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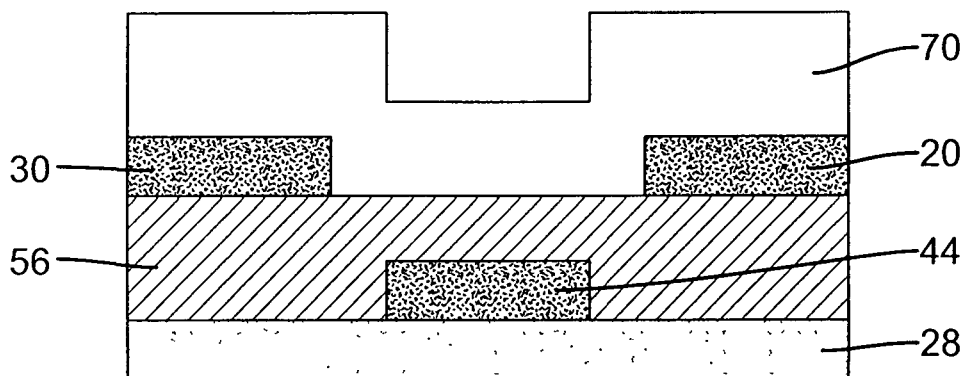
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(54) **Title:** NAPHTHALENE-BASED TETRACARB OXYLIC DIIMIDE COMPOUNDS AS SEMICONDUCTOR MATERIALS



(57) **Abstract:** A thin film transistor comprises a layer of organic semiconductor material comprising a configurationally controlled N,N'-dicycloalkyl-substituted naphthalene-1,4,5,8-bis-carboximide compound having a substituted or unsubstituted alicyclic ring independently attached to each imide nitrogen atom with the proviso that at least one of the two alicyclic rings is necessarily a 4-substituted cyclohexyl ring in which a substituent at the 4-position is the sole substituent on the 4-substituted cyclohexyl ring other than the imide attachment; with such substituent being stereochemically disposed as only one of either an essentially trans or cis position, respectively, to the imide nitrogen substituent. Such transistors can further comprise spaced apart first and second contact means or electrodes in contact with said material. Further disclosed is a process for fabricating an organic thin-film transistor device, preferably by sublimation deposition onto a substrate, wherein the substrate temperature is no more than 100°C.

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**A. CLASSIFICATION OF SUBJECT MATTER**  
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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)  
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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)  
EPO-Internal , INSPEC, **COMPENDEX**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
<b>A</b>	<p>YANG D ET AL: "Mobility study of a new naphthalenetetracarboxylic diimide derivative"</p> <p>JOURNAL OF VACUUM SCIENCE AND TECHNOLOGY: PART B, AVS / AIP, MELVILLE, NEW YORK, NY, US, vol. 24, no. 6, 6 November 2006 (2006-11-06), pages 2653-2658, XP012091719 ISSN: 1071-1023 page 2654, column 1; figures 1,2</p>	<p>1-4,7,9, 10, 12-14, 20,22, 23,25,28</p>
<b>A</b>	<p>US 2005/156163 A1 (HIRAI KATSURA [JP]) 21 July 2005 (2005-07-21) paragraphs [0126], [0128]; figures 1,2</p> <p align="center">----- -/--</p>	<p>1,5, 22-25</p>

<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C.	<input checked="" type="checkbox"/> See patent family annex.
<p>* Special categories of cited documents :</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"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)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"T" 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</p> <p>"X" 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</p> <p>"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.</p> <p>"&amp;" document member of the same patent family</p>	
Date of the actual completion of the international search <b>7 May 2008</b>	Date of mailing of the international search report 28/05/2008
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer  <b>Beierlein, Udo</b>

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
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A	US 5 468 583 A (GRUENBAUM WILLIAM T [US] ET AL) 21 November 1995 (1995-11-21) column 4 , line 39 - column 5 , line 36; table 1	1,2
A	EP 0 031 065 A (BAYER AG [DE]) 1 July 1981 (1981-07-01) page 1	1,2

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

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