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(54) Title: AMPHIPHILIC BLOCK COPOLYMERS

(57) Abstract: The invention relates to an amphiphilic multiblock copolymer capable of forming non-covalent crosslinks. The non-water soluble copolymer, having a hydrophilic middle block and hydrophobic end blocks, has a high water transmission or permeation. The copolymer can be used in applications requiring absorption and/or transmission of fluids, the preferred fluids being water or hydrophilic liquids such as glycerin, glycols, and alcohols. One specific use of the amphiphilic multiblock copolymer is as a hydrogel material.

**INTERNATIONAL SEARCH REPORT**

International application No.

PCT/US 07/69604

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC(8) - C08L 53/00 (2007.10) USPC - 524/504, 505 According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b> Minimum documentation searched (classification system followed by classification symbols) USPC : 524/504, 505		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched USPC: 424/70.11, 78.18, 450; 526/72, 317.1, 319, 320, IPC(8): C08L 53/00 (2007.10) - search terms below		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) PUBWEST (USPT, PGPB, USOC, EPAB and JPAB); Google Scholar. Search terms: amphiphilic block copolymer, hydrophilic, hydrophobic, middle block, end block, controlled radical polymerization, nitroxide, solvent or water absorption, %, molecular weight, (see search history)		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6,723,814 B2 (MEIER et al), 20 April 2004 (20.04.2004), col 1, ln 12-14; col 2, ln 18-21, 7-9; col 5, ln 17-36, 42-51, 9-11; col 7, ln 24-32; col 14, ln 18.	1-19
Y	GOHY et al, "Reversible Metallo-supramolecular block copolymer micelles containing soft core", in Macromol. Rapid Commun. 2002, 23, No 9, pgs 555-560, pg 556 RHS para 2 of 'Results & Discussion'.	1-19
Y	MATYJASZEWSKI et al, "Controlled/living radical polymerization", Materials Today, March 2005, pgs 26-33; pg 26 LHS para; pg 31 LHS 4th para, pg 27 Fig 1.	2,3
Y	LEE et al, "Platelet adhesion onto segmented polyurethane surfaces modified by PEO- and sulfonated PEO-containing block copolymer additives" by LEE et al, in Journal of Biomedical Materials Research, 6 Dec 1998, Volume 40, Issue 2, Pages 314 ? 323; abstract	4, 19
Y	NARDIN et al, "Giant Free-standing ABA Triblock Copolymer membranes", Langmuir, 2000, 16, pgs 7708-7712; pg 7709 LHS para 1 of 'Experimental Section'; pg 7708 LHS para 1.	6, 7
Y	ALEXANDRIDIS et al, "Solvent-regulated ordering in block copolymers", Current Opinion in Colloid & Interface Science 1999, 4:130 -139; pg 133 RHS para 2, pg 137 LHS para 'Conclusion', pg 131 RHS para.	11
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/>		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent 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	"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 "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 "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 "&" document member of the same patent family	
Date of the actual completion of the international search 15 October 2007 (15.10.2007)	Date of mailing of the international search report <div style="font-size: 24pt; font-weight: bold; text-align: center;">19 DEC 2007</div>	
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young <div style="text-align: right; font-family: cursive; font-size: 18pt;">  </div> PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774	

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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.
Y	HENNINK et al, "Novel crosslinking methods to design hydrogels", Advanced Drug Delivery Reviews, 2002, 54, pgs 13-36; pg 24 LHS para 'Crosslinking by stereo complex formation'; pg 24 RHS last para; pg 25 LHS 1st para.	15, 16
Y	NARDIN et al, "Amphiphilic block copolymer nanocontainers as bioreactors", Eur. Phys. J. (2001), E 4, pgs 403-410; pg 403 RHS para 2; pg 403 LHS para 2 of 'Introduction'.	18, 19
Y	US 2006/0013882 A1 (KOHN et al) 19 January 2006 (19.01.2006); para [0015], [0016], [0007], [0054].	7
Y	SIMON et al, "Block copolymer - ceramic hybrid materials from organically modified ceramic precursors", Chem. Mater. 2001, 3, pgs 3464-3486; pg 3473 LHS para 1; pg 3468 RHS para 1; pg 3464 RHS para 1.	13, 14
Y	US 2005/0129647 A1 (GIROUD et al) 16 June 2005 (16.06.2005) para [0016], [0017]	13, 14