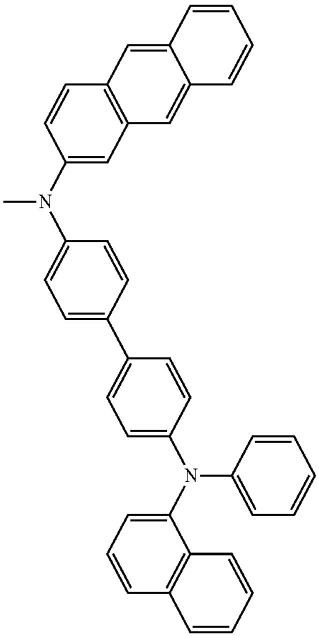

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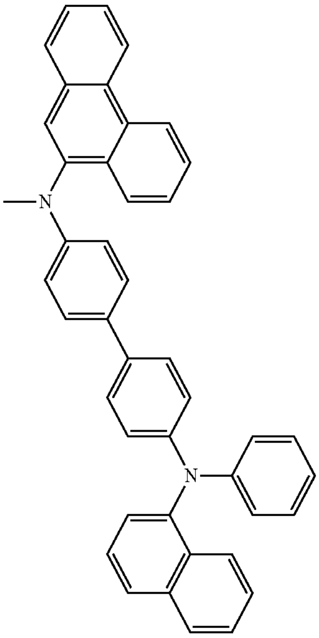

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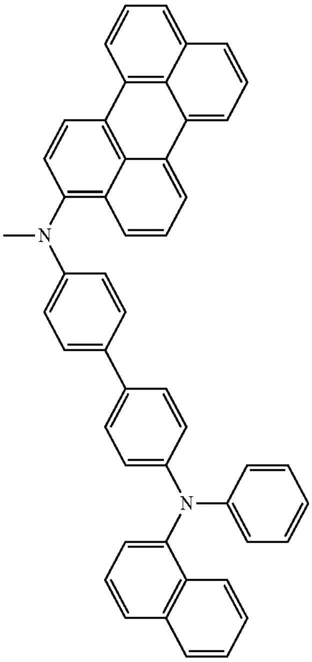

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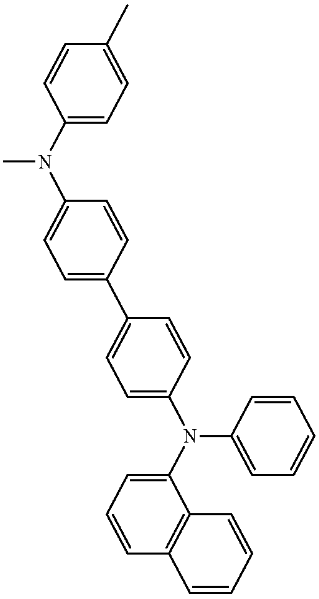

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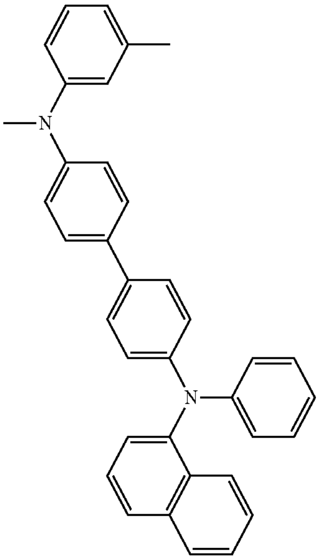

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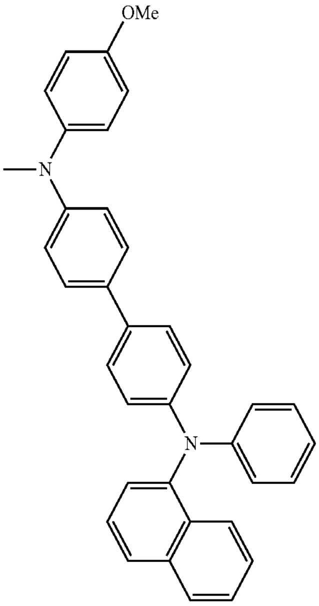

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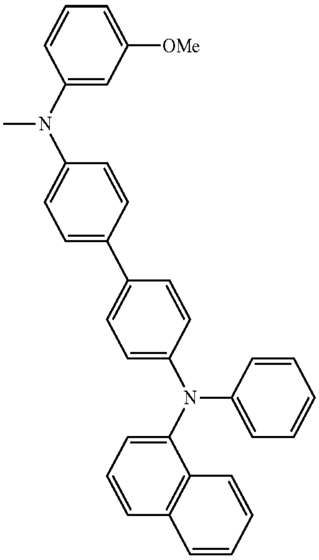

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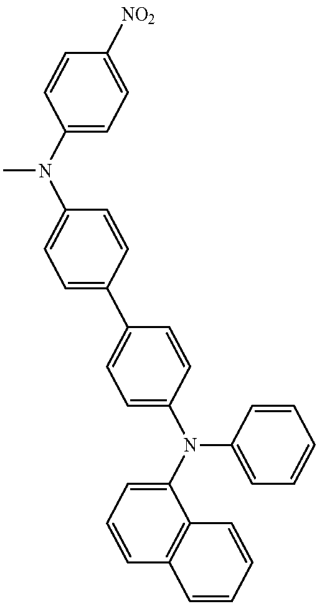

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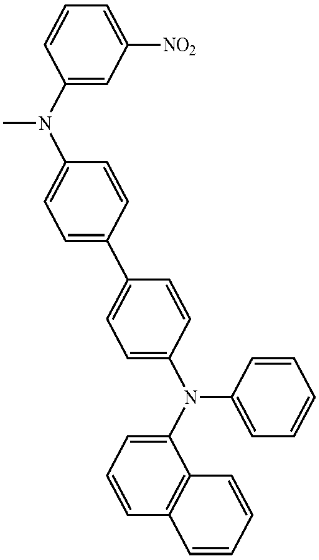

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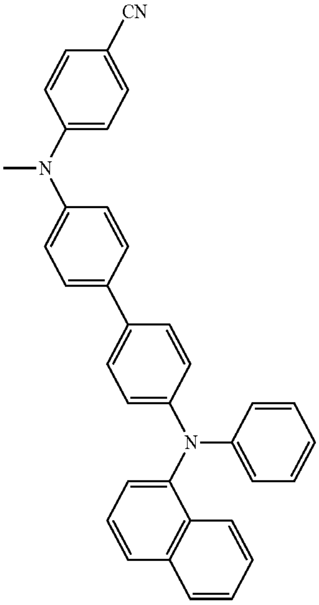

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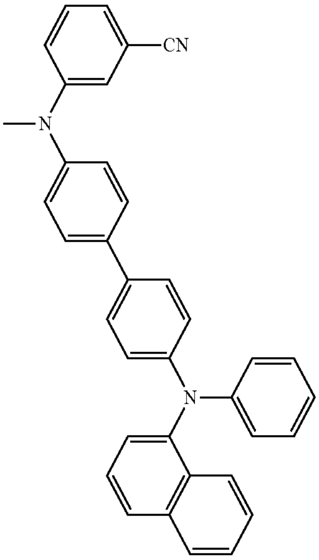

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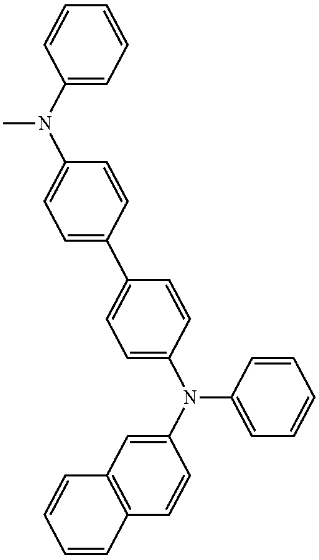

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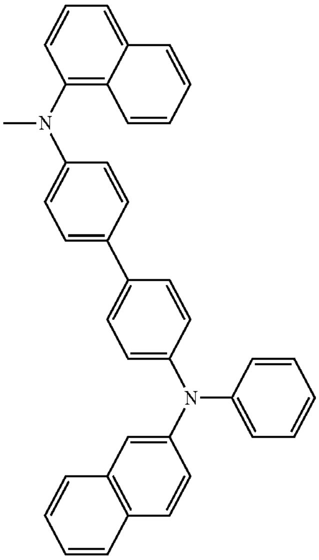

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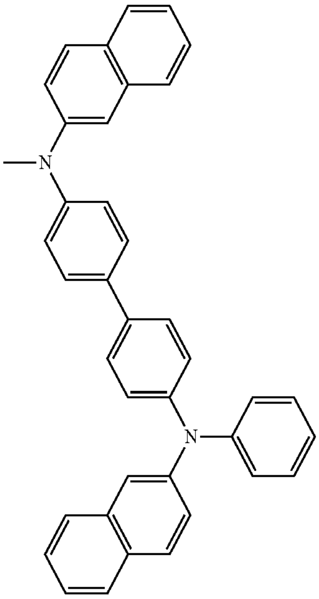

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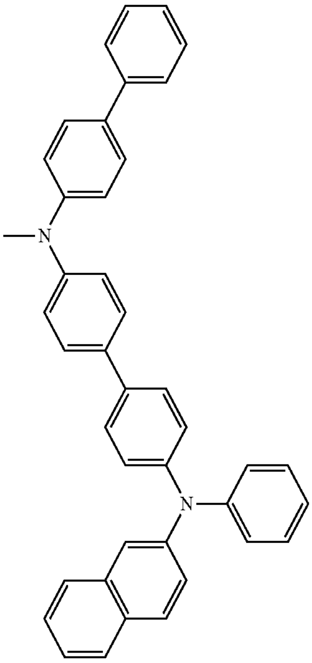

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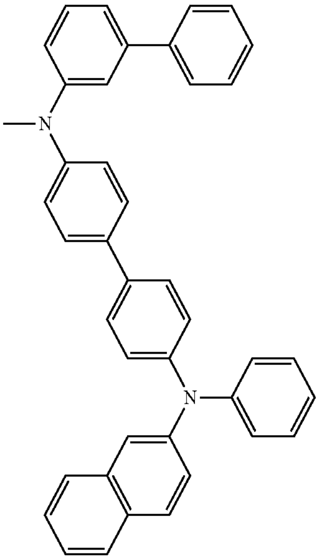

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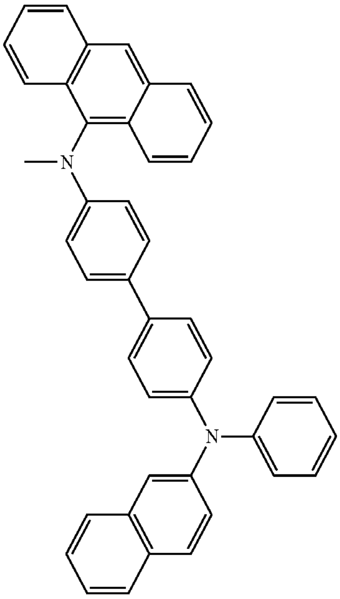

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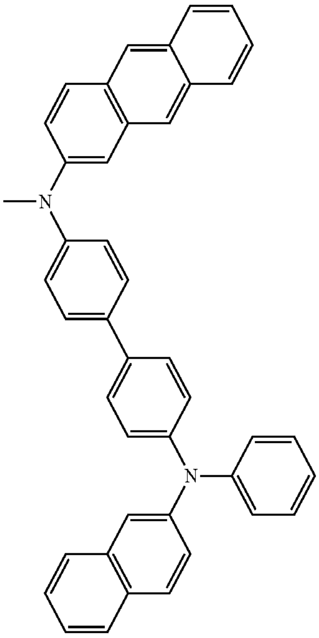

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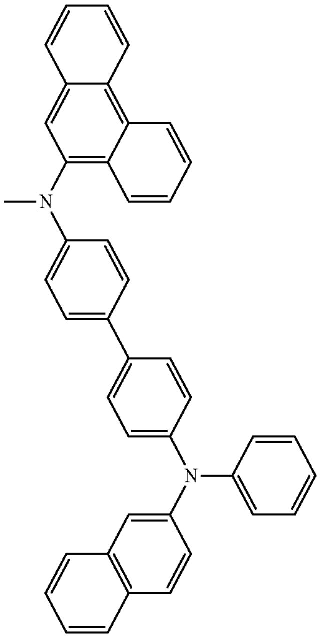

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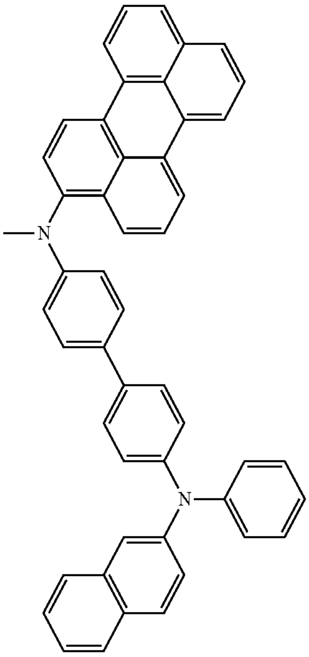

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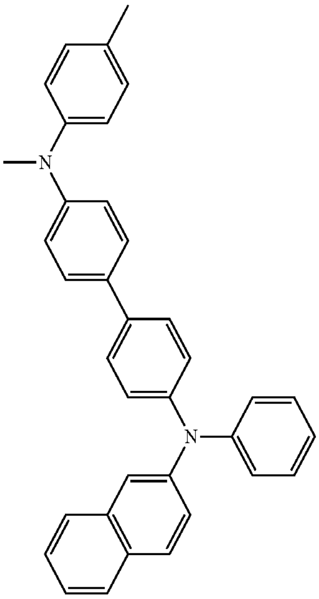

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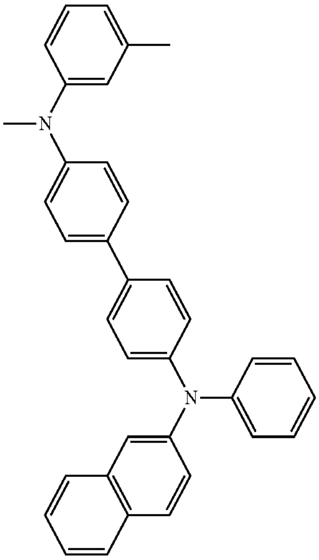

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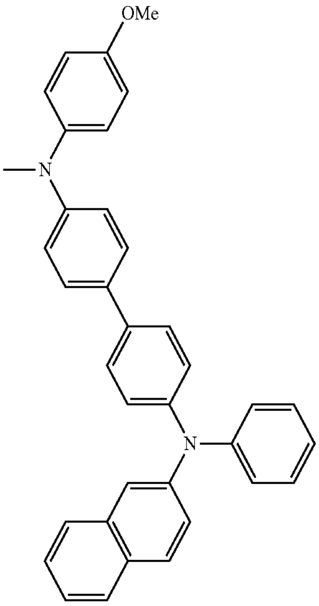

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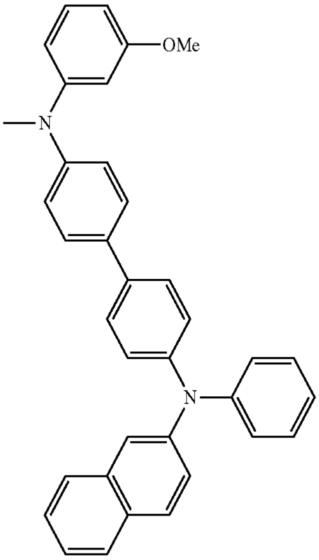

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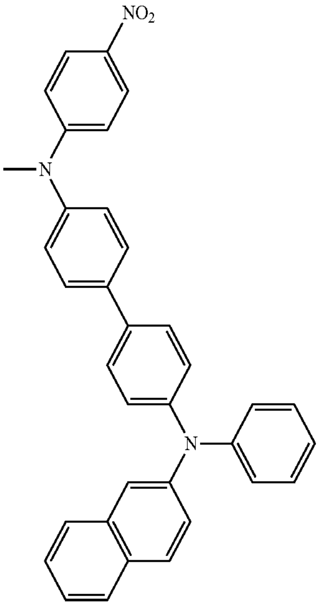

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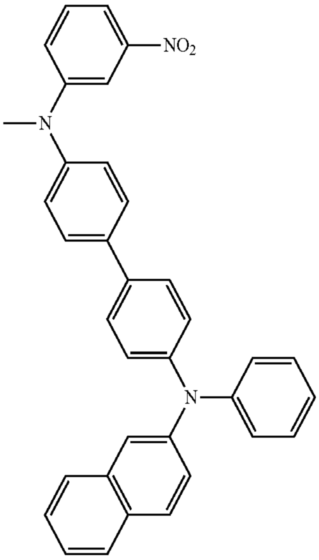

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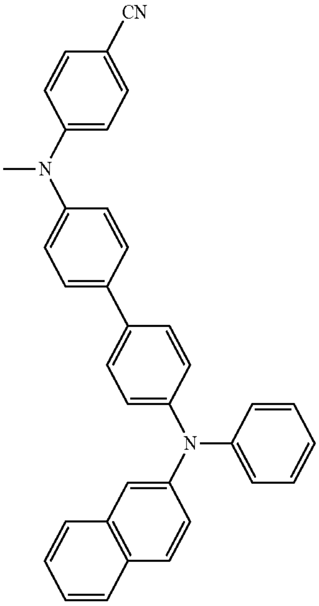

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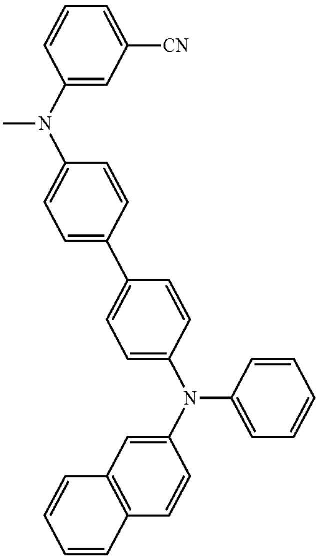

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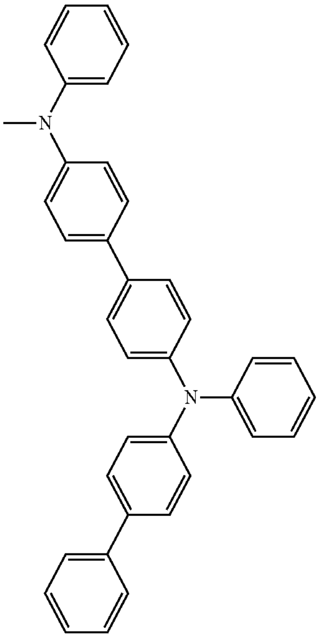

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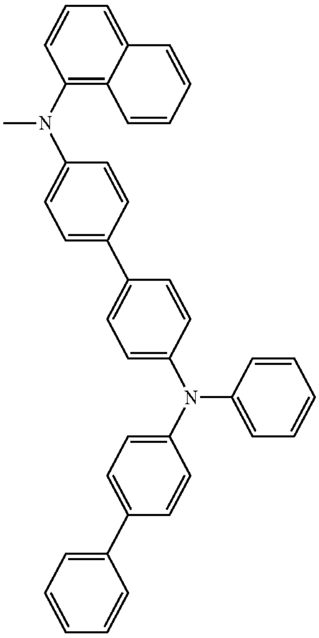

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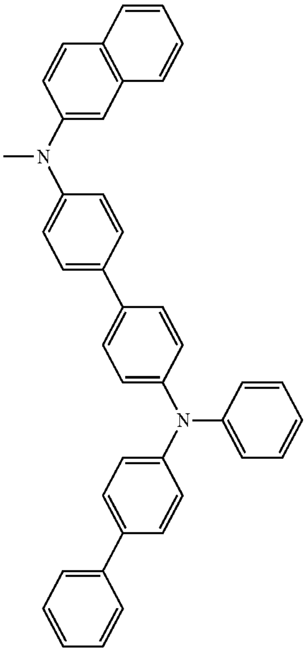

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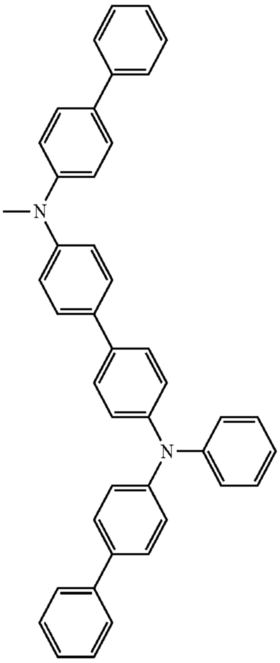

