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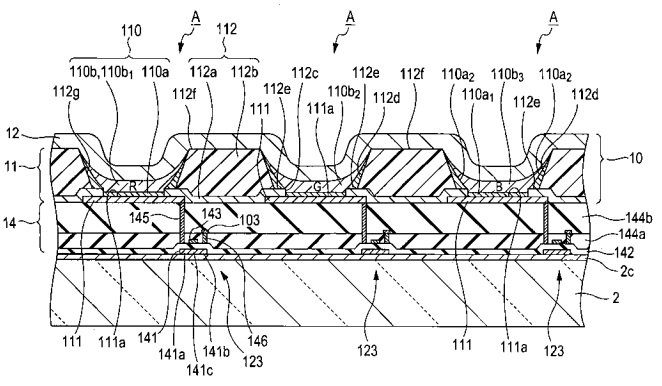
(54) Ink jet printing of an OLED display

(57) The invention relates to providing an electro-optical device, which is capable of improving film thickness uniformity and flatness of electro-optical layers to be formed. A method of manufacturing an electro-optical device according to the present invention comprises a step of forming a first partition wall portion 112a and a second partition wall portion 112b, and a step of ejecting a liquid substance for each of openings of each of the partition wall portions using a liquid droplet ejecting method, the liquid substance including functional materials composing the electro-optical layers. The ejected liquid substance has different viscosities for each electro-optical layer. In the partition wall portion formation step, a surface area of a portion of the first partition wall portion 112a projecting from the second partition wall portion 112b becomes relatively small in a position at which the liquid substance having relatively low viscosity is ejected, and the surface area of the portion of the first partition wall portion 112a projecting from the second partition wall portion 112b becomes relatively large in a position at which the liquid substance having relatively high viscosity is ejected.

FIG. 3



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EUROPEAN SEARCH REPORT

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EP 05 00 7001

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	EP 1 209 744 A (SEIKO EPSON CORP [JP]) 29 May 2002 (2002-05-29)	6,7	INV. H01L51/00
A	* paragraph [0057] - paragraph [0070]; figures 4,5 *	1-3,5	H01L27/00
X	US 2004/009303 A1 (ITO TATSUYA [JP] ET AL) 15 January 2004 (2004-01-15)	6,7	
A	* figures 9,12 *	1,2	
X	US 2003/137242 A1 (SEKI SHUNICHI [JP]) 24 July 2003 (2003-07-24)	6,7	
A	* the whole document *	1,2	

TECHNICAL FIELDS SEARCHED (IPC)

H01L

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	7 September 2009	Königstein, C

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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A : technological background
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T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 05 00 7001

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 1209744 A	29-05-2002	CN 1356857 A	03-07-2002
		CN 1678144 A	05-10-2005
		JP 3628997 B2	16-03-2005
		JP 2002222695 A	09-08-2002
		KR 20020041301 A	01-06-2002
		TW 541847 B	11-07-2003
		US 2009009075 A1	08-01-2009
		US 2008315760 A1	25-12-2008
		US 2002064966 A1	30-05-2002
US 2004009303 A1	15-01-2004	JP 4014901 B2	28-11-2007
		JP 2003270422 A	25-09-2003
		US 2009068351 A1	12-03-2009
US 2003137242 A1	24-07-2003	CN 1426894 A	02-07-2003
		JP 3823916 B2	20-09-2006
		JP 2003249375 A	05-09-2003
		KR 20030051344 A	25-06-2003
		TW 571602 B	11-01-2004

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)	OLED显示器的喷墨印刷		
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[标]申请(专利权)人(译)	精工爱普生株式会社		
申请(专利权)人(译)	SEIKO EPSON CORPORATION		
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其他公开文献	EP1601032B1 EP1601032A2		
外部链接	Espacenet		

摘要(译)

本发明涉及提供一种电光装置，其能够改善待形成的电光层的膜厚均匀性和平坦度。根据本发明的制造电光器件的方法包括形成第一分隔壁部分112a和第二分隔壁部分112b的步骤，以及为每个分区的每个开口喷射液体物质的步骤使用液滴喷射方法的壁部分，液体物质包括构成电光层的功能材料。喷射的液体物质对于每个电光层具有不同的粘度。在分隔壁部分形成步骤中，从第二分隔壁部分112b突出的第一分隔壁部分112a的一部分的表面区域在喷射具有相对低粘度的液体物质的位置和表面处变得相对较小。从第二分隔壁部分112b突出的第一分隔壁部分112a的部分的区域在喷射具有相对高粘度的液体物质的位置处变得相对大。

FIG. 3