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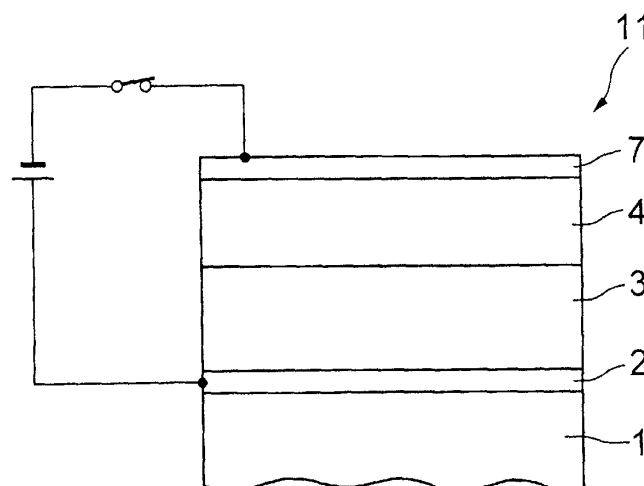
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(54) **Organic semiconductor diode and organic electroluminescence element display device**

(57) An organic semiconductor diode includes at least one hole transport layer which is arranged on an anode side and formed of an organic compound having a hole transport capability, and at least one electron transport layer which is arranged on a cathode side and formed of an organic compound having an electron transport capability. The at least one hole transport layer and the at least one electron transport layer are lami-

nated one upon another. The organic semiconductor diode exhibits nonlinear current-voltage characteristics when a voltage is applied between the hole transport layer and the electron transport layer in contact with each other. The hole transport layer at an anode-side end has an ionization potential larger than an electron affinity of the electron transport layer at a cathode side end.

FIG. 2





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EUROPEAN SEARCH REPORT

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EP 02 25 2144

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 04, 31 August 2000 (2000-08-31) -& JP 2000 030872 A (CANON INC), 28 January 2000 (2000-01-28)	1-5	H05B33/08
Y	* abstract *	6	
P,X	* paragraph [0159] - paragraph [0173]; figures 1,2,8,18 * -& US 6 350 996 B1 (UENO KAZUNORI ET AL) 26 February 2002 (2002-02-26) * column 8 - column 9 *	1-5	
	* column 18, line 14 - line 38 *		
X	ADACHI C ET AL: "HIGH-EFFICIENCY ORGANIC ELECTROPHORESCENT DEVICES WITH TRIS(2-PHENYLPYRIDINE)IRIDIUM DOPED INTO ELECTRON-TRANSPORTING MATERIALS" APPLIED PHYSICS LETTERS, AMERICAN INSTITUTE OF PHYSICS. NEW YORK, US, vol. 77, no. 6, 7 August 2000 (2000-08-07), pages 904-906, XP000956860 ISSN: 0003-6951 * the whole document *	1-3	TECHNICAL FIELDS SEARCHED (Int.Cl.7) H01L G09G H05B
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The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 23 February 2004	Examiner Pusch, C
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			

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[illegible]

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

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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
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专利名称(译)	有机半导体二极管和有机电致发光元件显示装置		
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CPC分类号	H01L27/3281 H01L51/005 H01L51/0052 H01L51/0053 H01L51/0059 H01L51/0077 H01L51/0078 H01L51/0081 H01L51/0583 H01L2924/0002		
代理机构(译)	LUCKHURST , ANTHONY HENRY WILLIAM		
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其他公开文献	EP1251720A2		
外部链接	Espacenet		

摘要(译)

有机半导体二极管包括至少一个空穴传输层和至少一个电子传输层，所述空穴传输层设置在阳极侧并由具有空穴传输能力的有机化合物形成，所述电子传输层设置在阴极侧并由有机化合物形成具有电子传输能力。至少一个空穴传输层和至少一个电子传输层彼此层叠。当在空穴传输层和电子传输层之间施加电压彼此接触时，有机半导体二极管表现出非线性电流 - 电压特性。阳极侧端部的空穴传输层的电离电位大于阴极侧端部的电子传输层的电子亲和势。

FIG. 2