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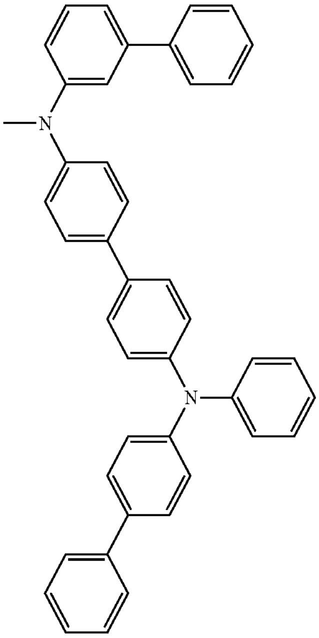

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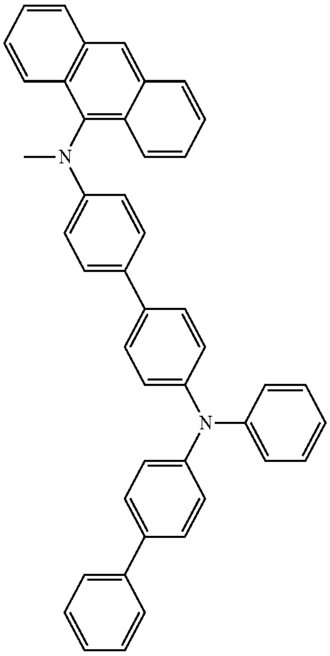

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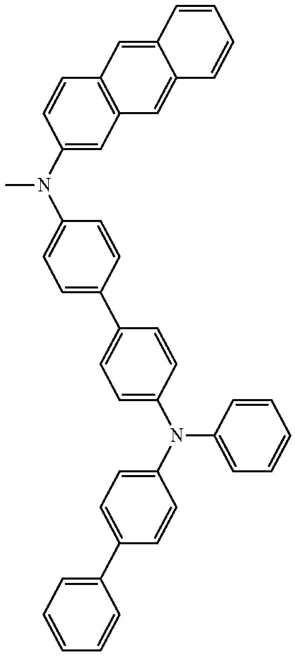

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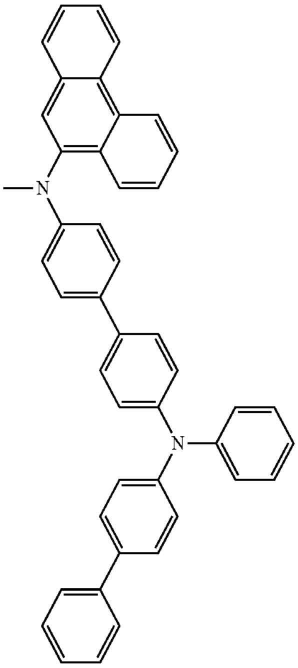

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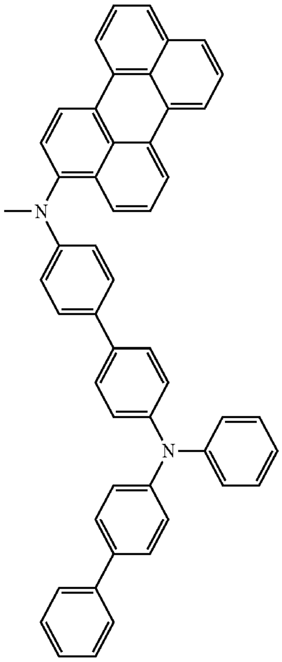

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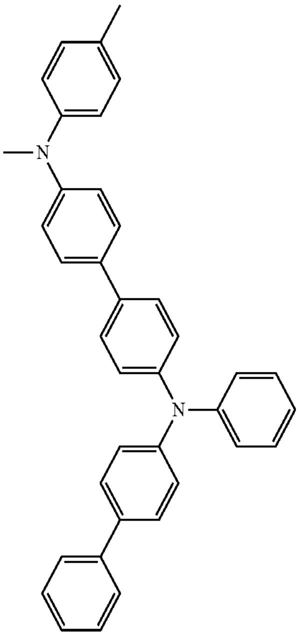

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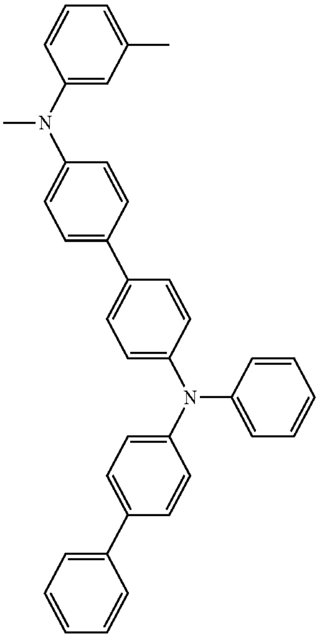

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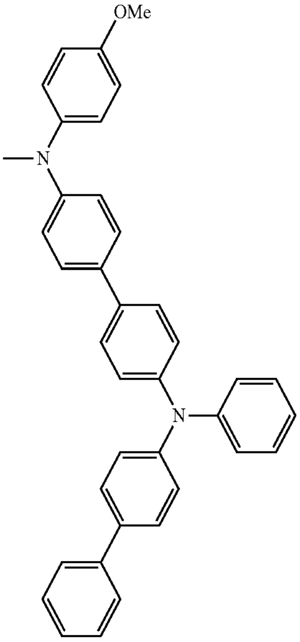

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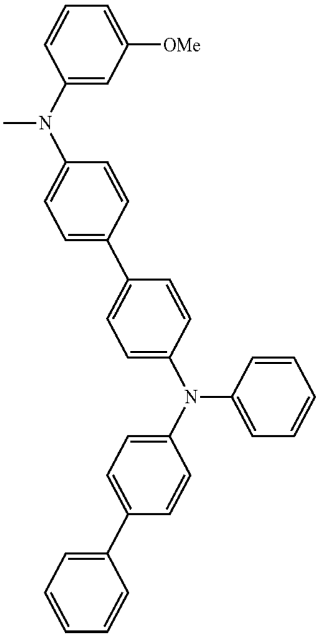

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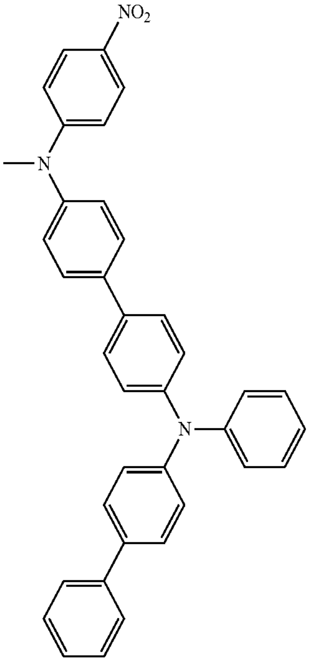

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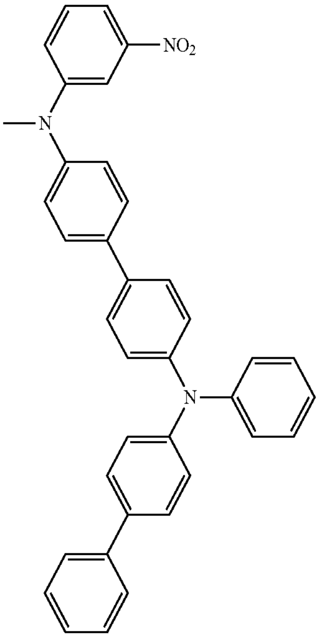

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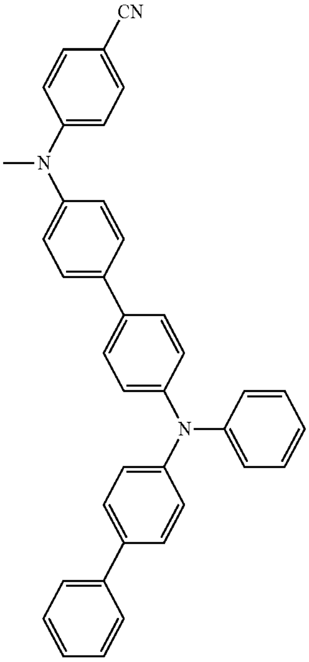

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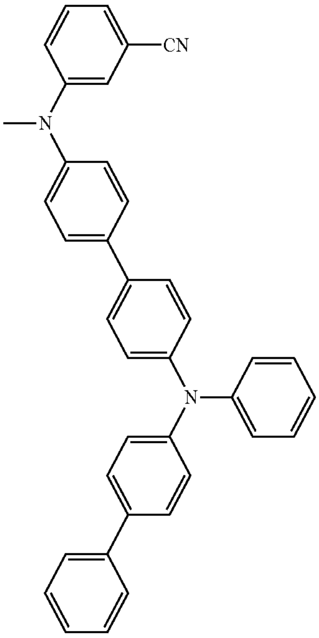

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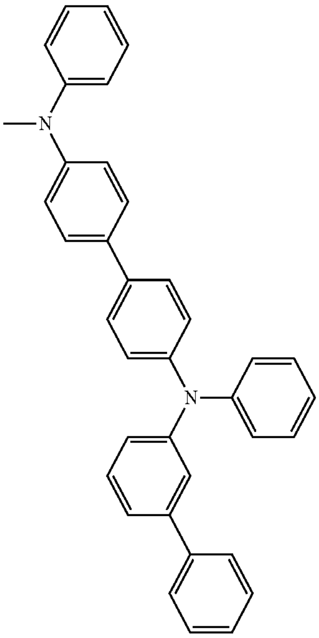

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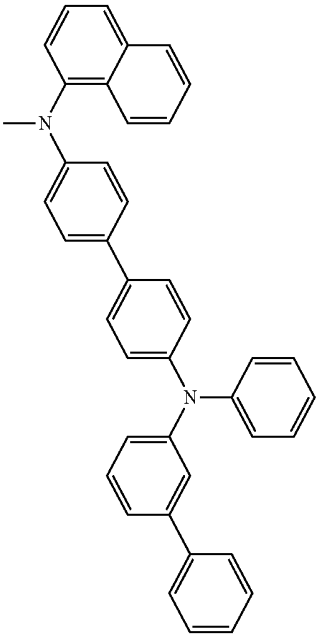

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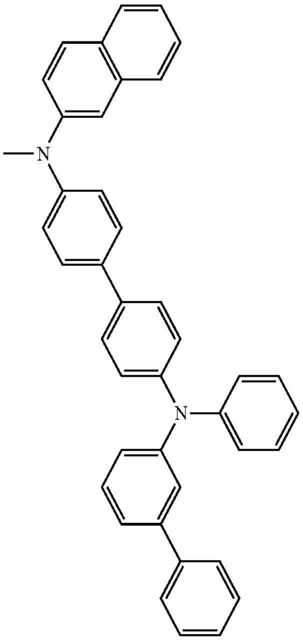

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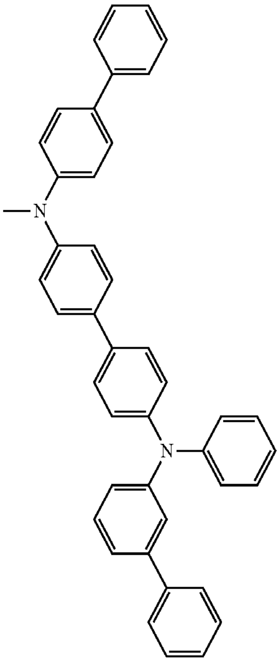

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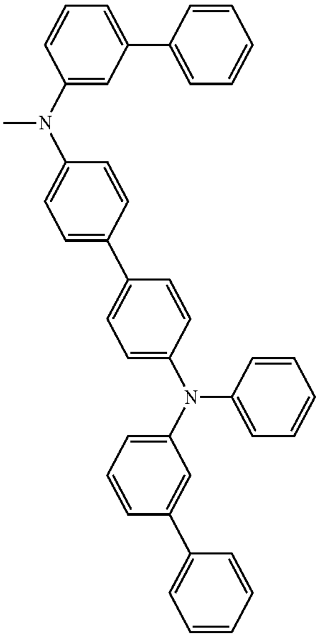

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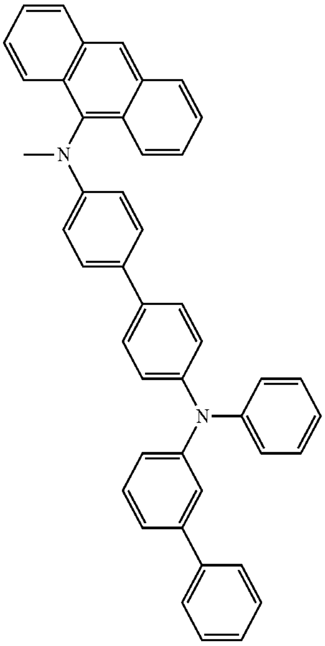

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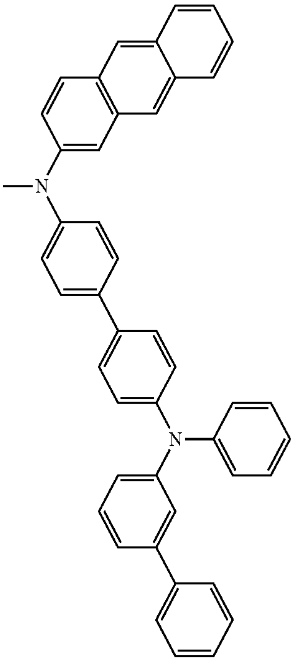

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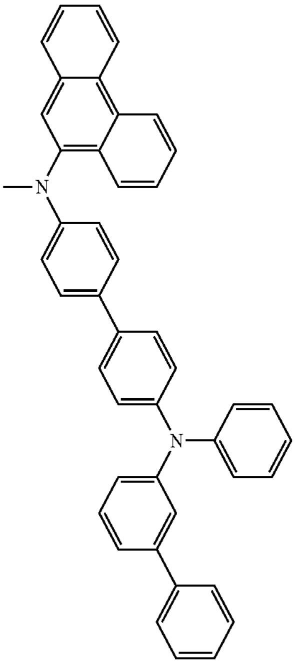

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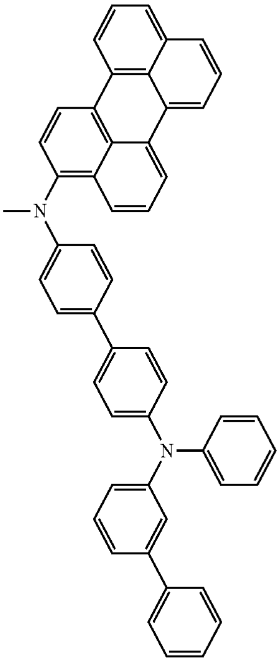

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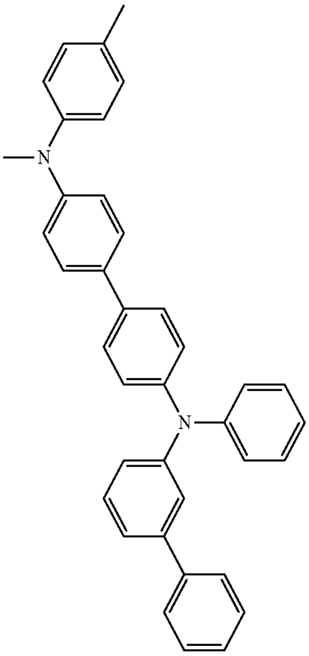

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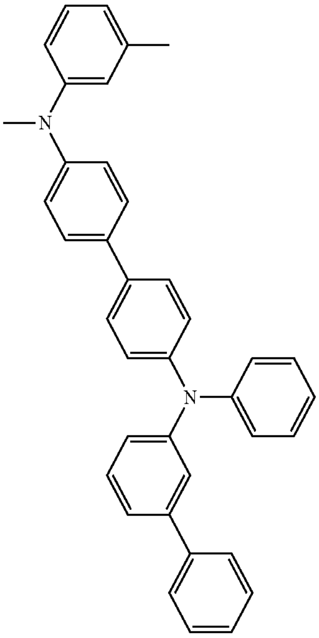

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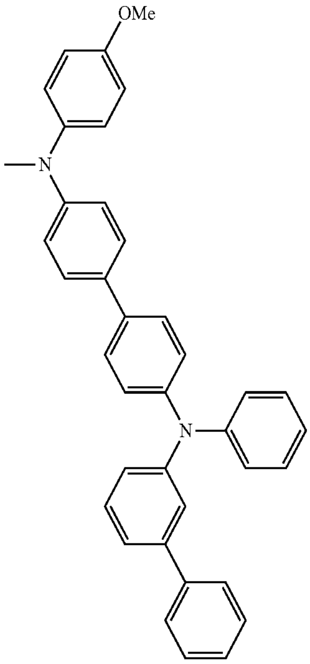

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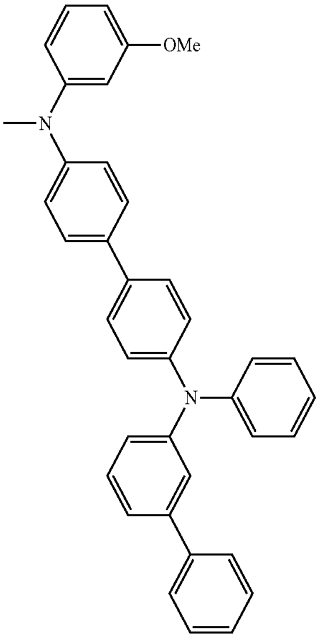

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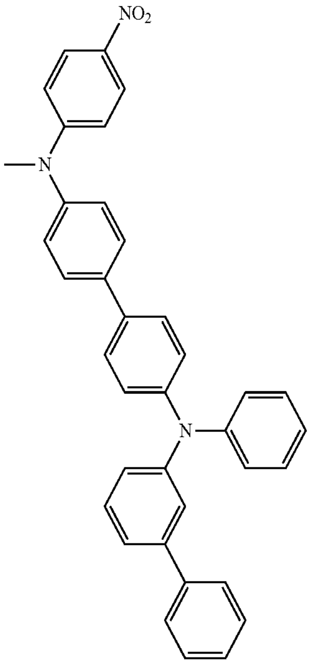

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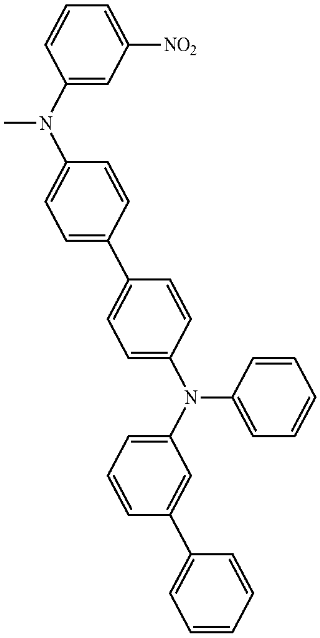

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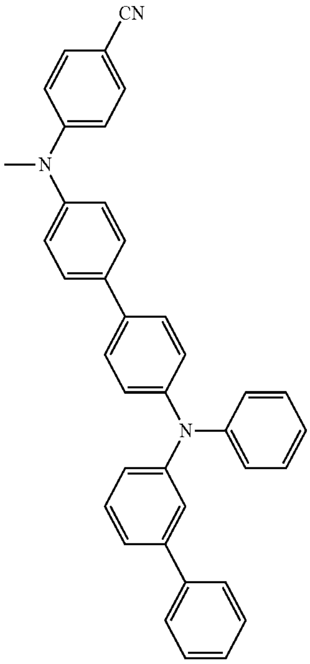

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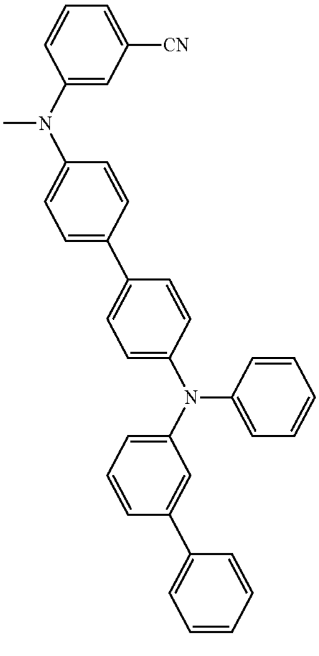

