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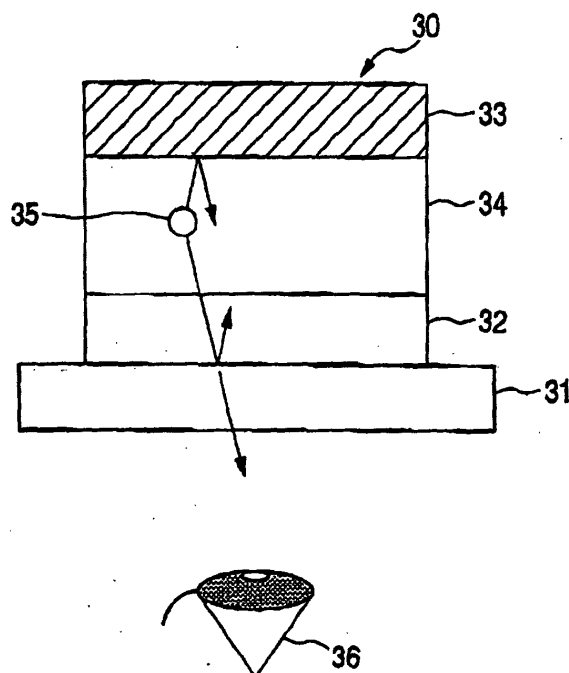
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(54) **Organic electroluminescence display**

(57) An organic EL display equipped with an organic EL device (30) with an organic material (34) sandwiched by at least two electrodes, including: a light emitting layer which emits light; a front reflecting portion arranged on the side of a viewer with respect to the light emitting layer; and a rear reflecting portion arranged on the side

opposite to the viewer with respect to the light emitting layer, wherein the optical film thickness of the organic material, intensity reflectance R_1 at the front reflecting portion and intensity reflectance R_2 at the rear reflecting portion are adjusted so that the external light intensity reflectance of the display viewed from the viewer is 10% or less by an optical interference effect.

FIG. 13





DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	US 6 410 168 B1 (TAMURA SHINICHIRO) 25 June 2002 (2002-06-25)	14,15	H01L51/20
Y		1-3,5-8, 11	
A	* column 4, line 32 - column 6, line 42 * -----	4	
X	KRASNOV ALEXEY N: "High-contrast organic light-emitting diodes on flexible substrates" APPLIED PHYSICS LETTERS, AMERICAN INSTITUTE OF PHYSICS, NEW YORK, US, vol. 80, no. 20, 20 May 2002 (2002-05-20), pages 3853-3855, XP012030992 ISSN: 0003-6951	14,15	TECHNICAL FIELDS SEARCHED (Int.Cl.7) H01L
A	* the whole document * -----	1,16	
X	US 6 411 019 B1 (HOFSTRA PETER G ET AL) 25 June 2002 (2002-06-25) * column 4, line 35 - column 7, line 47 * -----	1	
X	RENAULT O ET AL: "A low reflectivity multilayer cathode for organic light-emitting diodes" THIN SOLID FILMS, ELSEVIER-SEQUOIA S.A. LAUSANNE, CH, vol. 379, no. 1-2, 8 December 2000 (2000-12-08), pages 195-198, XP004226562 ISSN: 0040-6090	14,15	
A	* the whole document * ----- -/--	1	
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 13 January 2005	Examiner De Laere, A
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons</p> <p>& : member of the same patent family, corresponding document</p>			

EPO FORM 1503 03/02 (F04C01)



European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 03 25 6202

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
Y	FUKUDA Y ET AL: "AN ORGANIC LED DISPLAY EXHIBITING PURE RGB COLORS" SYNTHETIC METALS, ELSEVIER SEQUOIA, LAUSANNE, CH, vol. 111/112, 1 June 2000 (2000-06-01), pages 1-6, XP000965771 ISSN: 0379-6779 * paragraph '0003! *	1-3, 5-8, 11	
A	EP 1 160 890 A (EASTMAN KODAK CO) 5 December 2001 (2001-12-05) * the whole document *	1-16	
A	TAKADA N ET AL: "CONTROLLED SPONTANEOUS EMISSION IN ORGANIC ELECTROLUMINESCENT DEVICES" OPTOELECTRONICS DEVICES AND TECHNOLOGIES, MITA PRESS, TOKYO, JP, vol. 8, no. 3, 1 September 1993 (1993-09-01), pages 403-412, XP000408726 ISSN: 0912-5434 * figure 6 *	1	
D,A	EP 0 372 763 A (CANADA NAT RES COUNCIL) 13 June 1990 (1990-06-13) * the whole document *	1-16	
P,X	PATENT ABSTRACTS OF JAPAN vol. 2003, no. 05, 12 May 2003 (2003-05-12) -& JP 2003 017274 A (SONY CORP), 17 January 2003 (2003-01-17)	14, 15	
P,A	* abstract *	1	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
Place of search		Date of completion of the search	Examiner
The Hague		13 January 2005	De Laere, A
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			

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ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.

EP 03 25 6202

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

13-01-2005

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 6410168	B1	25-06-2002	JP 2000040591 A	08-02-2000
			KR 2000011851 A	25-02-2000
US 6411019	B1	25-06-2002	AU 6256500 A	13-02-2001
			WO 0108240 A1	01-02-2001
			CA 2378442 A1	01-02-2001
			CN 1369116 T	11-09-2002
			EP 1208611 A1	29-05-2002
			EP 1300891 A1	09-04-2003
			JP 2003505849 T	12-02-2003
			US 2004052931 A1	18-03-2004
			US 2003127971 A1	10-07-2003
			US 2002153834 A1	24-10-2002
			US 2002039871 A1	04-04-2002
EP 1160890	A	05-12-2001	US 6429451 B1	06-08-2002
			EP 1160890 A2	05-12-2001
			JP 2001332391 A	30-11-2001
			TW 498566 B	11-08-2002
EP 0372763	A	13-06-1990	CA 1302547 C	02-06-1992
			AT 141035 T	15-08-1996
			DE 68926906 D1	05-09-1996
			DE 68926906 T2	27-02-1997
			EP 0372763 A2	13-06-1990
			JP 2276191 A	13-11-1990
			JP 2529741 B2	04-09-1996
			US 5049780 A	17-09-1991
JP 2003017274	A	17-01-2003	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

专利名称(译)	有机电致发光显示器		
公开(公告)号	EP1406320A3	公开(公告)日	2005-03-16
申请号	EP2003256202	申请日	2003-10-01
[标]申请(专利权)人(译)	日本先锋公司		
申请(专利权)人(译)	先锋公司		
当前申请(专利权)人(译)	先锋公司		
发明人	FUKUDA, YOSHINORI,		
IPC分类号	H05B33/24 H01L51/50 H01L51/52 H01L51/20		
CPC分类号	H01L51/5281		
代理机构(译)	哈利, STEPHEN		
优先权	2002290519 2002-10-02 JP		
其他公开文献	EP1406320A2		
外部链接	Espacenet		

摘要(译)

一种有机EL显示器，其配备有有机材料，所述有机EL器件具有夹在至少两个电极之间的有机材料，包括：发光的发光层；前反射部分相对于发光层设置在观察者一侧；设置在侧面的后反射部分相对于发光层适合于观察者，其中调整有机材料的光学膜厚度，前反射部分的强度反射率R1和前反射部分的强度反射率R2因此，通过光学干涉效应，从观察者看到的显示器的外部光强度反射率为10%或更小。

