(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
15 December 2005 (15.12.2005)

(21) International Application Number:
PCT/US2005/016813

(22) International Filing Date:
13 May 2005 (13.05.2005)

(25) Filing Language:
English

(26) Publication Language:
English

(30) Priority Data:
10/857,516 28 May 2004 (28.05.2004) US

(71) Applicant (for all designated States except US):

(72) Inventors:

(74) Common Representative:
EASTMAN KODAK COMPANY; 343 State Street, Rochester, NY 14650-2201 (US).


(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— with international search report
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:
21 September 2006

(Continued on next page)

(54) Title: TANDEM OLED HAVING STABLE INTERMEDIATE CONNECTORS

---

(57) Abstract: A tandem OLED includes an anode, a cathode, and a plurality of organic electroluminescent units disposed between the anode and the cathode, wherein each organic electroluminescent unit includes at least one light-emitting layer, and an intermediate connector disposed between each adjacent organic electroluminescent unit, wherein the intermediate connector includes at least a high work function metal layer having a work function of no less than 4.0 eV and a metal compound layer, wherein the intermediate connector has a sheet resistance of higher than 100 kΩ per square, and wherein the high work function metal layer improves the operational stability of the OLED.
For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.
INTERNATIONAL SEARCH REPORT

International application No
PCT/US2005/016813

A. CLASSIFICATION OF SUBJECT MATTER
INV. HO1L51/20

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
Minimum documentation searched (classification system followed by classification symbols)
HO1L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic database consulted during the international search (name of data base and, where practical, search terms used)
EPO—Internal, PAJ, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>US 6 337 492 B1 (JONES GARY W ET AL) 8 January 2002 (2002-01-08) column 3, line 10 - column 6, line 16 column 6, lines 48-51 figures 1-3</td>
<td>1, 5, 6, 13-17, 21-29, 31</td>
</tr>
</tbody>
</table>

See patent family annex.

X Special categories of cited documents:

- "X" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "Y" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "Y" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- "8" document member of the same patent family

Date of the actual completion of the international search
7 July 2006

Date of mailing of the international search report
19/07/2006

Name and mailing address of the ISA/
European Patent Office, P.B. 5818 Patentee 2 NL—2690 HV, P.J. Horst
Tel. (+31—70) 340-2040, Tx 31 651 epo nl
Fax: (+31—70) 340-3016

Authorized officer
Ledoix, S
<table>
<thead>
<tr>
<th>Patent document cited in search report</th>
<th>Publication date</th>
<th>Patent family member(s)</th>
<th>Publication date</th>
</tr>
</thead>
<tbody>
<tr>
<td>US 2004032220 A1</td>
<td>19-02-2004</td>
<td>CN 1483960 A</td>
<td>24-03-2004</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EP 1396676 A2</td>
<td>10-03-2004</td>
</tr>
<tr>
<td></td>
<td></td>
<td>JP 2004134385 A</td>
<td>30-04-2004</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WO 9903158 A1</td>
<td>21-01-1999</td>
</tr>
<tr>
<td>EP 1351558 A</td>
<td>08-10-2003</td>
<td>CN 1447629 A</td>
<td>08-10-2003</td>
</tr>
<tr>
<td></td>
<td></td>
<td>JP 2003272860 A</td>
<td>26-09-2003</td>
</tr>
<tr>
<td></td>
<td></td>
<td>US 2003189401 A1</td>
<td>09-10-2003</td>
</tr>
</tbody>
</table>