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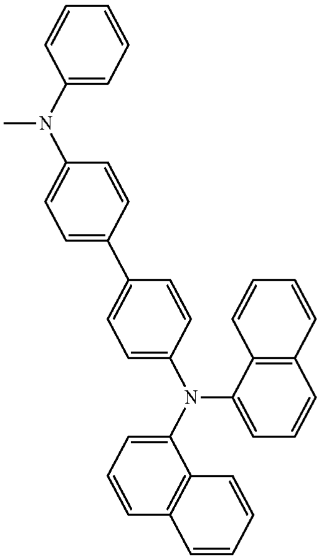

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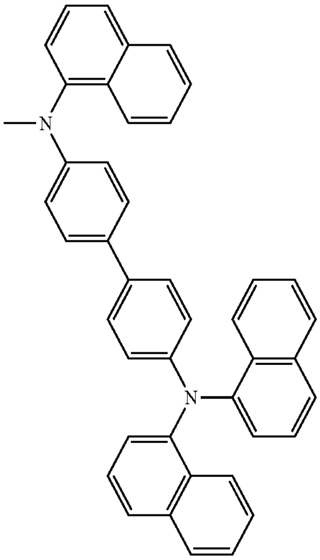

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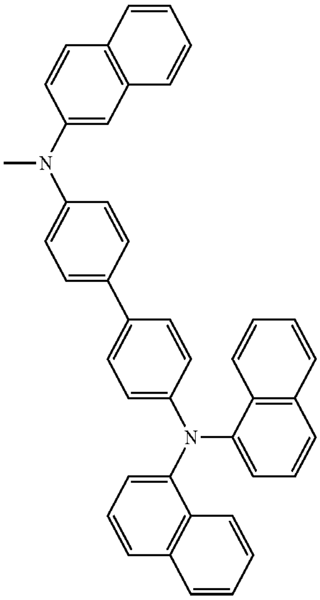

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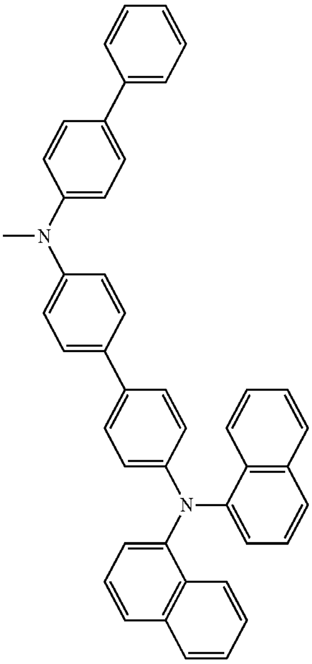

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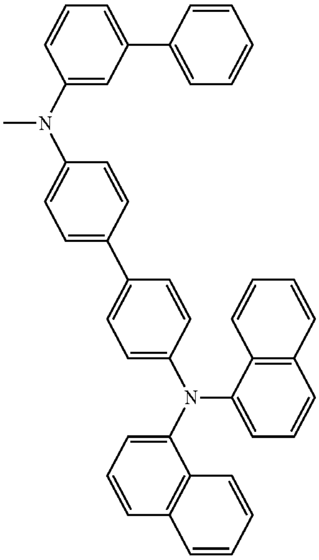

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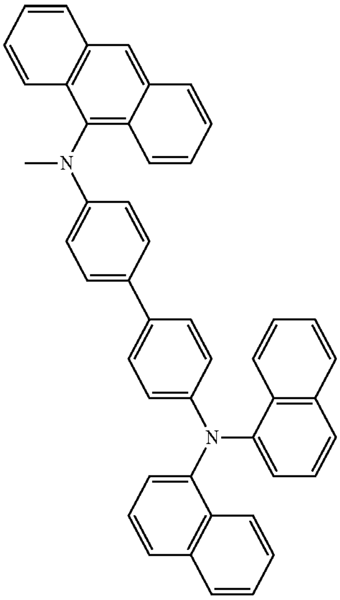

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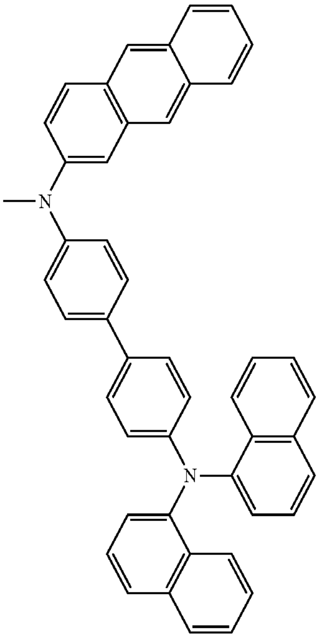

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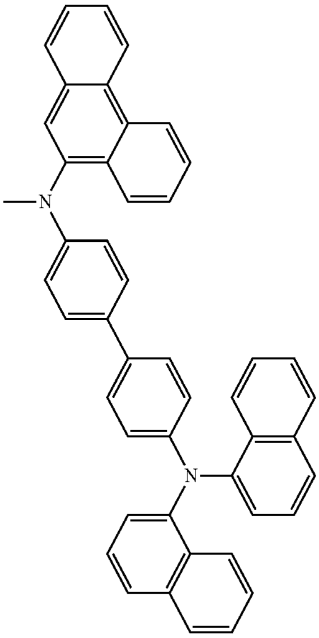

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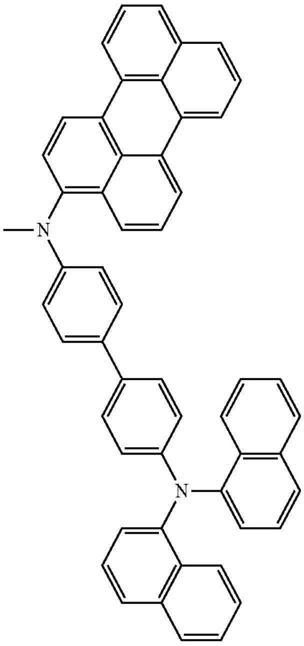

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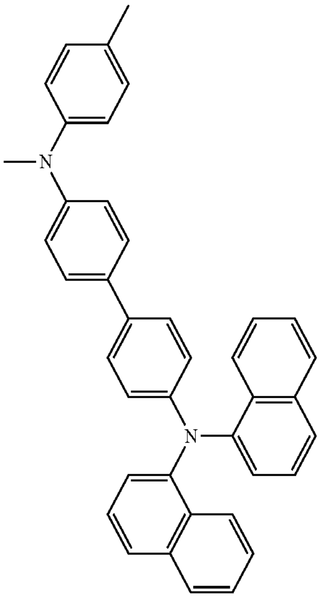

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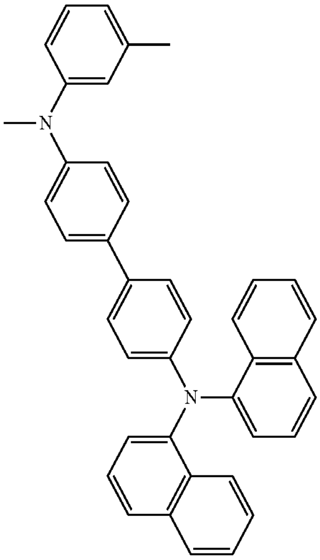

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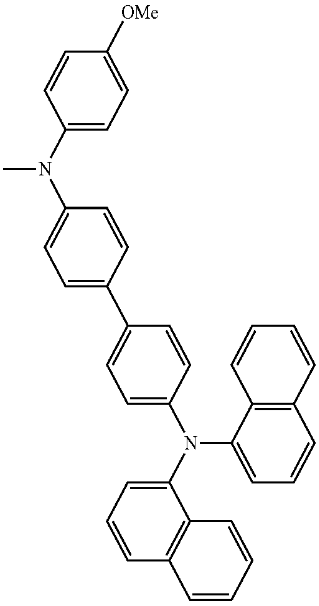

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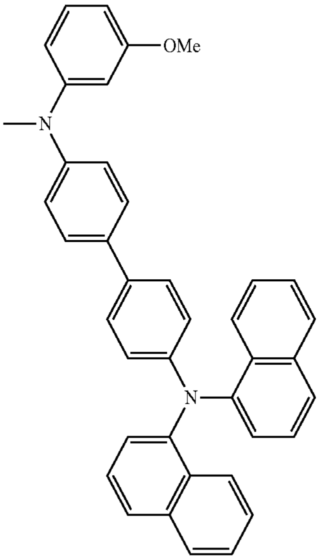

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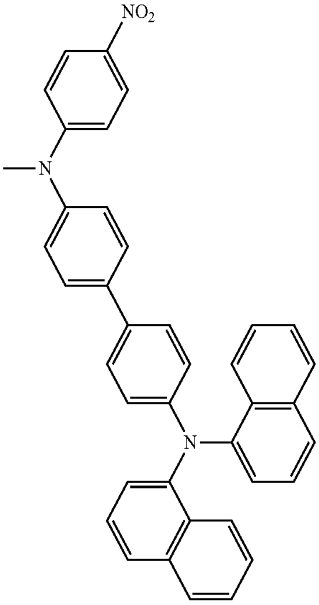

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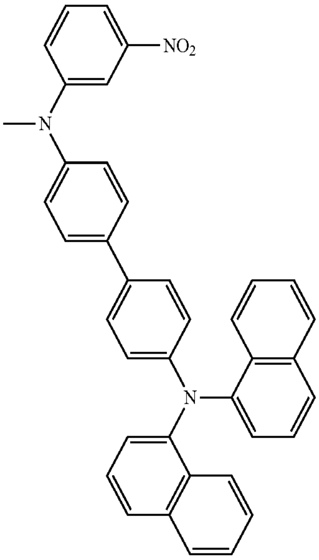

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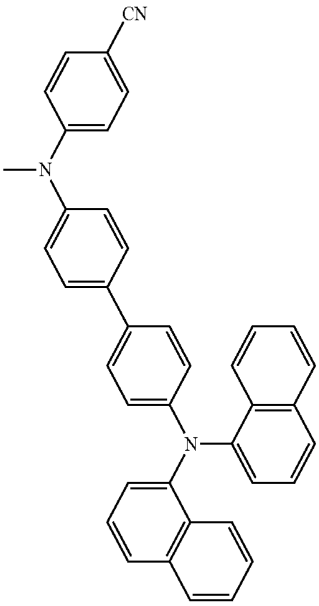

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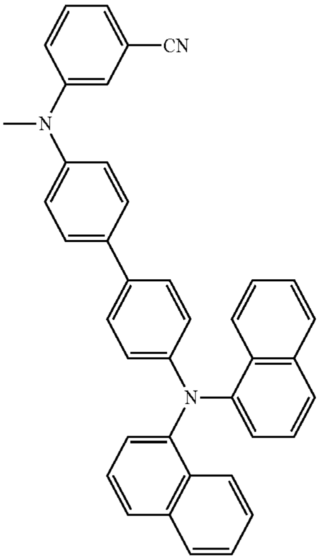

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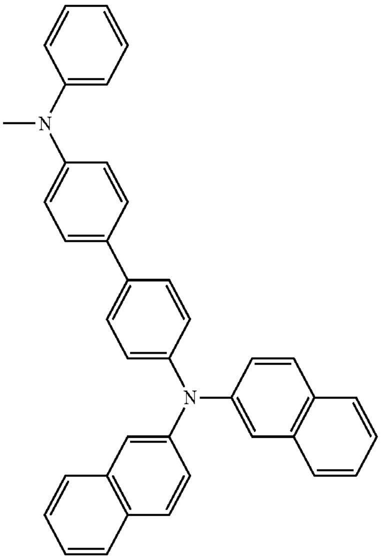

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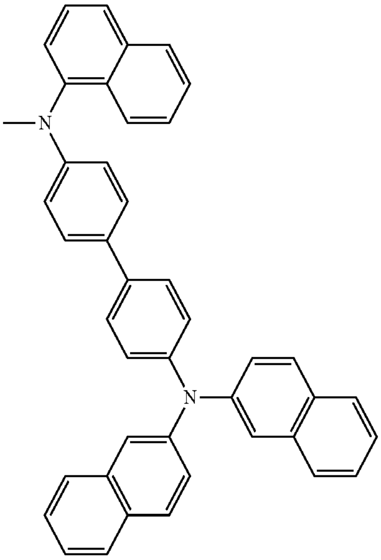

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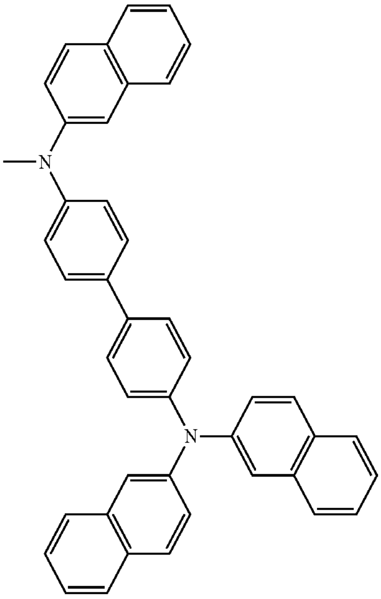

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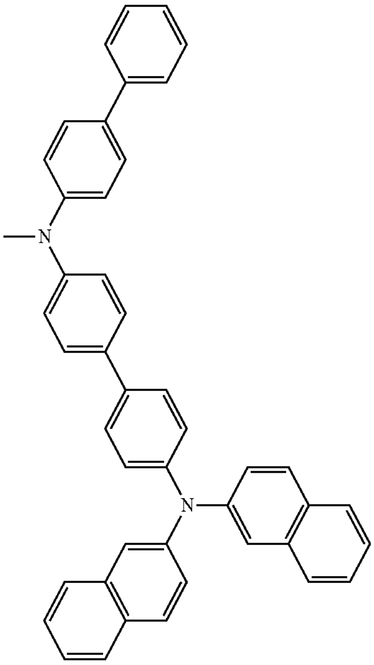

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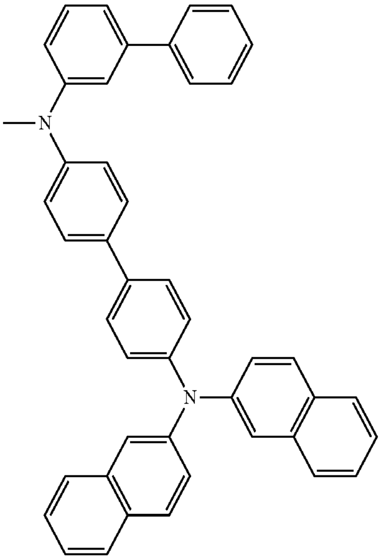

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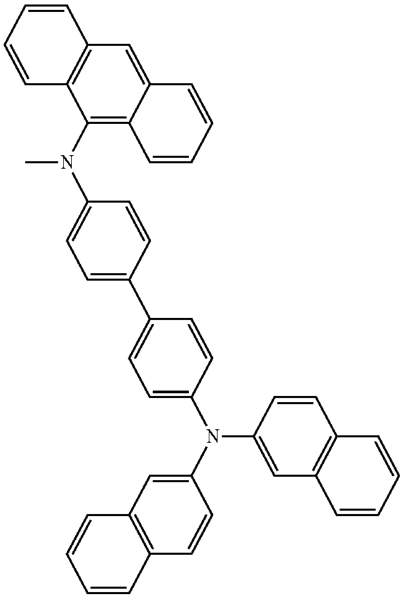

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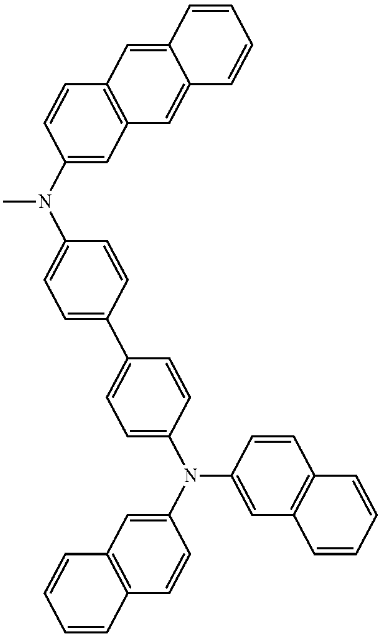

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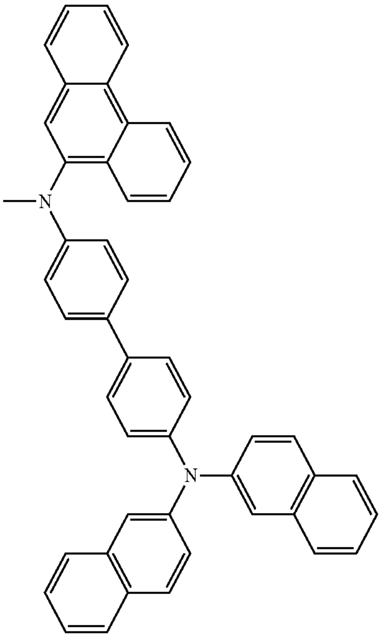

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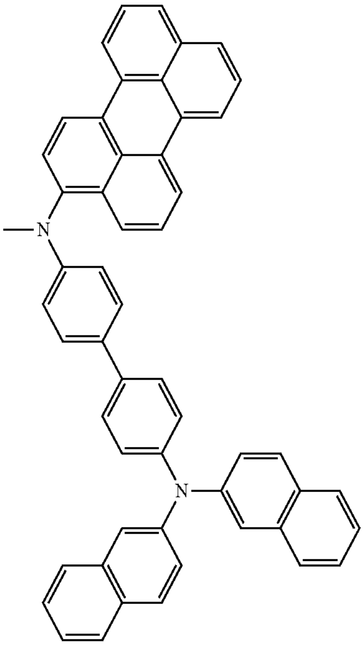

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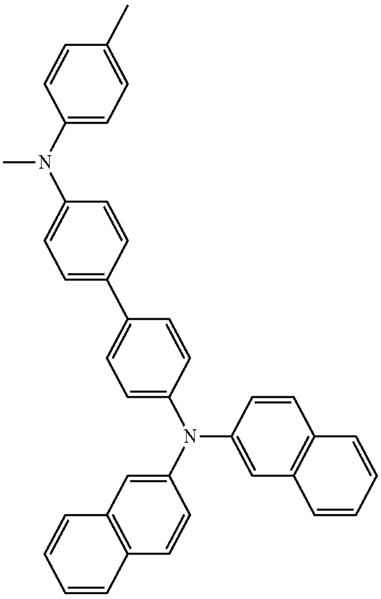

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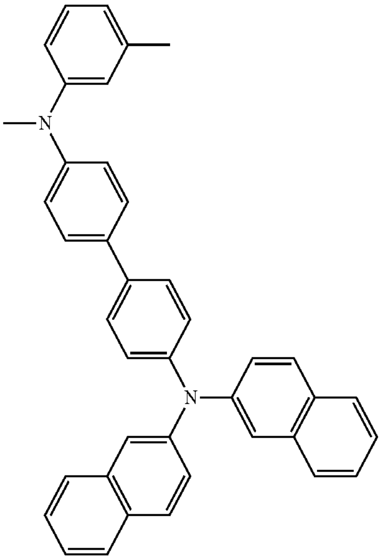

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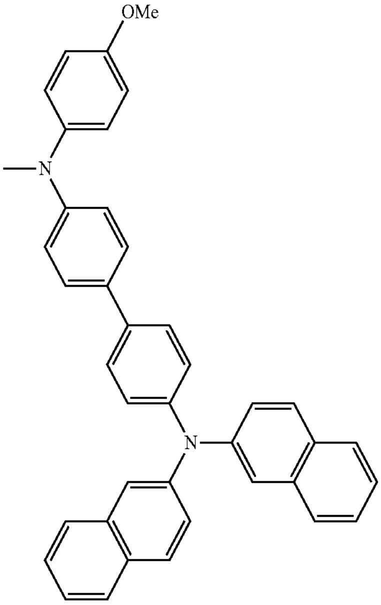

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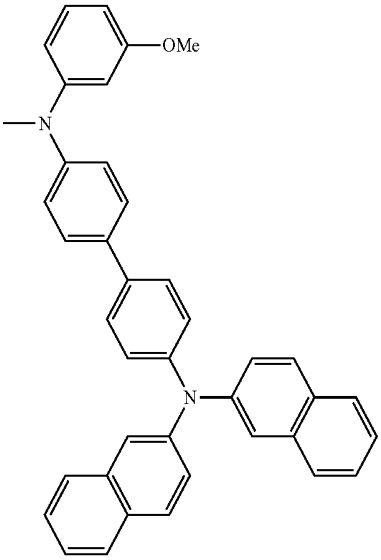

