(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
25 June 2009 (25.06.2009)

PCT

(10) International Publication Number
WO 2009/078819 A1

(51) International Patent Classification:
A61L 27/20 (2006.01) *C08F 6/14* (2006.01)
A61L 27/56 (2006.01) *C08L 1/08* (2006.01)

(21) International Application Number:
PCT/SG2008/000491

(22) International Filing Date:
18 December 2008 (18.12.2008)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/006,090 18 December 2007 (18.12.2007) US

(71) Applicant *(for all designated States except US)*: **AGENCY FOR SCIENCE, TECHNOLOGY AND RESEARCH** [SG/SG]; 1 Fusionopolis Way, #20-10 Connexis, Singapore 138632 (SG).

(72) Inventors; and
(75) Inventors/Applicants *(for US only)*: **YUE, Zhilian** [CN/SG]; Institute of Bioengineering and Nanotechnology, 31 Biopolis Way, #04-01 Nanos, Singapore 138669 (SG). **WEN, Feng** [CN/SG]; Institute of Bioengineering and Nanotechnology, 31 Biopolis Way, #04-01 Nanos, Singapore 138669 (SG). **YU, Hanry** [SG/SG]; Institute of Bioengineering and Nanotechnology, 31 Biopolis Way, #04-01 Nanos, Singapore 138669 (SG).

(74) Agent: **YU SARN AUDREY & PARTNERS**; 17 Upper Circular Road, #03-00 Juta Building, Singapore 058415 (SG).

(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, 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, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:
— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*
— *of inventorship (Rule 4.17(iv))*

Published:
— *with international search report*

(54) **Title:** FORMING POROUS SCAFFOLD FROM CELLULOSE DERIVATIVES

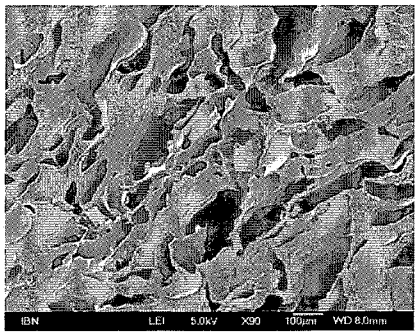

FIG. 2

(57) **Abstract:** Scaffold comprises a polymer defining macropores and comprising hydroxypropylcellulose partially substituted by a substituent comprising a self-crosslinkable group, which is crosslinked through the self-crosslinkable group. The macropores have an average pore size larger than 50 microns and are at least partially interconnected. In one method, bicontinuous emulsion comprising a continuous aqueous phase and a continuous polymer phase is formed. The polymer phase comprises hydroxypropylcellulose partially substituted by a substituent comprising a self-crosslinkable group, and is crosslinked through the self-crosslinkable group to form a polymer defining at least partially interconnected pores. In another method, phase separation is induced in a solution comprising a polymer precursor and water to form a bicontinuous emulsion comprising a continuous polymer phase and a continuous aqueous phase. The polymer precursor comprises a self-crosslinkable group and is crosslinked through the self-crosslinkable group in the emulsion to form a polymer defining at least partially interconnected macropores.

WO 2009/078819 A1