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(54) Title: BLACK SOLUBLE CONJUGATED POLYMERS WITH HIGH CHARGE CARRIER MOBILITIES

(57) Abstract: A soluble fused donor-acceptor conjugated polymer (fDA-CP) is prepared that absorbs light throughout nearly all the visible spectrum and is essentially black to the human eye when in the neutral state. The conjugated polymer has acceptor units that are isolated by a plurality of fused donor units. The fDA-CP assumes a conformation that results in a close π -stacking between adjacent lamella with a separation of less than 4.5 Å in the solid state and extended conjugation to promote high charge carrier mobilities. The fDA-CP is prepared by the polycondensation of a plurality of at least one fused donor- acceptor oligomer (fDA-oligomer) that has a flat internal acceptor unit and at least one fused donor unit incorporated in the oligomers, and optionally, an additional conjugated aromatic monomer or oligomer copolymerized with the fDA-oligomers.



WO 2010/062948 A3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2009/065903**A. CLASSIFICATION OF SUBJECT MATTER*****C08G 61/12(2006.01)i, C08G 75/06(2006.01)i, C08G 77/52(2006.01)i***

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)

C08G 61/12; C07D 285/10; C09K 11/06; H01L 51/50

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

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: donor, acceptor, receptor, conjugate, polymer, optical, absorb and similar terms

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2008-231051 A (SHINSHU UNIV et al.) 02 October 2008 See the whole document	1-26
A	JP 2007-227509 A (CANON INC) 06 September 2007 See the whole document	1-26
A	BEAUJUGE p.m. et al., The donor-acceptor approach allows a black-to-transmissive switching polymeric electrochrome, NATURE MATERIALS, August 2008, Vol.7, pages 795-799. See the whole document	1-26
A	ABEL ROBERT et al., Molecular weight optimum in mesoscopic order of chiral fluorene (co)polymer films, MACROMOLECULES, October 2008, Vol.41, pages 7497-7504. See the whole document	1-26
A	WU FANG-IY et al., Efficient white-electrophosphorescent devices based on a single polyfluorene copolymer, ADVANCED FUNCTIONAL MATERIALS, March 2007, Vol.17, pages 1085-1092. See the whole document	1-26



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

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"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

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"&" document member of the same patent family

Date of the actual completion of the international search

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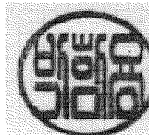
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INTERNATIONAL SEARCH REPORT

International application No.

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CHUANG CHU-YING et al., Bright-white light emitting devices based on a single polymer exhibiting simultaneous blue, green, and red emmissions, MACROMOLECULES, December 2006, Vol.40, pages 247-252. See the whole document	1-26

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2009/065903

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 2008-231051 A	02.10.2008	JP 2008-231051 A	02.10.2008
JP 2007-227509 A	06.09.2007	None	