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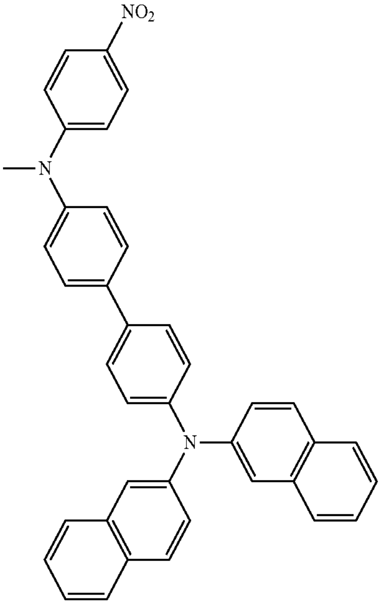

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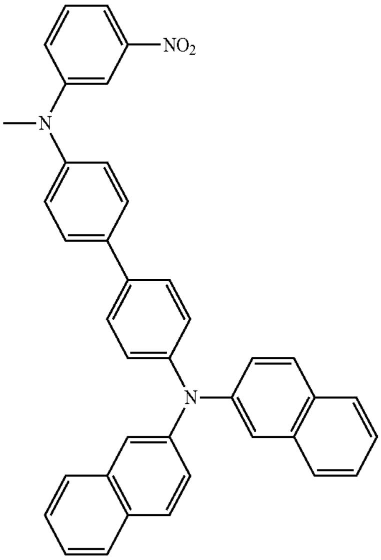

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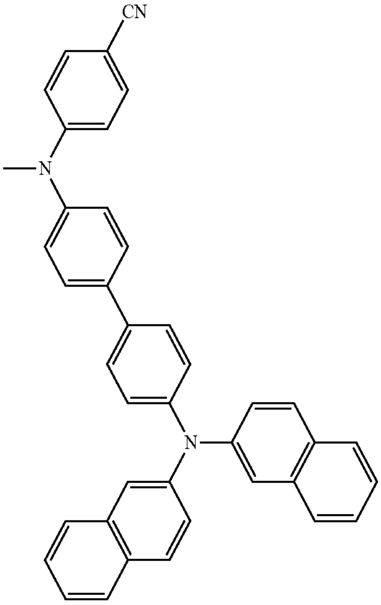

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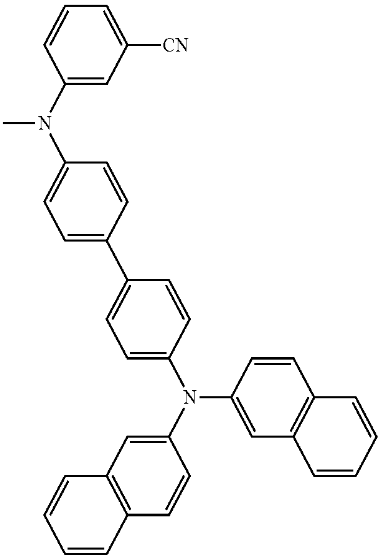

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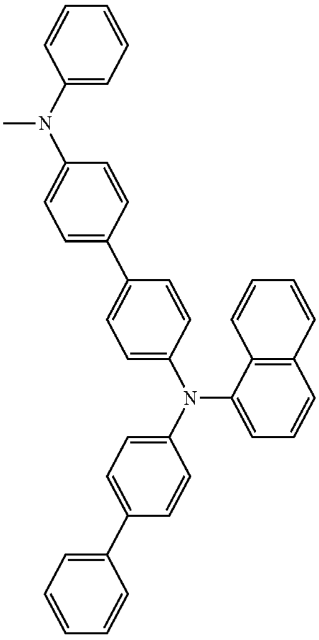

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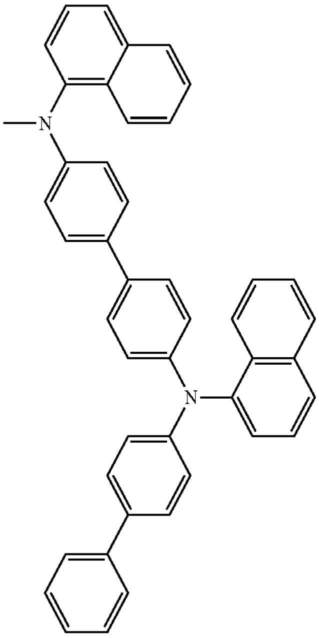

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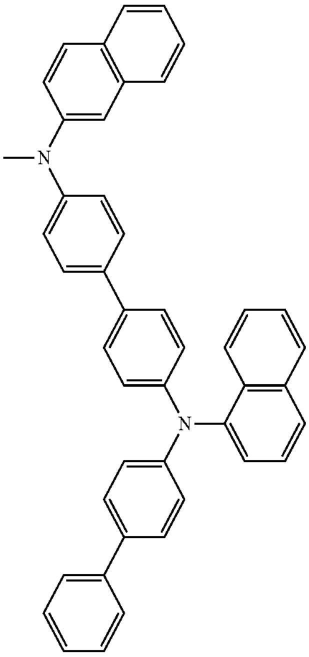

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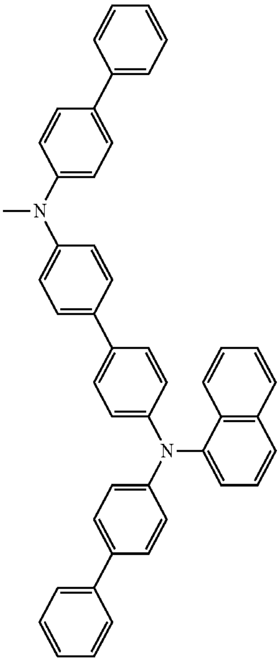

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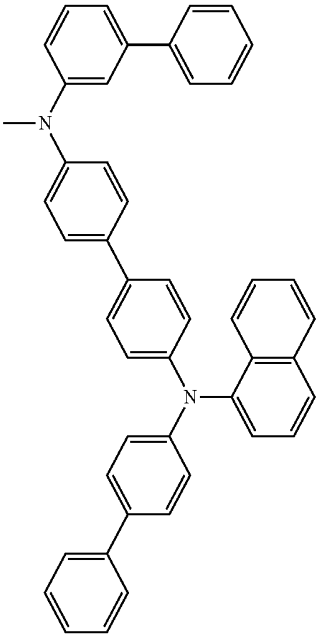

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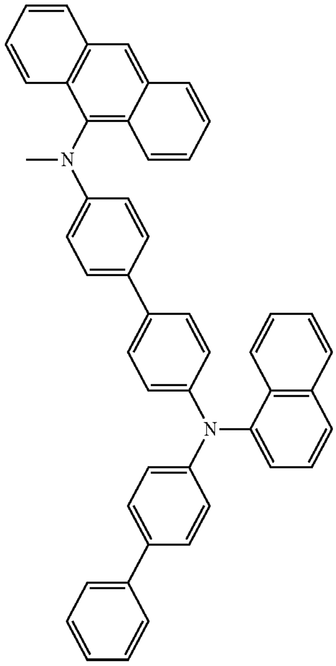

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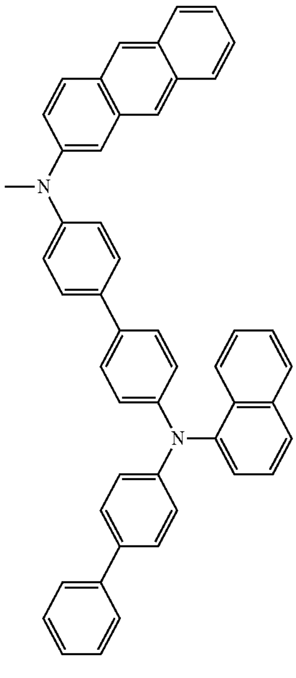

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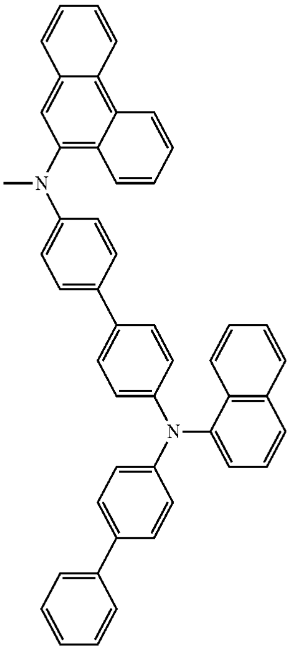

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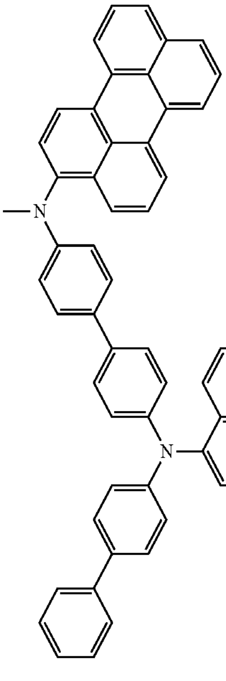

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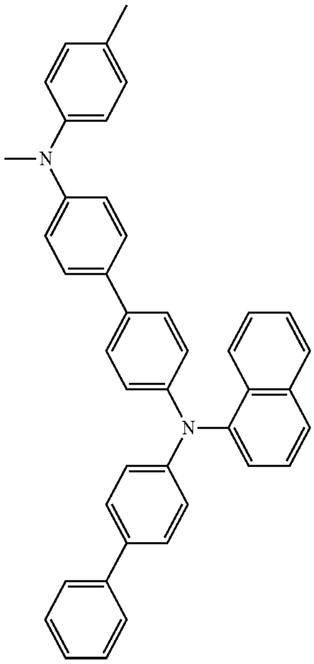

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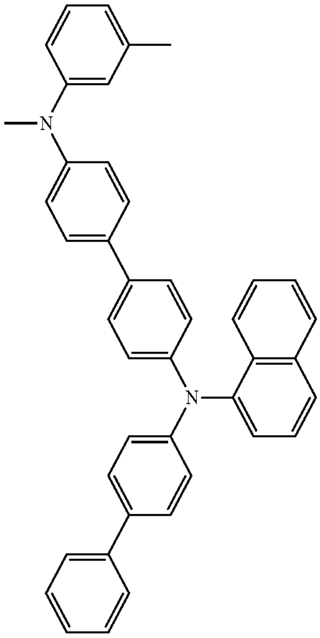

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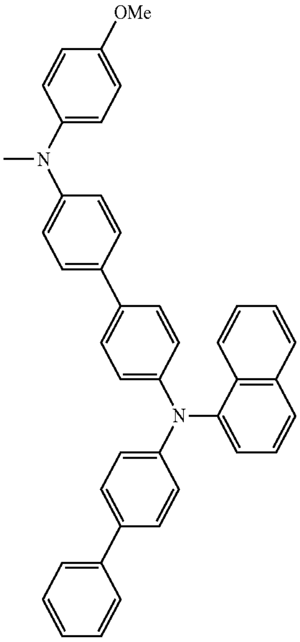

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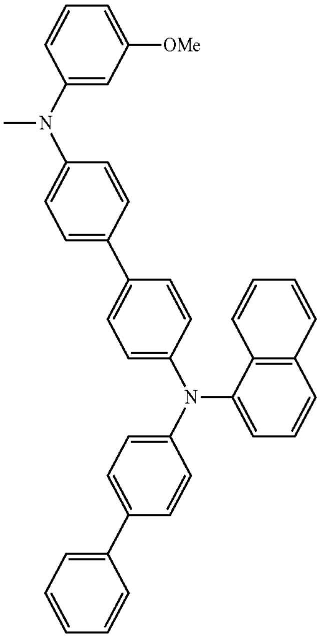

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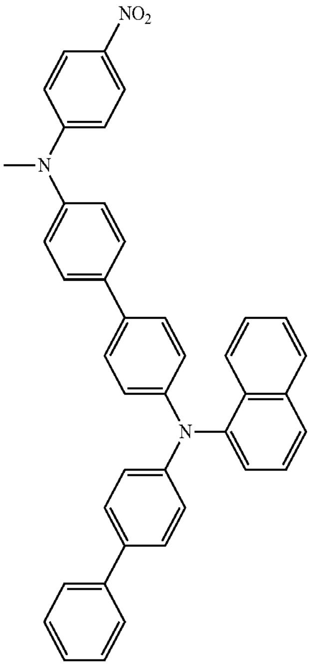

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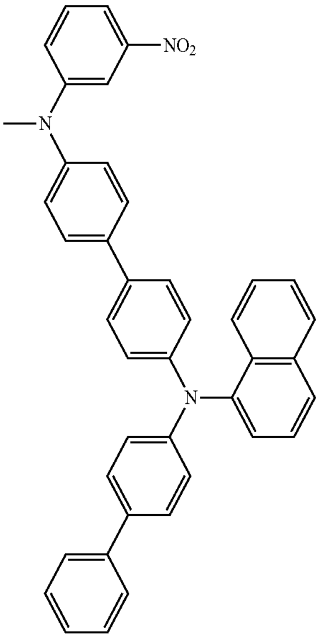

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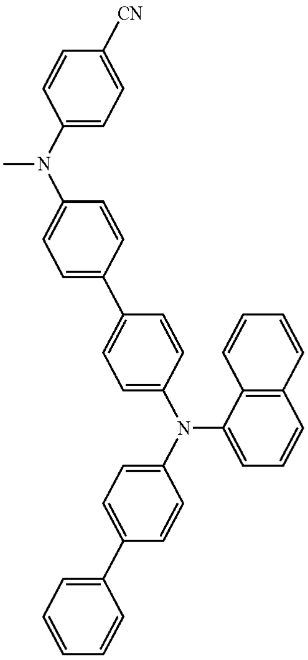

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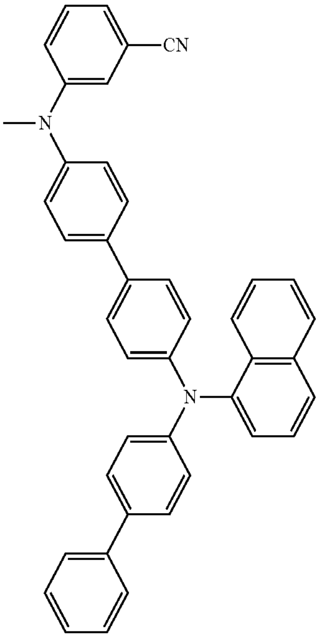

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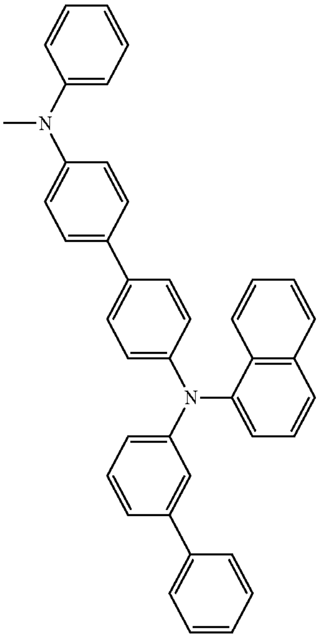

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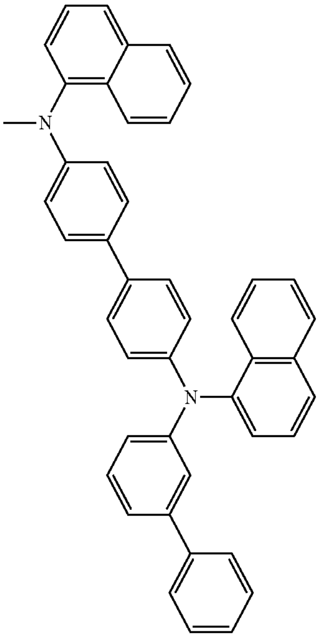

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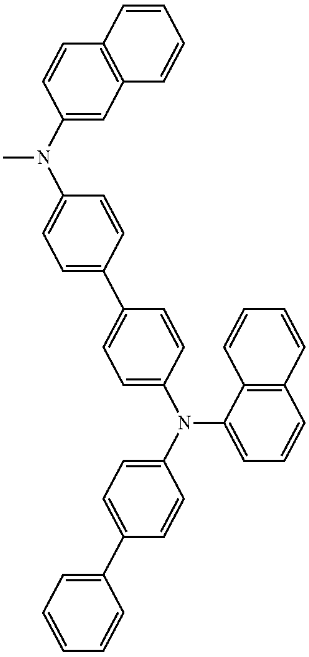

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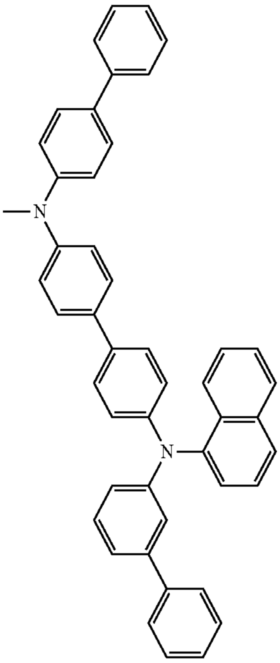

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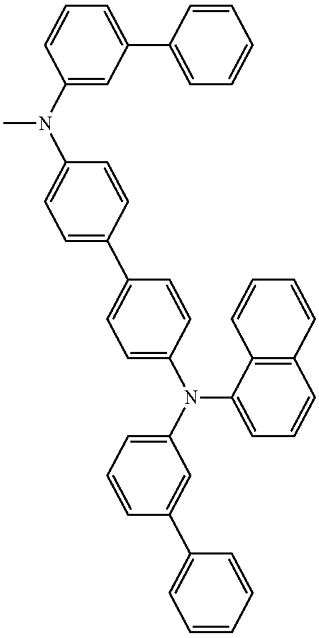

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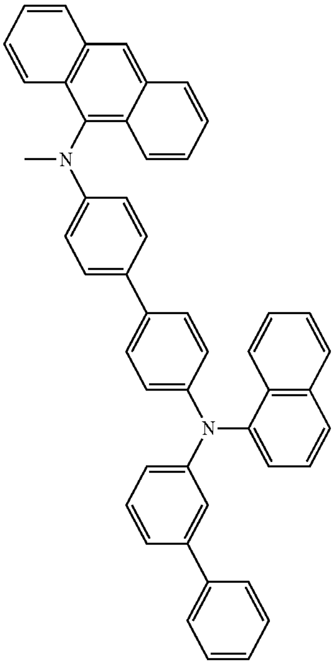

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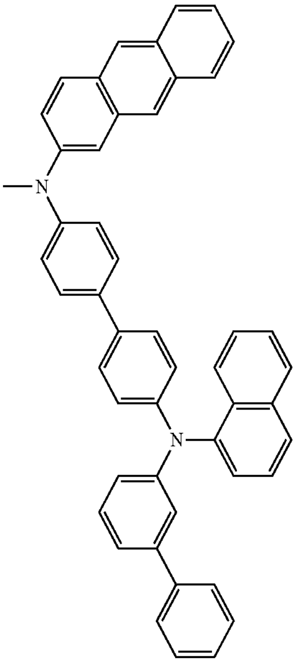

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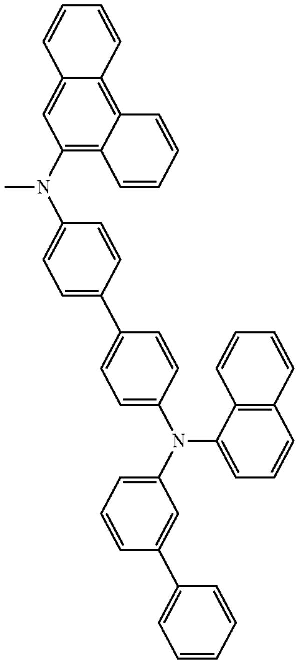

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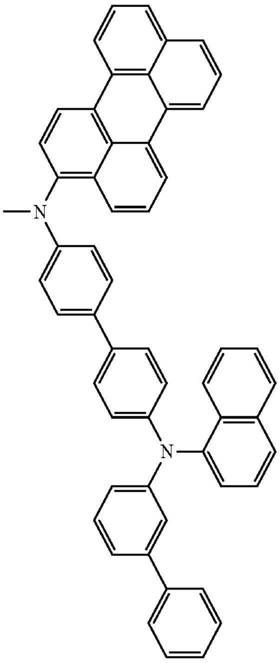

