



(51) International Patent Classification:

C08F 293/00 (2006.01) B82Y 30/00 (2011.01)  
G02B 1/04 (2006.01) C08L 53/00 (2006.01)  
C08J 7/00 (2006.01) C08F 220/58 (2006.01)

(21) International Application Number:

PCT/US2013/042628

(22) International Filing Date:

24 May 2013 (24.05.2013)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/651,767	25 May 2012 (25.05.2012)	US
61/771,961	4 March 2013 (04.03.2013)	US
61/771,959	4 March 2013 (04.03.2013)	US
13/840,919	15 March 2013 (15.03.2013)	US
13/899,694	22 May 2013 (22.05.2013)	US
13/899,676	22 May 2013 (22.05.2013)	US

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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, BN, 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, PA, 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.

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

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Declarations under Rule 4.17:

— as to the identity of the inventor (Rule 4.17(i))

[Continued on next page]

(54) Title: POLYMERS AND NANOGEL MATERIALS AND METHODS FOR MAKING AND USING THE SAME

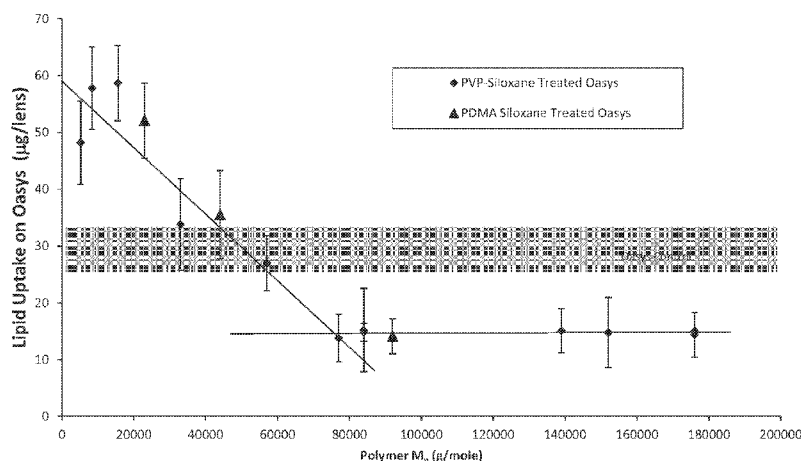


Figure 1  
PRIOR ART

(57) Abstract: Provided are articles such as medical devices which comprise at least one water soluble, crosslinked copolymer. The primary polymer chains of the copolymer are hydrophilic and independently have a degree of polymerization in the range of about 10 to about 10,000. The water soluble, crosslinked copolymers of the present invention are free from terminal substrate associating segments. The copolymers may be incorporated into a formulation from which the article is made or may be contacted with the article post-formation.





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- *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))*
  - *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*
- (88) Date of publication of the international search report:**  
10 April 2014
- Published:**
- *with international search report (Art. 21(3))*

INTERNATIONAL SEARCH REPORT

International application No  
PCT/US2013/042628

A. CLASSIFICATION OF SUBJECT MATTER  
 INV. C08F293/00 G02B1/04 C08J7/00 B82Y30/00 C08L53/00  
 C08F220/58  
 ADD.  
 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)  
 G02B C08F C08J C08L B82Y

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 practicable, search terms used)  
 EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2010/168855 A1 (MCGEE JOSEPH A [US] ET AL) 1 July 2010 (2010-07-01) paragraphs [0015], [0018], [0028], [0047], [0060], [0075], [0105]; claim 22	1-18,77
X	US 2010/296049 A1 (JUSTYNSKA JUSTYNA [NO] ET AL) 25 November 2010 (2010-11-25) paragraphs [0006] - [0009]; claims	31-35,77
X	WO 2009/085759 A1 (BAUSCH & LOMB [US]; LINHARDT JEFFREY G [US]; SHIPP DEVON A [US]; KUNZL) 9 July 2009 (2009-07-09) claims; examples	31-35,77
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Further documents are listed in the continuation of Box C.

See patent family annex.

\* 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 <b>6 February 2014</b>	Date of mailing of the international search report <b>26/02/2014</b>
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer  <b>Iraegui Retolaza, E</b>
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## INTERNATIONAL SEARCH REPORT

International application No  
PCT/US2013/042628

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2004/056909 A1 (COLOPLAST AS [DK]; NIELSEN BO RUD [DK]; MADSEN NIELS JOERGEN [DK]) 8 July 2004 (2004-07-08) page 6, line 18 - line 31 page 12, line 23 - line 25; claims 7,10 -----	1-80
A	US 2011/275734 A1 (SCALES CHARLES [US] ET AL) 10 November 2011 (2011-11-10) the whole document -----	1-80
A	US 2007/116740 A1 (VALINT PAUL L JR [US] ET AL VALINT JR PAUL L [US] ET AL) 24 May 2007 (2007-05-24) the whole document -----	1-80
A	WO 2009/085754 A1 (BAUSCH & LOMB [US]; LINHARDT JEFFREY G [US]; SHIPP DEVON A [US]; KUNZL) 9 July 2009 (2009-07-09) the whole document -----	1-80

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2013/042628

## Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
  
3.  Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1.  As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2.  As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3.  As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
  
4.  No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

### Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

## 1. claims: 1-18, 77

A process comprising contacting a contact lens with a solution according to claim 1 as well as dependent claims 2 to 18 and 77

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## 2. claims: 19-30, 77, 78

A composition comprising a hydrophilic nanogel material according to claim 19 as well as dependent claims 20 to 30 and 78 and a process according to claim 77.

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## 3. claims: 31-35, 77

A process comprising forming a reaction mixture and curing said reaction mixture according to claim 31 as well as dependent claims 32 to 35 and 77.

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## 4. claims: 36-41, 79

An ophthalmic device according to claim 36 as well as dependent claims 37 to 41 and 79

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## 5. claims: 42-47, 80

An ophthalmic solution according to claim 42 as well as dependent claims 43 to 47 and 80

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## 6. claims: 48, 50-76

A composition comprising water soluble crosslinked polymers according to claim 48 as well as dependent claims 50 to 76

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## 7. claims: 49-76

A composition comprising a water soluble crosslinked polymers according to claim 49 as well dependent claims 50 to 76

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No  
PCT/US2013/042628

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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