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(81) Designated States (unless otherwise indicated, for every kind of national protection available):

AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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(54) Title: BIODEGRADABLE STEALTH POLYMERIC PARTICLES FABRICATED USING THE MACROMONOMER APPROACH BY FREE RADICAL DISPERSION POLYMERIZATION

(57) Abstract: The present invention is directed to a crosslinked or non-crosslinked polymer particle, wherein the crosslinked polymer particle comprises a copolymer of poly(alkylene glycol-graft-lactate) that is crosslinked by at least one hydrolysable monomer. Another embodiment of the present invention is a polymer particle comprising a crosslinked polymer particle that is a product of starting materials comprising (a) a hydrophilic monomer, (b) a hydrophobic monomer, and (c) a hydrolysable crosslinking agent. Another embodiment of the present invention is a polymer particle comprising, a crosslinked copolymer comprises structures represented by Formulas (I), (II), and (III), where Formulas (I), (II) and (III) are defined in the specification. Yet other embodiments of the present invention include a method of preparing a methacrylate terminated macromonomer, a method of preparing a crosslinking agent, and a method of preparing a therapeutic agent loaded nanosphere by dispersion polymerization.



A. CLASSIFICATION OF SUBJECT MATTER*C08G 63/08(2006.01)i, C08F 283/01(2006.01)i, C08J 3/12(2006.01)i, C08F 20/10(2006.01)i, A61K 47/30(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 63/08; C07C 259/06; C08L 51/04; A61K 31/785; A61K 31/795

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: poly(alkylene glycol-graft-lactate), hydrolysable monomer, hydrophobic monomer, hydrophilic monomer, crosslinking agent, L-lactide, initiator, catalyst, therapeutic agent

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	SANT, SHILIPA et al., "Effect of polymer architecture on surface properties, plasma protein adsorption, and cellular interactions of pegylated nanoparticles", Journal of Biomedical Materials Research Part A, Vol.87A, Issues 4, pages 885-895 15 December 2008 See abstract, materials and method, table 2	1,3,5,6,7,8
Y	See abstract, materials and method, table 2	15,16
X	US 05130479 A (ULBRICH, KAREL et al.) 14 July 1992 See abstract; column 1, lines 57-66; column 2, lines 7-10	9,13,14,17,18
Y	See abstract; column 1, lines 57-66; column 2, lines 7-10	10,15,16
Y	US 2003-0018128 A1 (WANG, JAMES H. et al.) 23 January 2003 See paragraphs [0061],[0068]	10
A	US 2002-0064513 A1 (MAITRA, AMARNATH et al.) 30 May 2002 See paragraphs [0038]-[0045],[0075],[0100]	1-37



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

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"E" earlier application or patent but published on or after the international filing date

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"P" document published prior to the international filing date but later than the priority date claimed

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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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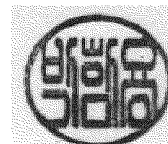
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2011/061902

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 05130479 A	14.07.1992	CA 2032581 C	12.03.2002
		EP 0434438 A2	26.06.1991
		EP 0434438 A3	09.10.1991
		EP 0434438 B1	01.05.1996
		JP 02-693042 B2	05.09.1997
		JP 02-783793 B2	22.05.1998
		JP 04-298504 A	22.10.1992
		JP 10-072427 A	17.03.1998
		JP 2017-783793 B	06.08.1998
		JP 2693042 B2	17.12.1997
		US 05124421 A	23.06.1992
US 2003-0018128 A1	23.01.2003	MX PA03005805A	10.09.2003
		US 7053151 B2	30.05.2006
		WO 0205-3641A1	11.07.2002
		WO 0205-3641A9	17.04.2003
US 2002-0064513 A1	30.05.2002	DE 10145910 A1	20.06.2002
		US 6579519 B2	17.06.2003