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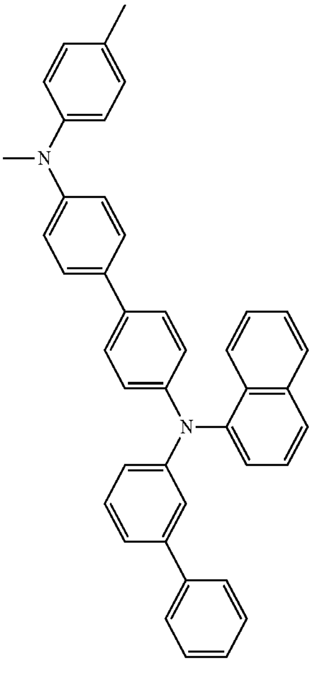

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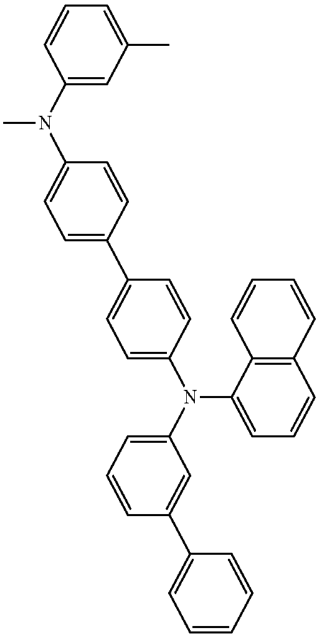

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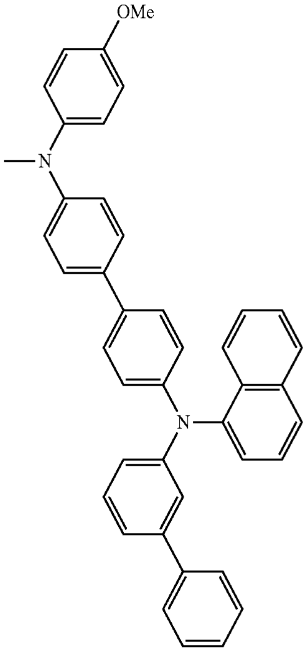

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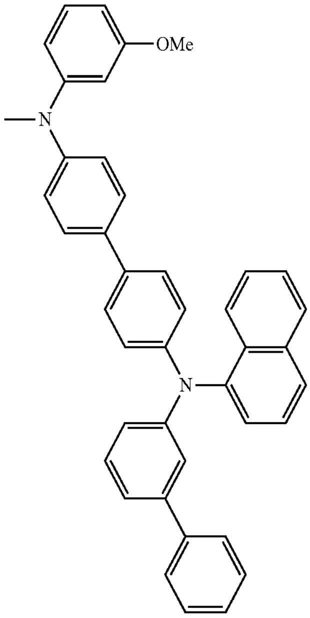

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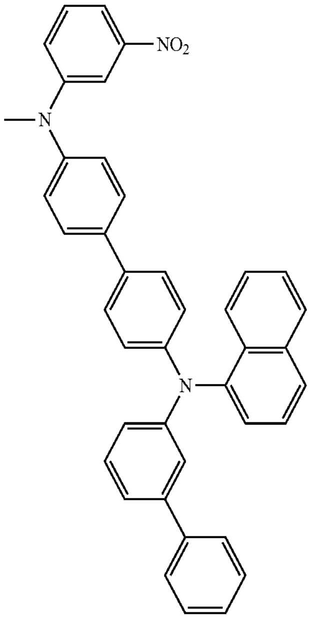

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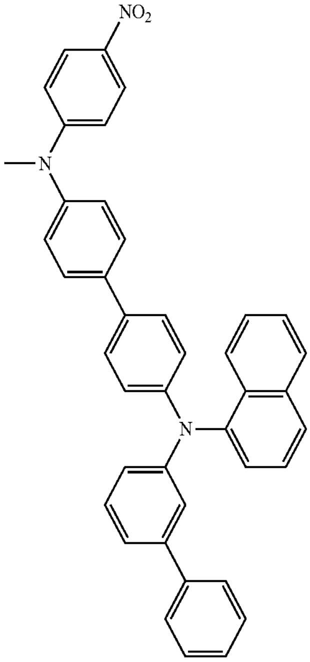

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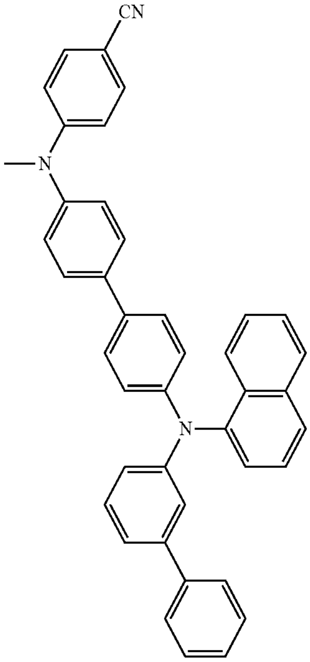

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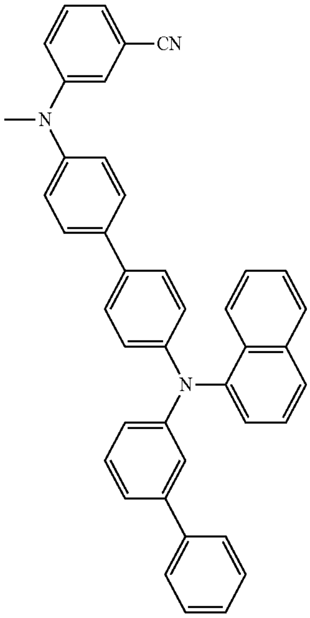

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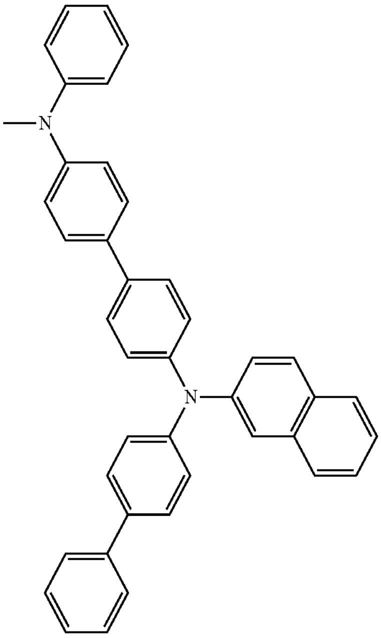

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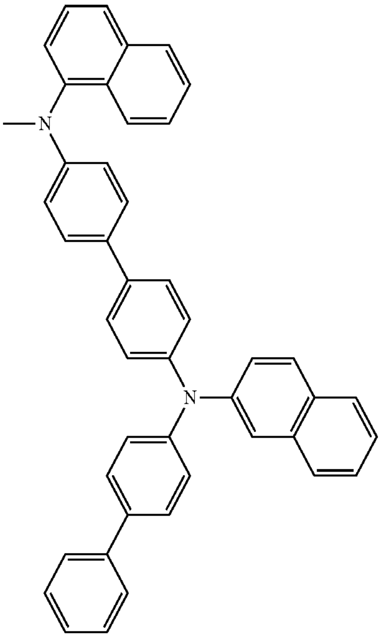

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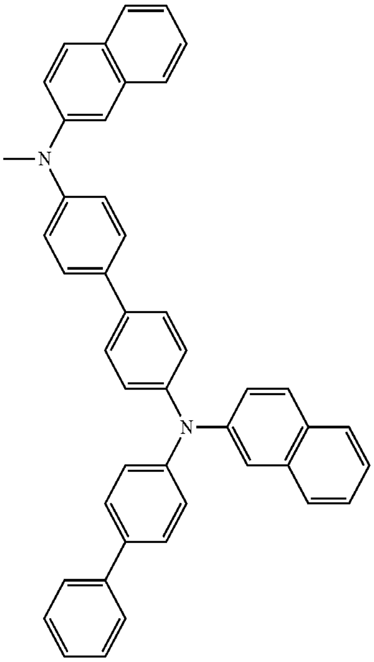

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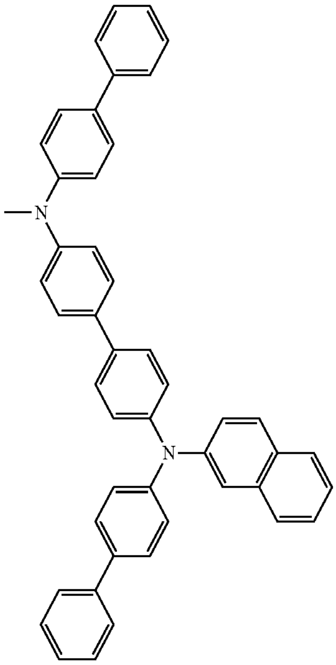

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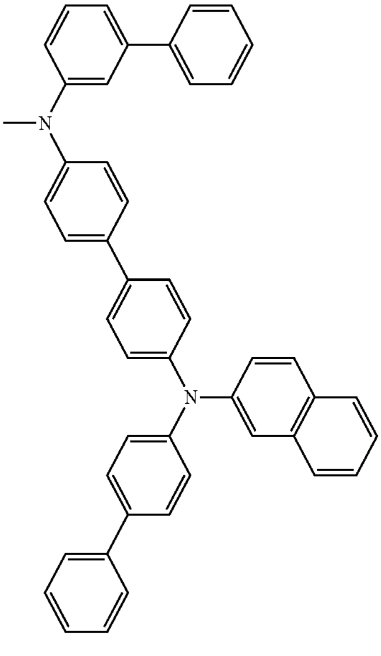

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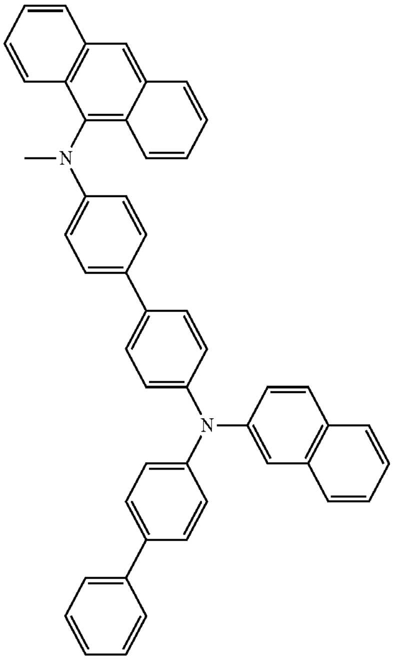

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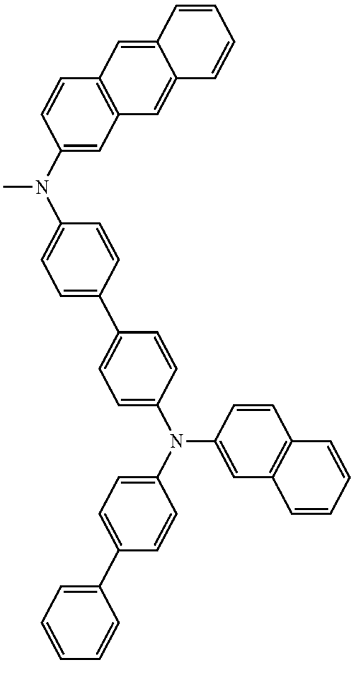

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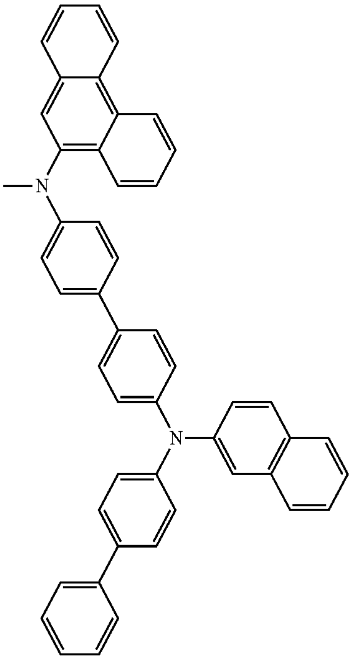

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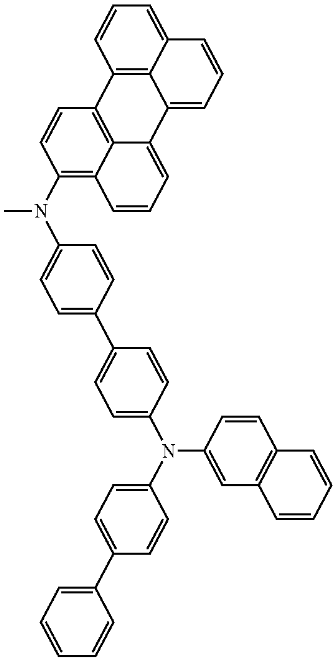

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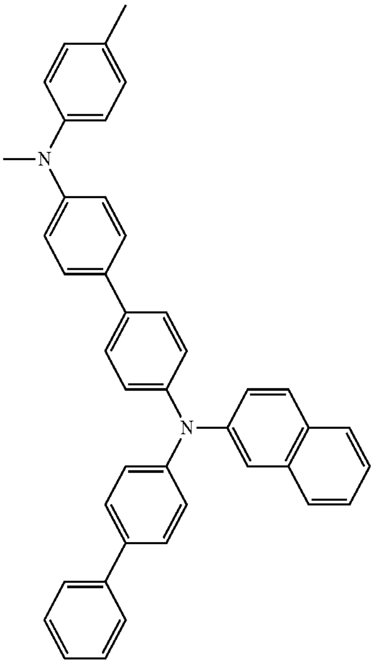

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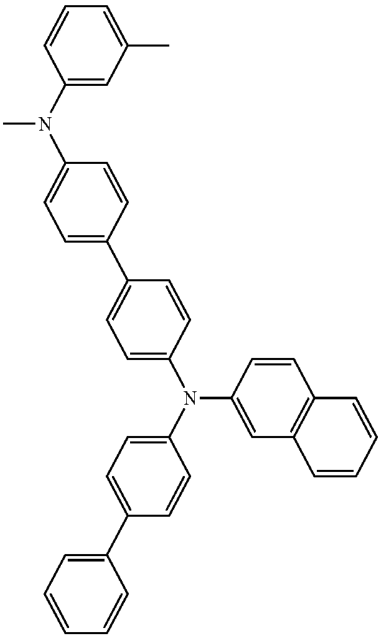

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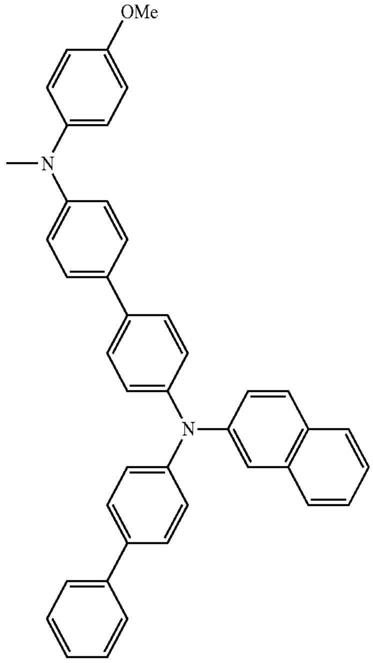

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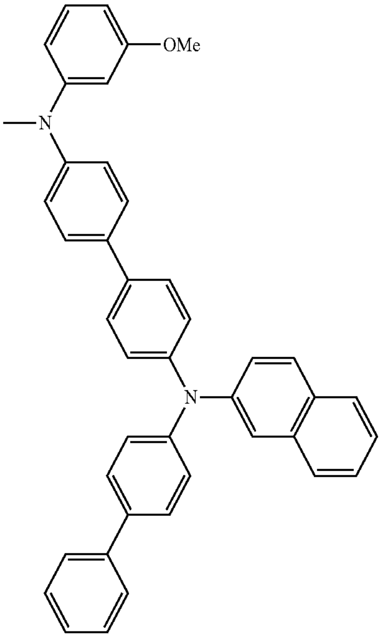

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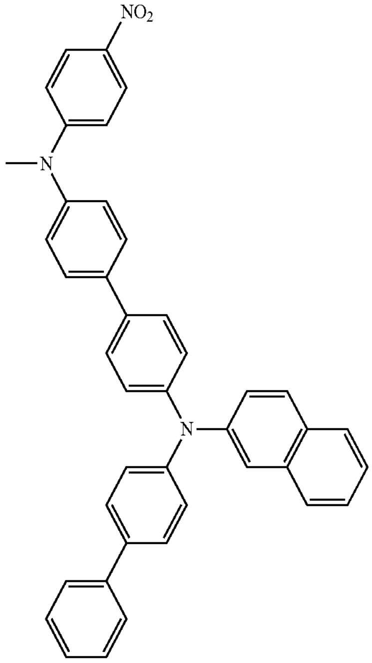

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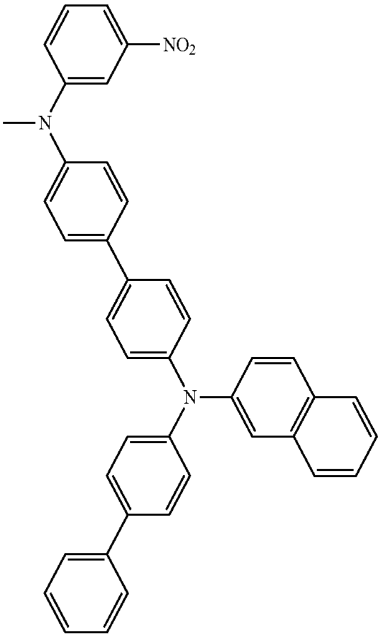

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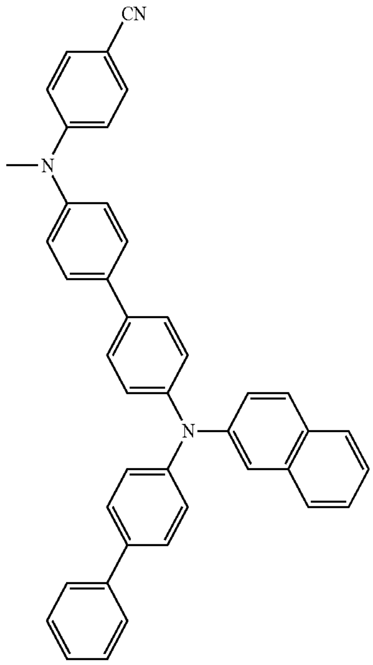

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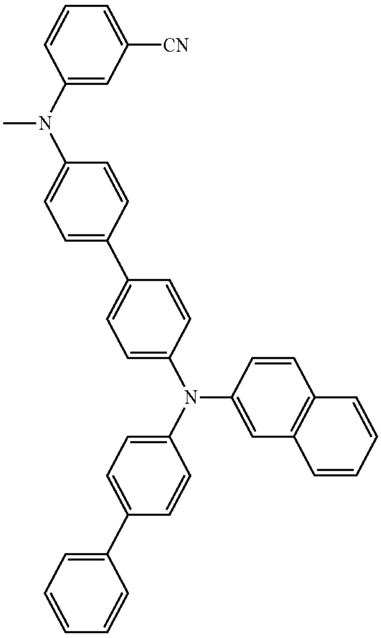

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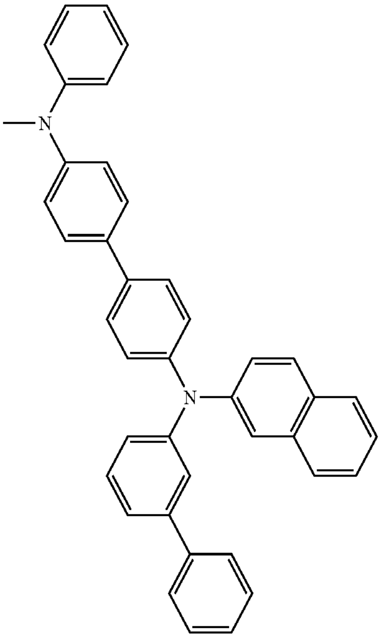

