(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 517 376 A3

(12) EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
21.03.2007 Bulletin 2007/12

(43) Date of publication A2:
23.03.2005 Bulletin 2005/12

(21) Application number: **04255583.9**

(22) Date of filing: **15.09.2004**

(51) Int Cl.:
H01L 27/15 *(2006.01)*

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PL PT RO SE SI SK TR
Designated Extension States:
AL HR LT LV MK

(30) Priority: **17.09.2003 JP 2003324625**

(71) Applicant: **SEIKO EPSON CORPORATION**
Shinjuku-ku
Tokyo 163-0811 (JP)

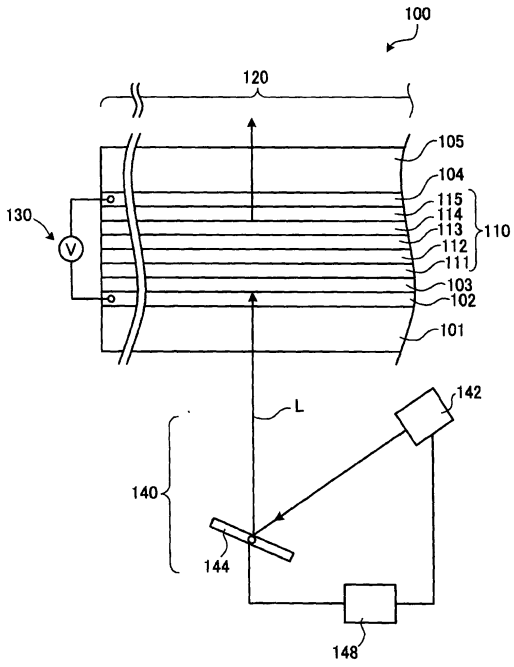
(72) Inventors:
- **Yonekubo, Masatoshi**
  c/o Seiko Epson Corporation
  Nagano-ken 392-8502 (JP)
- **Takeda, Takashi**
  c/o Seiko Epson Corporation
  Nagano-ken 392-8502 (JP)
- **Yamazaki, Tetsuro**
  c/o Seiko Epson Corporation
  Nagano-ken 392-8502 (JP)

(74) Representative: **Sturt, Clifford Mark et al**
Miller Sturt Kenyon
9 John Street
London WC1N 2ES (GB)

(54) Display panel, method of manufacturing display panel, and display apparatus

(57) The invention seeks to provide a display panel or the like which is easy of enlarging a size thereof. A display panel comprising a first transparent electrode layer 102 and a second transparent electrode layer 104 which are optically transparent, a conductivity-variable layer 103 which is provided on the first transparent electrode layer 102, and an electroluminescent layer 110 which is provided between the conductivity-variable layer 103 and the second transparent electrode layer 104, and which emits light by applying a voltage thereto, wherein a predetermined voltage is applied between the first transparent electrode layer 102 and the second transparent electrode layer 104, the conductivity-variable layer 103 has its electrical conductivity changed in accordance with the light quantity of control light L transmitted through the first transparent electrode layer 102, and the electroluminescent layer 110 emits the light in such a way that the voltage in the predetermined voltage as corresponds to the conductivity of the conductivity-variable layer 103 is applied thereto when the conductivity of the conductivity-variable layer 103 has been changed in accordance with the light quantity of the control light L transmitted through the first transparent electrode layer 102.

F I G. 1



EP 1 517 376 A3

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 04 25 5583

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 Y	EP 0 382 642 A (FRANCE ETAT [FR]) 16 August 1990 (1990-08-16) * the whole document * * column 7, line 23 - column 8, line 15 * * figure 2 *	1 2-14	INV. H01L27/15
X Y	US 5 200 668 A (OHASHI YUTAKA [US] ET AL) 6 April 1993 (1993-04-06) * column 7, line 60 - column 11, line 25; figures 2,3 *	1 2-14	
X Y	US 5 539 424 A (HATTORI YUTAKA [JP] ET AL) 23 July 1996 (1996-07-23) * column 3, line 50 - column 8, line 42; claim 1; figures 2-10 *	1,2 3-14	
Y	US 2002/167268 A1 (ARUGA HISASHI [JP] ET AL) 14 November 2002 (2002-11-14) * the whole document * * figures 1-12 *	2-14	
			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
Munich	9 February 2007	BERNABE PRIETO, A

CATEGORY OF CITED DOCUMENTS

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

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

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 04 25 5583

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.

09-02-2007

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0382642 A	16-08-1990	FR 2643180 A1	17-08-1990
		JP 2262186 A	24-10-1990
		US 5055739 A	08-10-1991
US 5200668 A	06-04-1993	DE 68925634 D1	21-03-1996
		DE 68925634 T2	22-08-1996
		EP 0397889 A1	22-11-1990
		WO 9005998 A1	31-05-1990
US 5539424 A	23-07-1996	NONE	
US 2002167268 A1	14-11-2002	CN 1384388 A	11-12-2002
		JP 3613257 B2	26-01-2005
		JP 2003022036 A	24-01-2003
		KR 20020084695 A	09-11-2002
		TW 586044 B	01-05-2004

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)	显示面板，显示面板的制造方法和显示装置		
公开(公告)号	EP1517376A3	公开(公告)日	2007-03-21
申请号	EP2004255583	申请日	2004-09-15
[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		
当前申请(专利权)人(译)	SEIKO EPSON CORPORATION		
[标]发明人	YONEKUBO MASATOSHI C O SEIKO EPSON CORPORATION TAKEDA TAKASHI C O SEIKO EPSON CORPORATION YAMAZAKI TETSURO C O SEIKO EPSON CORPORATION		
发明人	YONEKUBO, MASATOSHI C/O SEIKO EPSON CORPORATION TAKEDA, TAKASHI C/O SEIKO EPSON CORPORATION YAMAZAKI, TETSURO C/O SEIKO EPSON CORPORATION		
IPC分类号	H01L27/15 H05B33/26 G02B26/00 G09F9/00 G09F9/30 G09G3/10 H01L27/14 H01L27/32 H01L51/50 H01L51/52 H04N5/70 H04N9/30 H05B33/10 H05B33/12 H05B33/14 H05B33/22 H05B33/24		
CPC分类号	H01L27/3211 H01L27/3241 H01L27/3281 H01L27/3283 H01L51/52 H01L51/5203 H04N9/30		
代理机构(译)	斯特，CLIFFORD MARK		
优先权	2003324625 2003-09-17 JP		
其他公开文献	EP1517376A2 EP1517376B1		
外部链接	Espacenet		

摘要(译)

本发明旨在提供一种易于扩大其尺寸的显示面板等。一种显示面板，包括光学透明的第一透明电极层102和第二透明电极层104，设置在第一透明电极层102上的导电可变层103，以及设置在导电性之间的电致发光层110 - 可变层103和第二透明电极层104，并且通过向其施加电压而发光，其中在第一透明电极层102和第二透明电极层104之间施加预定电压，导电可变层103具有其导电率根据透过第一透明电极层102的控制光L的光量而变化，并且电致发光层110以这样的方式发光：使得预定电压中的电压对应于导电率的导电率当导电时，可变层103被施加到其上导电可变层103的电阻已根据透过第一透明电极层102的控制光L的光量而改变。

F I G. 1