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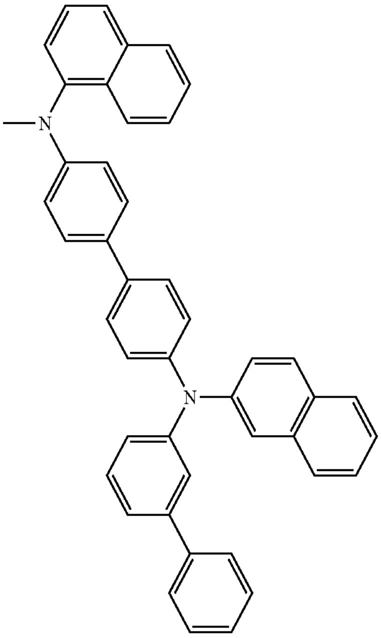

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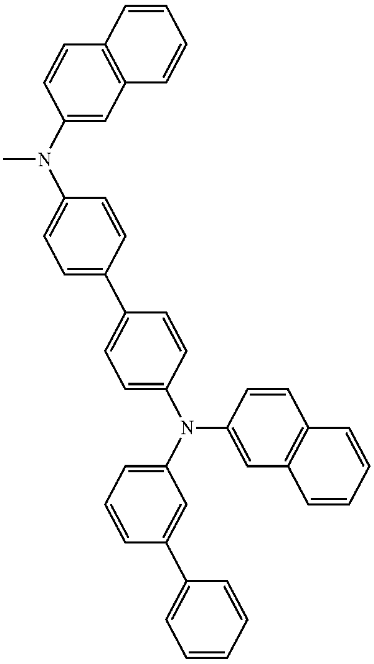

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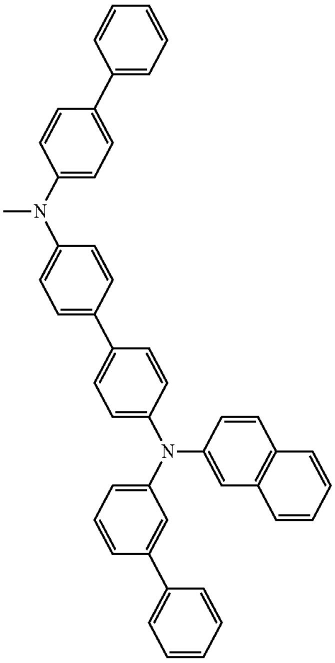

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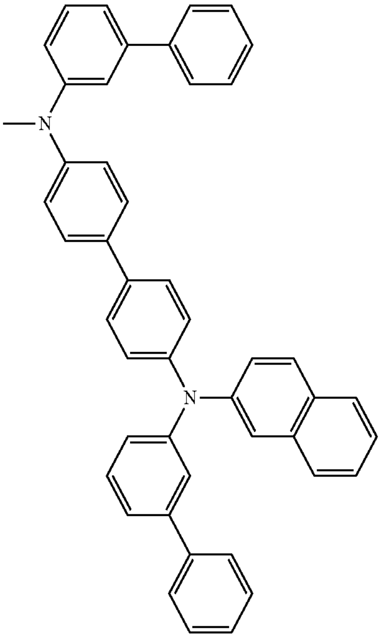

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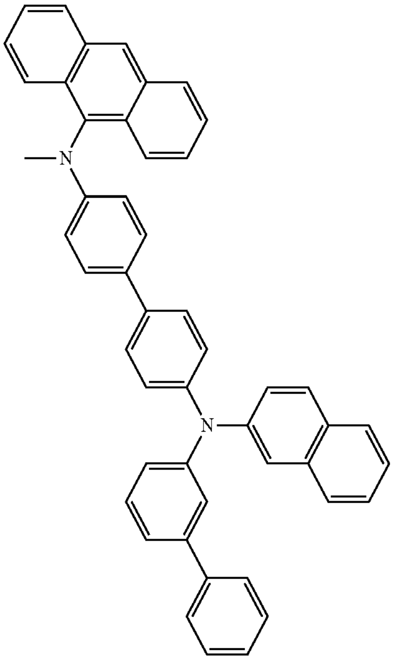

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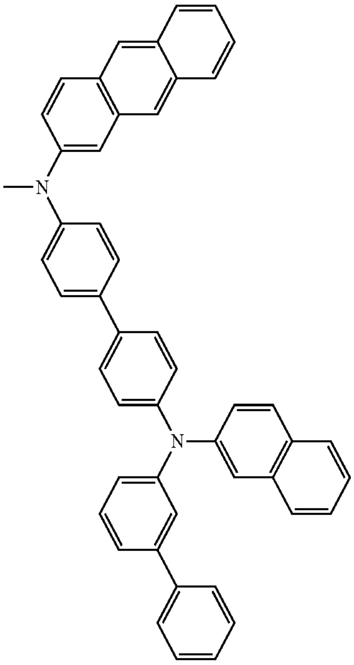

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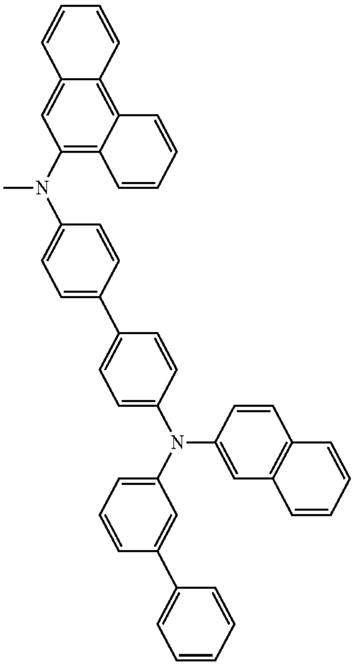

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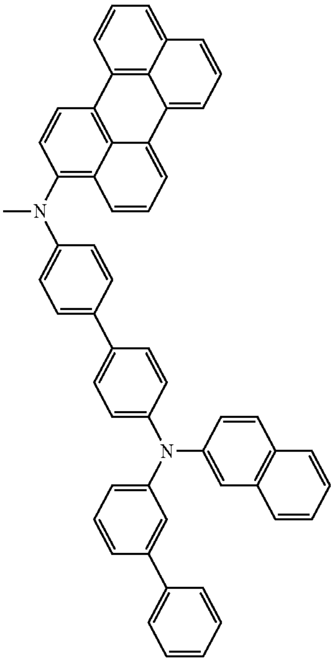

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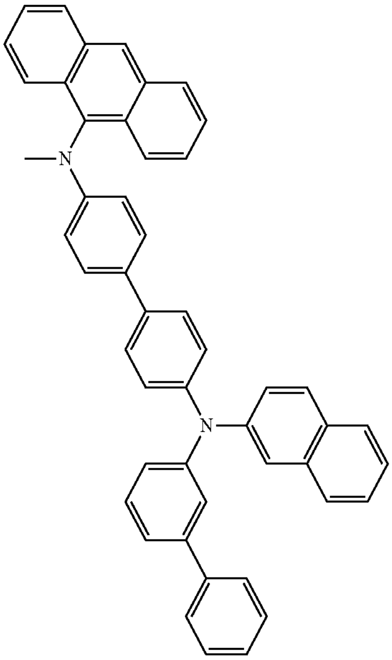

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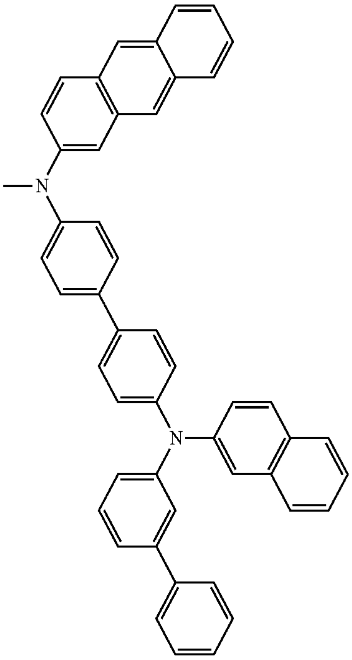

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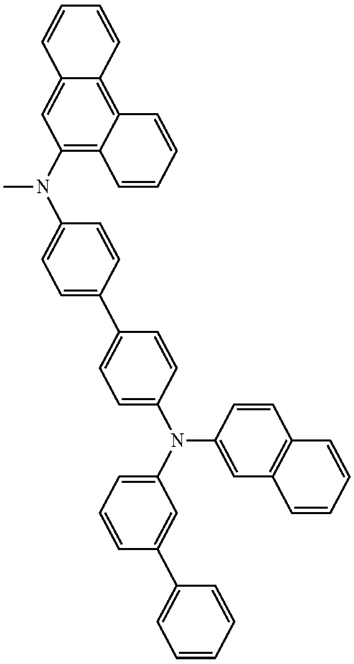

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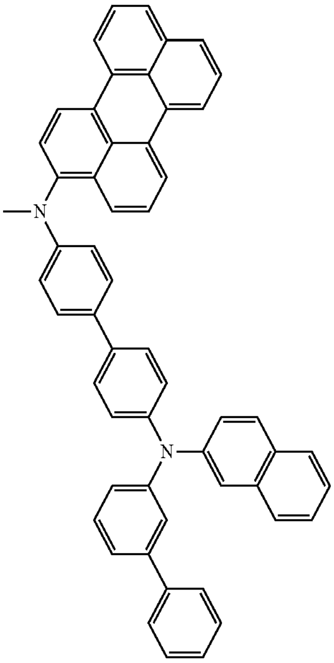

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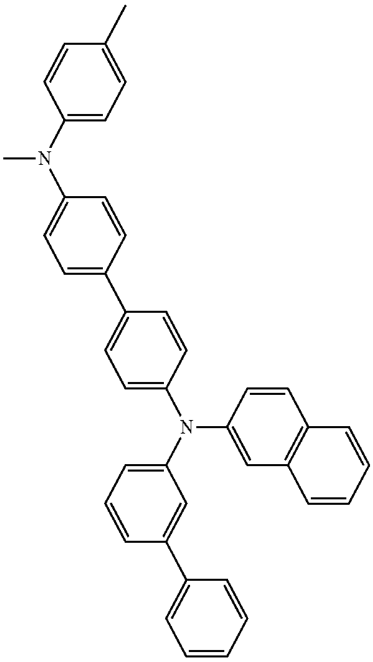

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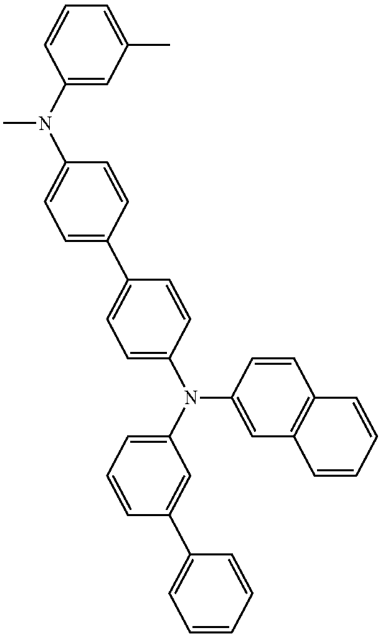

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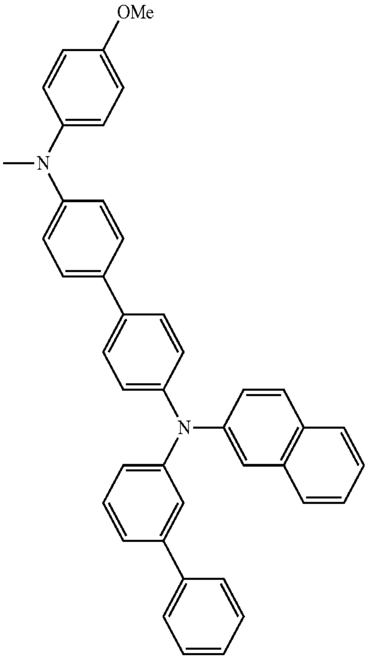

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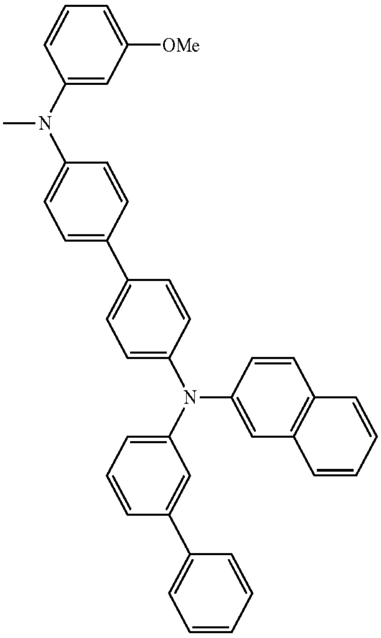

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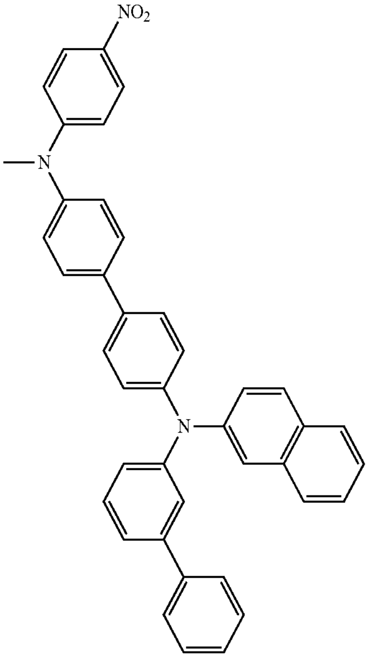

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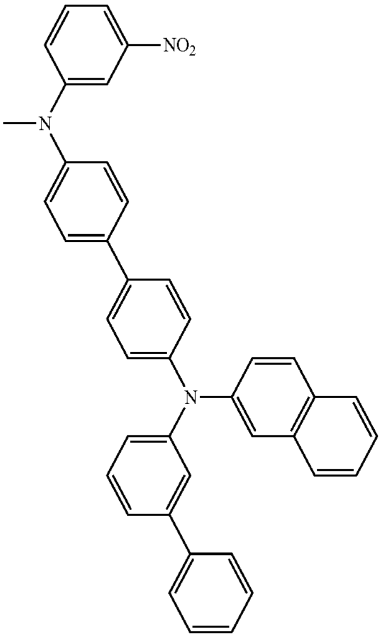

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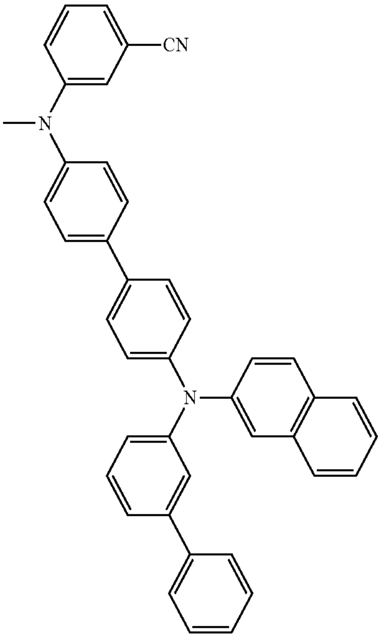

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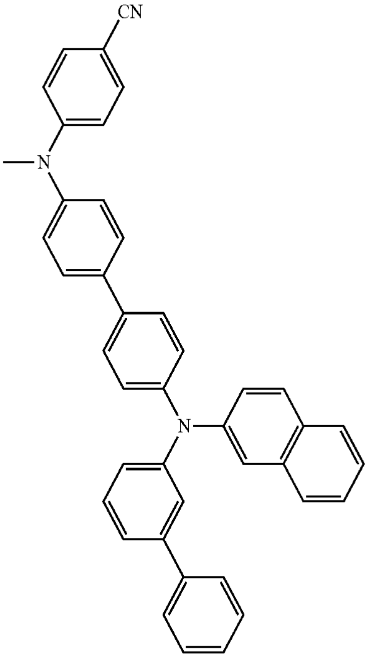

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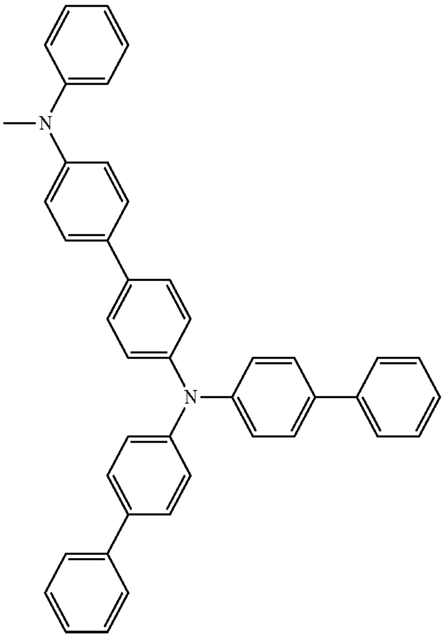

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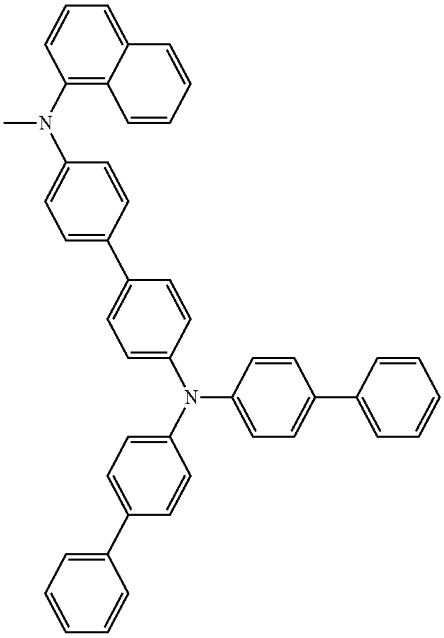

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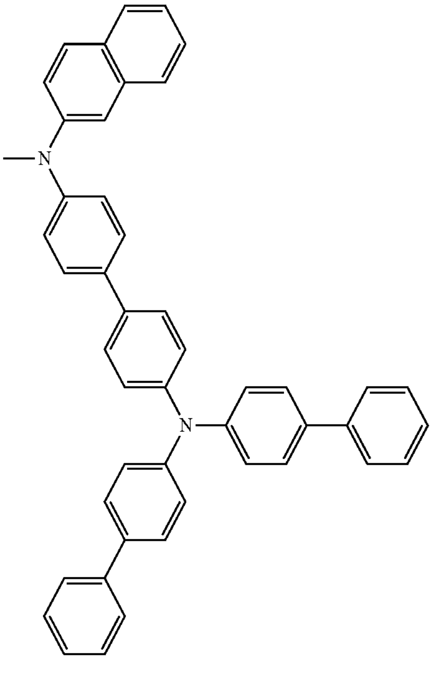

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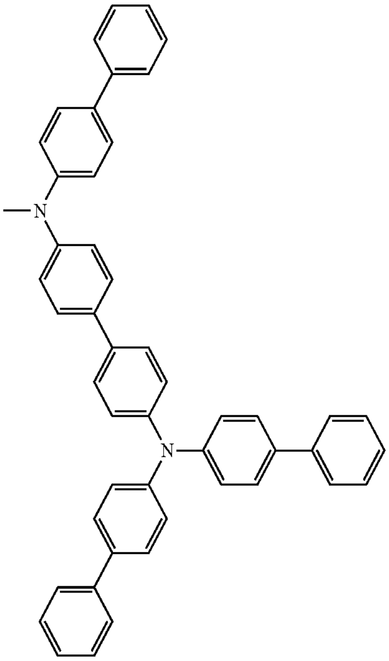

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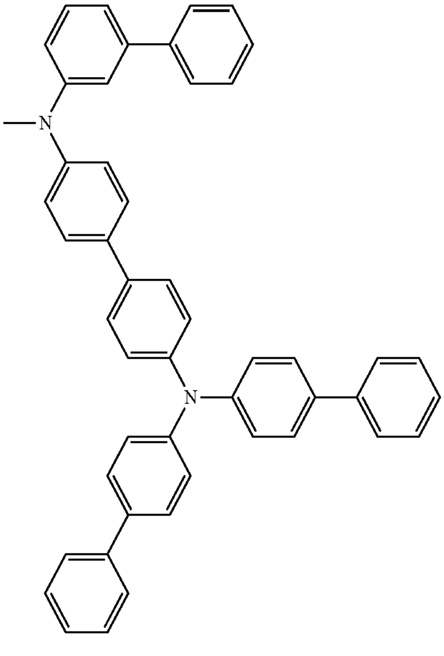

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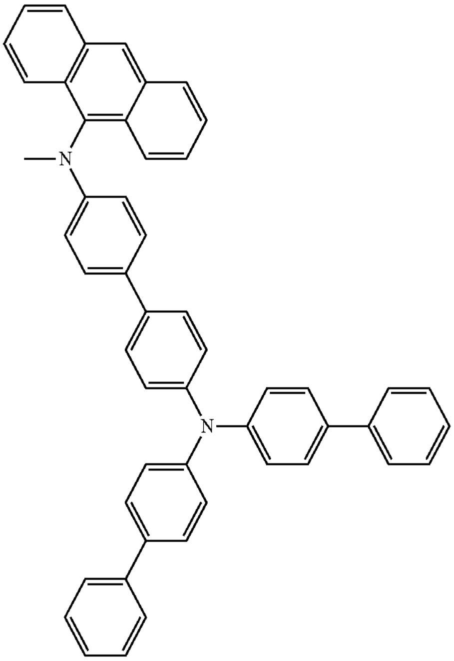

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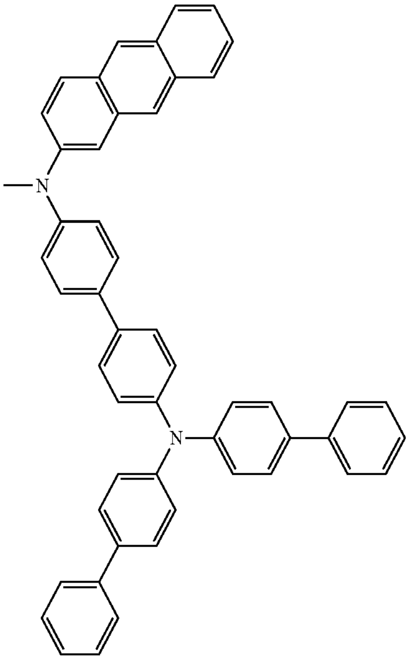

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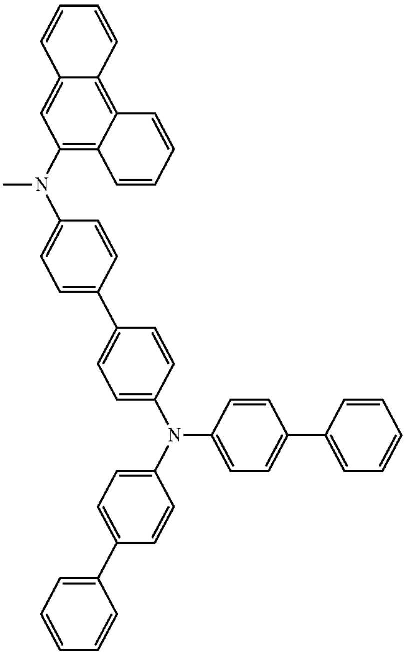

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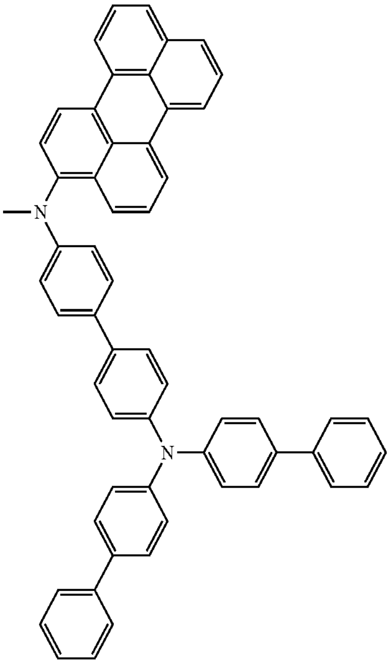

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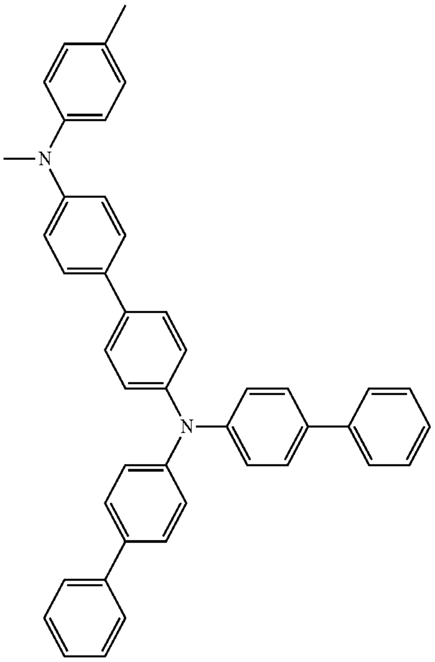

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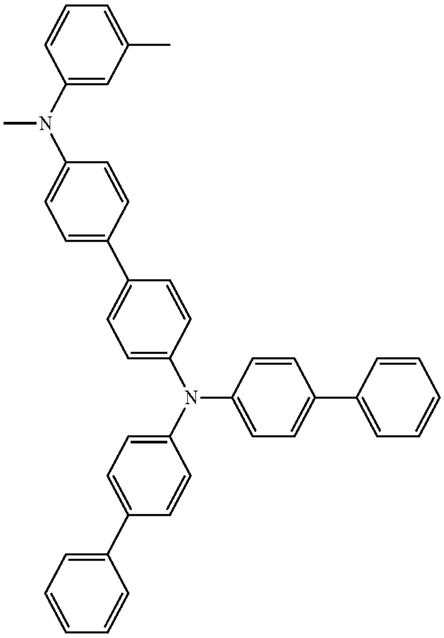

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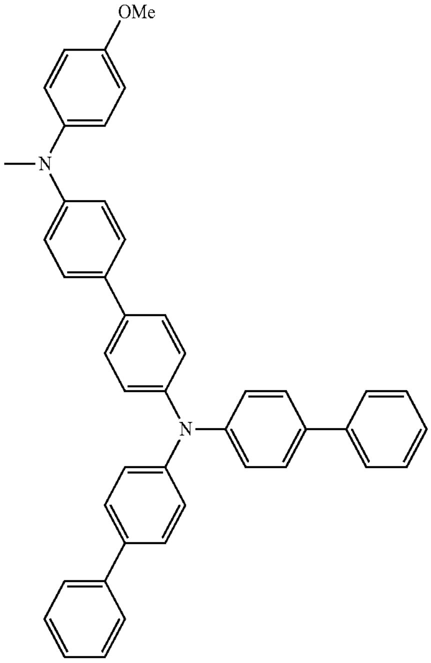

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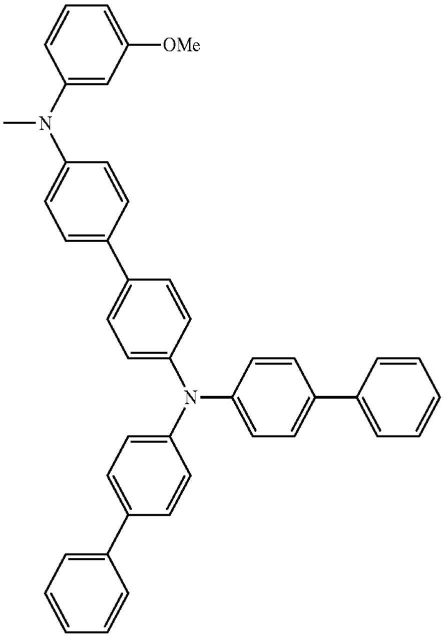

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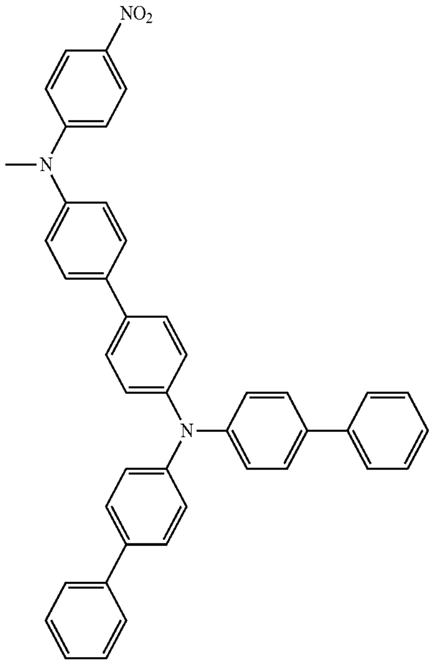

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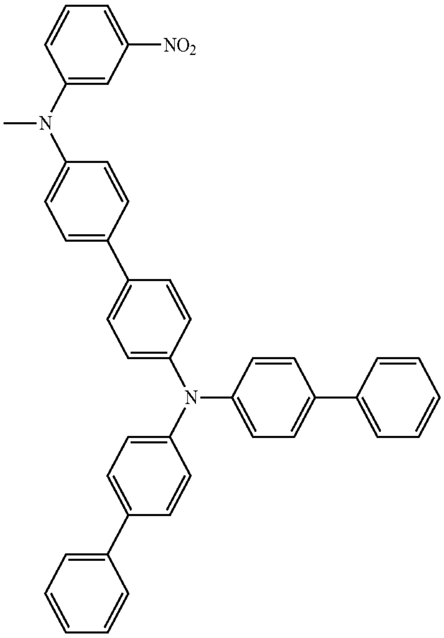

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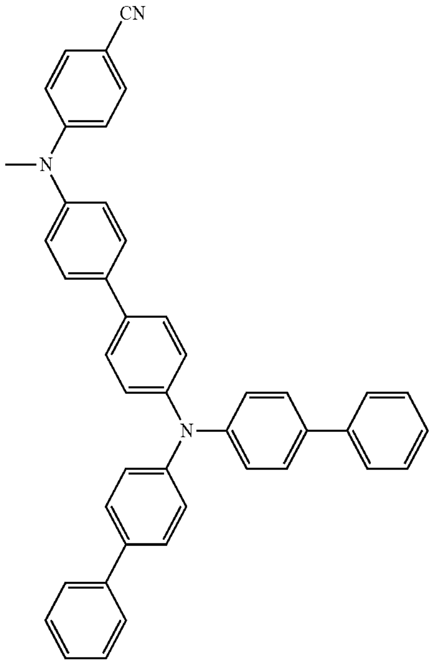

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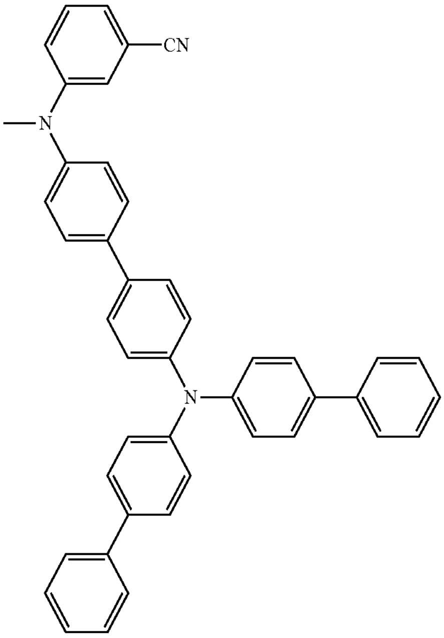

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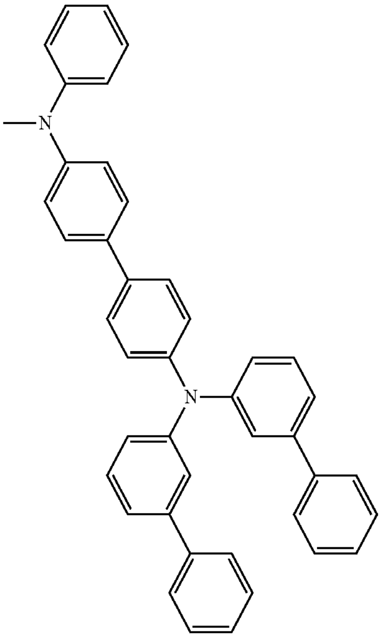

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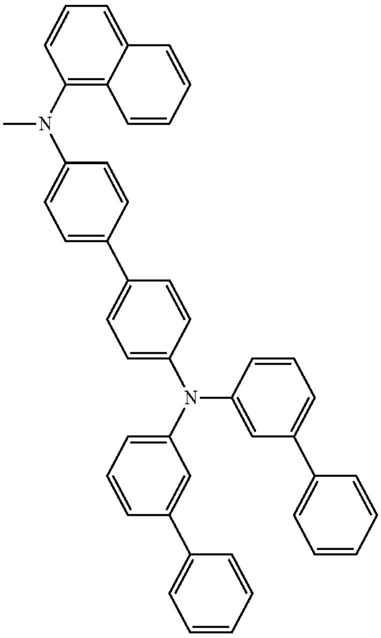

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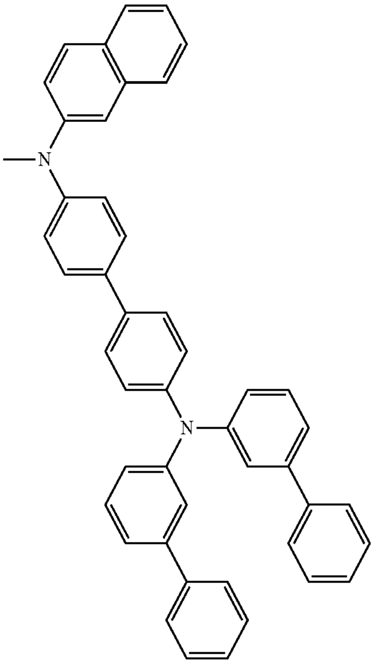

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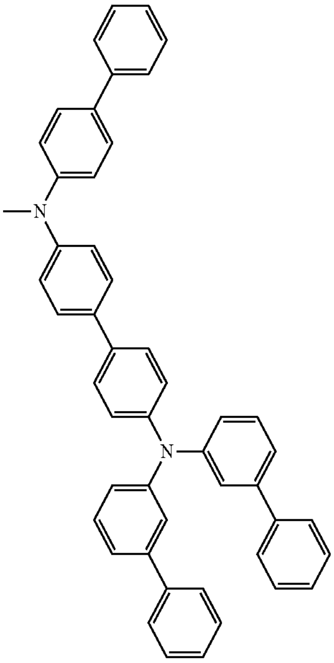

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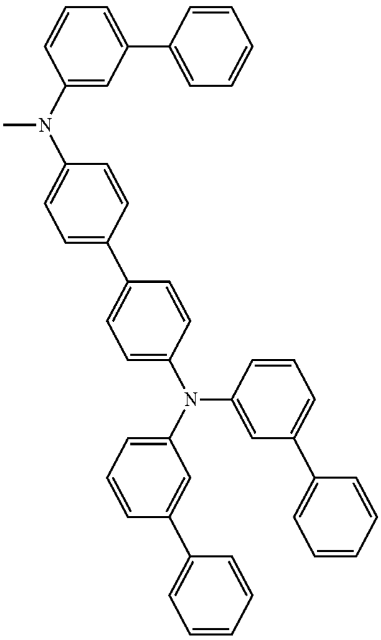

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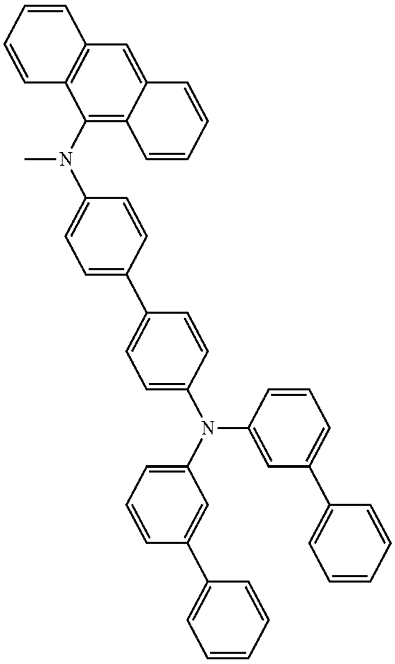

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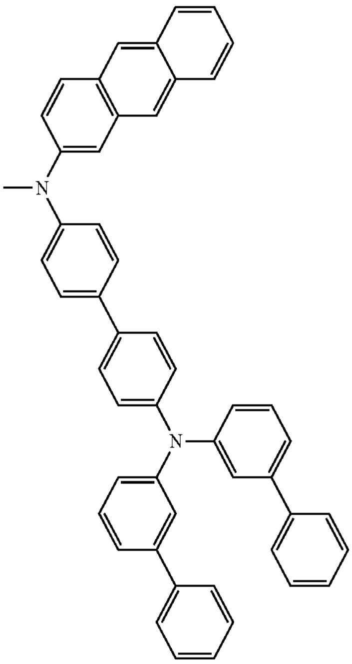

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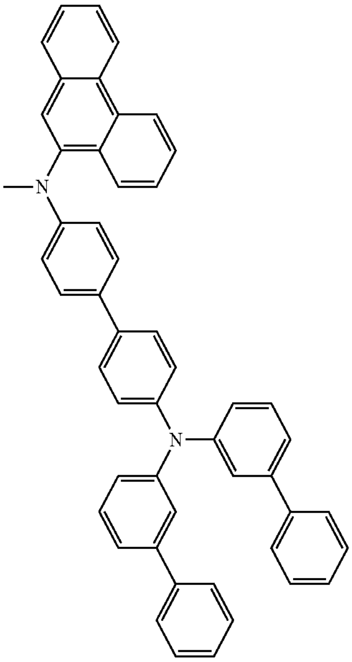

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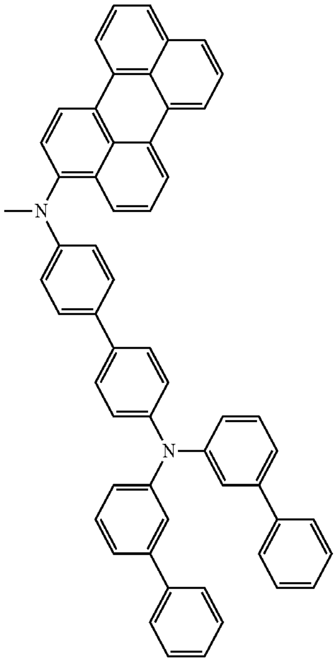

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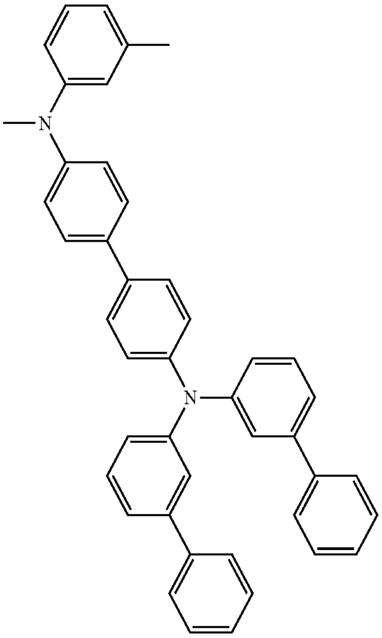

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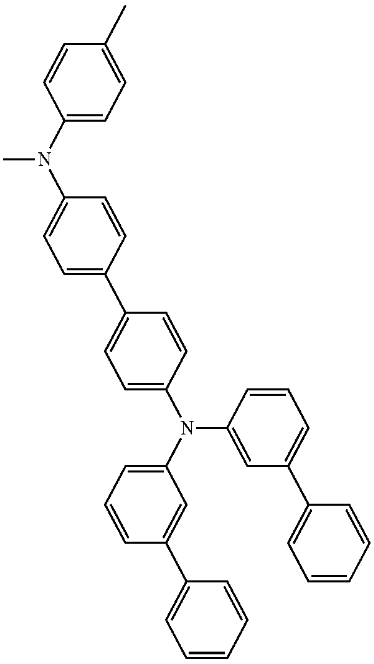

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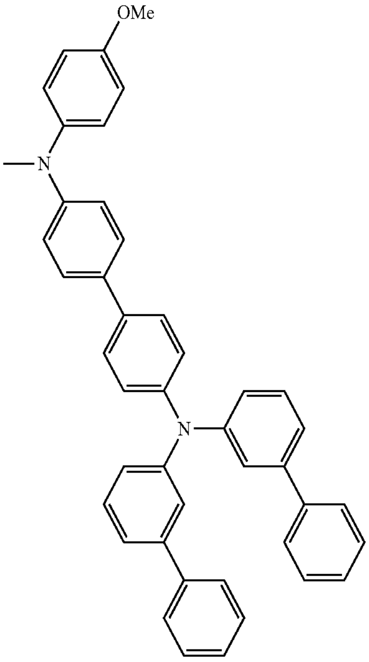

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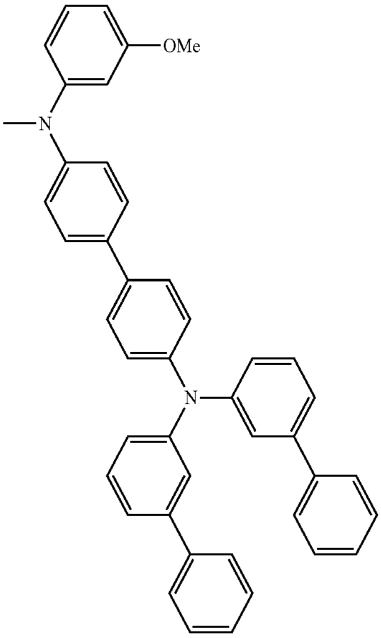

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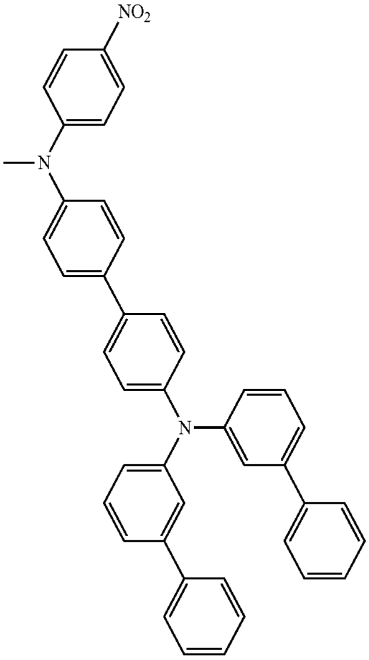

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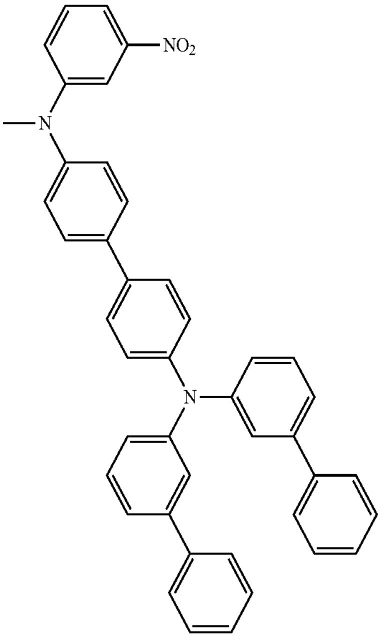

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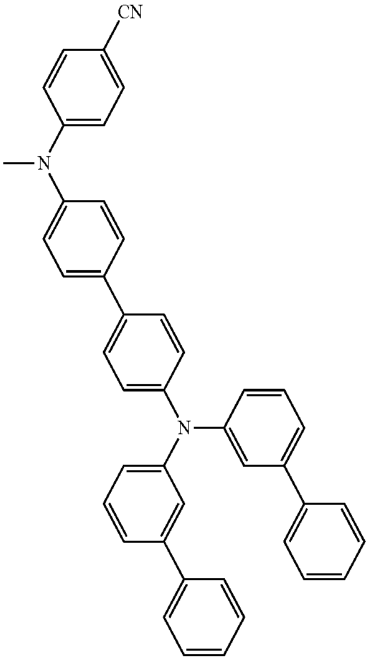

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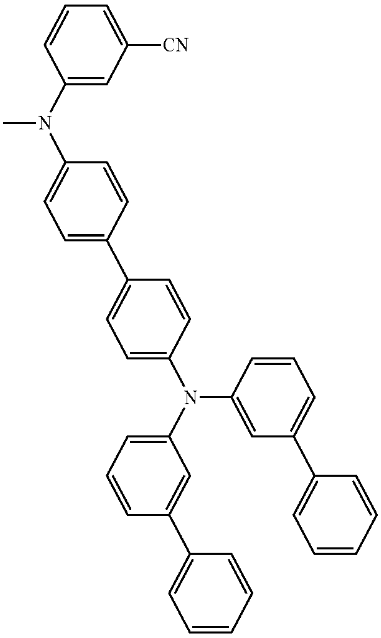
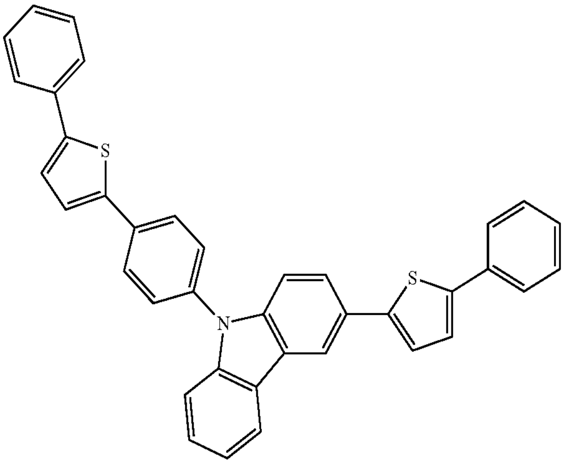


8. The compound of Formula 1 as set forth in claim **1**, wherein Ar of Formula 1 is phenylene.

9. The compound of Formula 1 as set forth in claim **1**, wherein the compound of Formula 1 is any one compound of the following Formula 4 to Formula 15:

[Formula 4]



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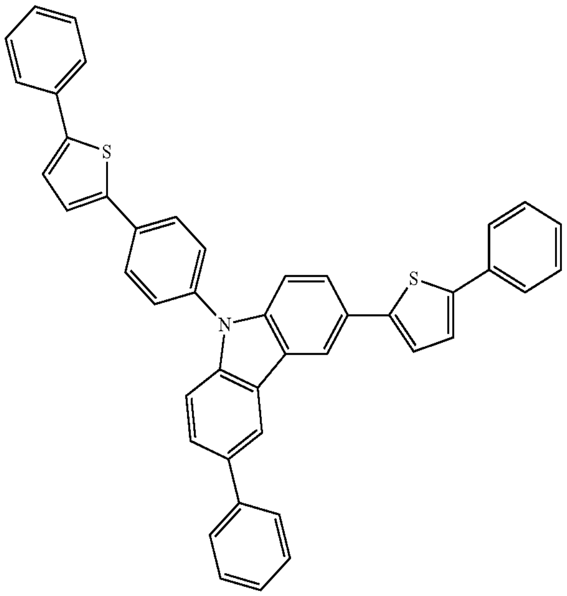
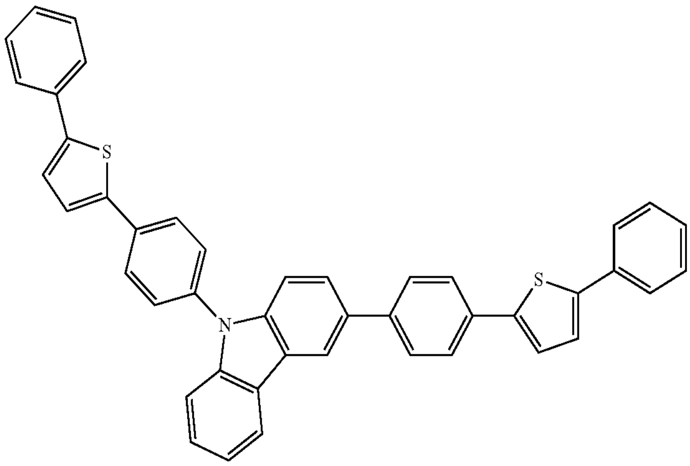
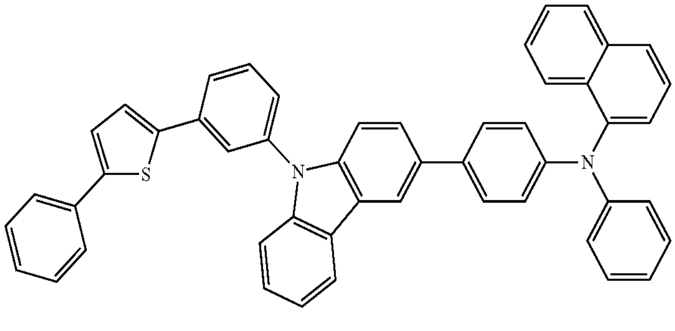
[Formula 5]



[Formula 6]



[Formula 7]



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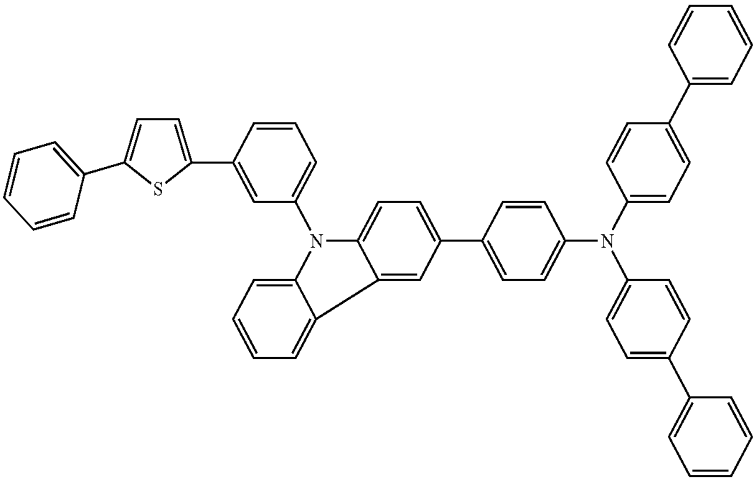
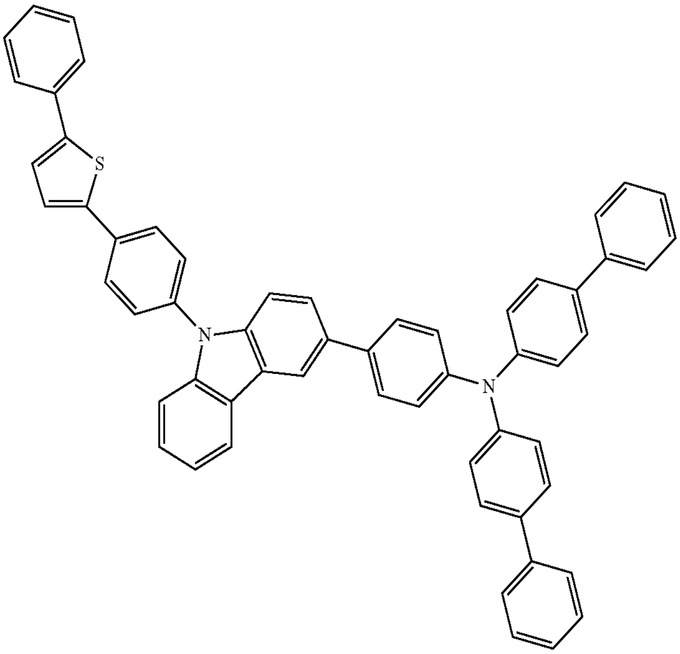
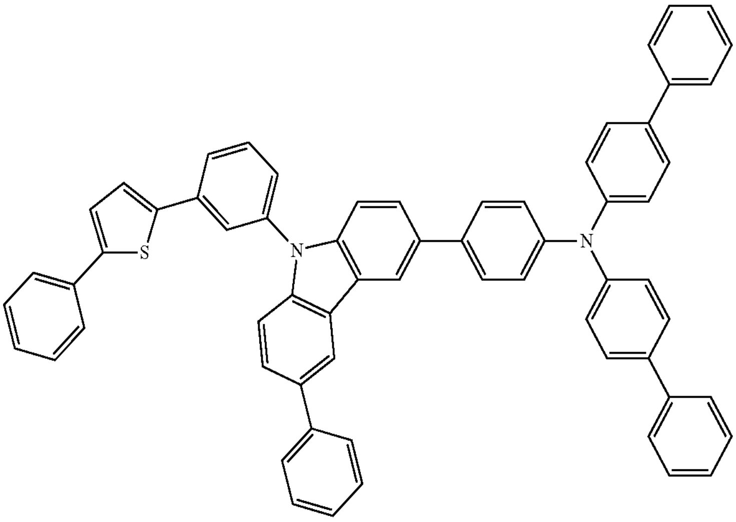
[Formula 8]



[Formula 9]



[Formula 10]



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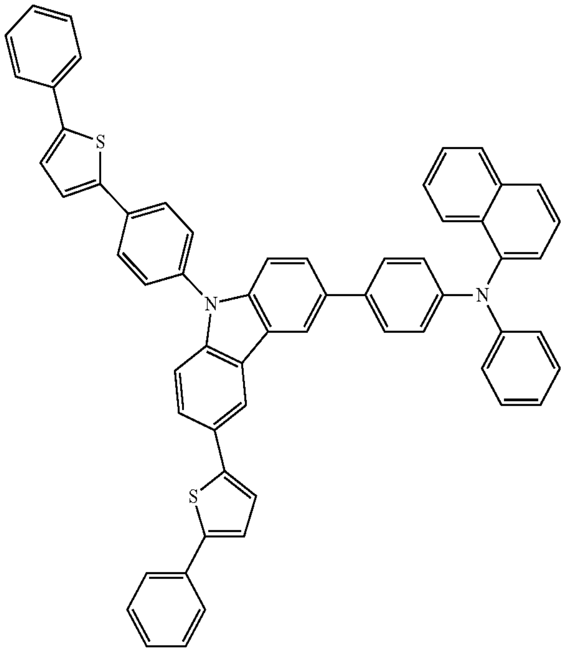
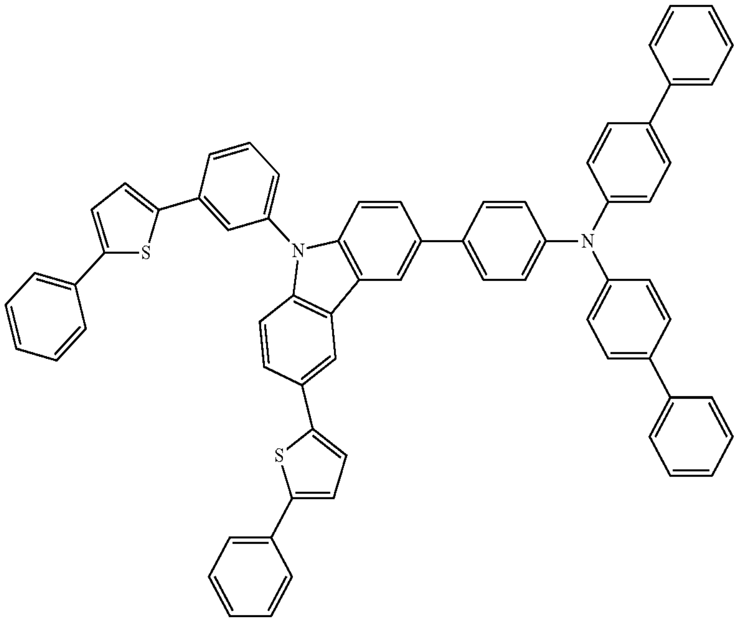
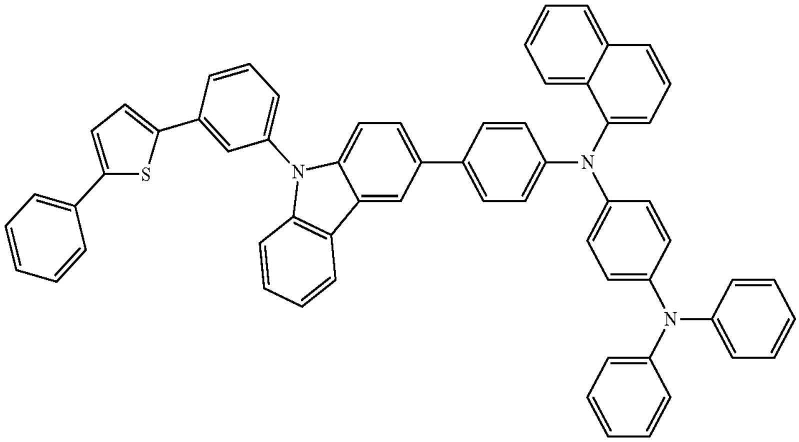
[Formula 11]



[Formula 12]



[Formula 13]



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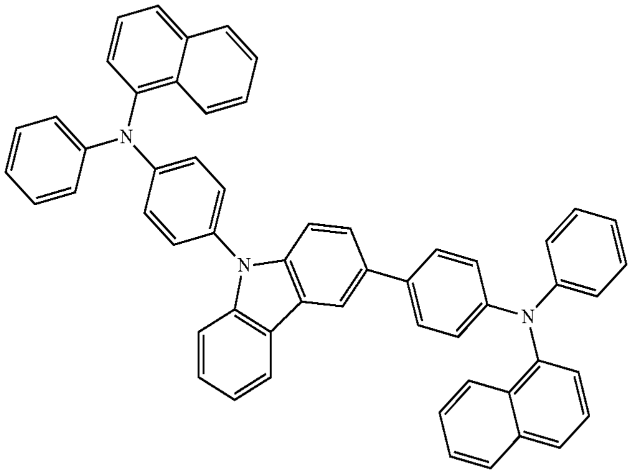
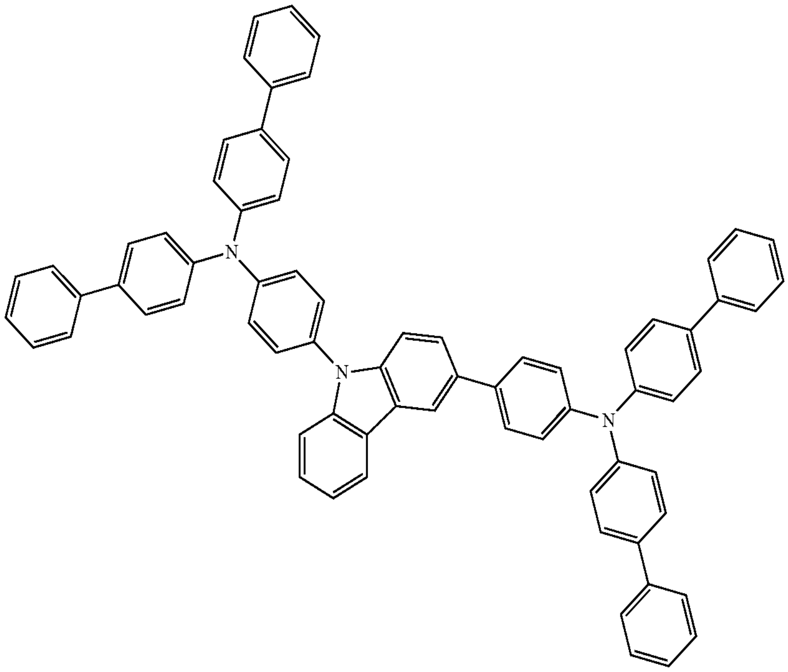
[Formula 14]



[Formula 15]



10. An organic light emitting device that includes a first electrode, an organic material layer that includes one or more layers having a light emitting layer, and a second electrode sequentially layered, wherein the organic light emitting device comprises one or more layers of the organic material layer that include the compound of Formula 1 of claim **1**, or the compound of Formula 1 into which a thermosetting group or a photocurable functional group is introduced.

11. The organic light emitting device as set forth in claim **10**, wherein the organic material layer includes a hole transport layer, and the hole transport layer includes the compound of Formula 1 or the compound of Formula 1 into which a thermosetting group or a photocurable functional group is introduced.

12. The organic light emitting device as set forth in claim **10**, wherein the organic material layer includes a hole injection layer, and the hole injection layer includes the compound of Formula 1 or the compound of Formula 1 into which a thermosetting group or a photocurable functional group is introduced.

13. The organic light emitting device as set forth in claim **10**, wherein the organic material layer includes a layer that collectively inject and transport a hole, and the layer includes the compound of Formula 1 or the compound of Formula 1 into which a thermosetting group or a photocurable functional group is introduced.

14. The organic light emitting device as set forth in claim **10**, wherein the organic material layer includes an electron injection and transport layer, and the electron injection and transport layer includes the compound of Formula 1 or the compound of Formula 1 into which a thermosetting group or a photocurable functional group is introduced.

15. The organic light emitting device as set forth in claim **10**, wherein the light emitting layer includes the compound of Formula 1 or the compound of Formula 1 into which a thermosetting group or a photocurable functional group is introduced.

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摘要(译)

本发明提供一种能够大大提高有机发光器件的寿命，效率，电化学稳定性和热稳定性的新型化合物，以及其中所述化合物包含在有机化合物层中的有机发光器件。