



US006087412A

United States Patent [19][11] **Patent Number:** **6,087,412****Chabreck et al.**[45] **Date of Patent:** **Jul. 11, 2000**[54] **POLYMERS BASED ON BLOCK COPOLYMERS**5,532,112 7/1996 Kohler et al. 430/281.1
5,612,389 3/1997 Chabreck et al. 522/35[75] Inventors: **Peter Chabreck**, Clayton, Australia;
Dieter Lohmann, Münchenstein; **Kurt Dietliker**, Fribourg, both of Switzerland

FOREIGN PATENT DOCUMENTS

1262488 9/1988 Australia .
0281941A2 3/1988 European Pat. Off. .
0302831A1 7/1988 European Pat. Off. .
0632329A1 6/1994 European Pat. Off. .[73] Assignee: **Novartis AG**, Basel, Switzerland*Primary Examiner*—Susan W. Berman
Attorney, Agent, or Firm—R. Scott Meece; Robert J. Gorman, Jr.[21] Appl. No.: **08/860,132**[22] PCT Filed: **Dec. 27, 1995**[86] PCT No.: **PCT/CH95/00309**§ 371 Date: **Sep. 12, 1997**§ 102(e) Date: **Sep. 12, 1997**[87] PCT Pub. No.: **WO96/21167**PCT Pub. Date: **Jul. 11, 1996**[30] **Foreign Application Priority Data**Dec. 30, 1994 [CH] Switzerland 3967/94
Dec. 30, 1994 [CH] Switzerland 3968/94[51] **Int. Cl.**⁷ **G02C 7/02**; G02C 7/04;
C08F 2/50; C08F 287/00[52] **U.S. Cl.** **522/35**; 522/39; 522/42;
522/36; 522/904; 522/135; 522/136; 522/137;
522/142; 522/144; 522/148; 351/159; 351/160 R;
351/160 H; 525/90; 525/92 C[58] **Field of Search** 522/35, 904, 39,
522/42, 182, 36, 135, 136, 137, 142, 144,
148; 351/159, 160 R, 160 H[56] **References Cited**

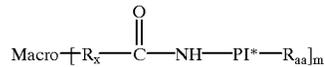
U.S. PATENT DOCUMENTS

4,977,293 12/1990 Hatton et al. 558/153
5,070,170 12/1991 Robertson et al. 528/25
5,334,681 8/1994 Mueller et al. 526/243
5,371,147 12/1994 Spinelli et al. 525/288
5,527,925 6/1996 Chabreck et al. 549/430[57] **ABSTRACT**

The invention relates to crosslinked polymers, which are polymerisation products of a polymerisable mixture that comprises the following components:

a) a macromer of formula C

(C)

wherein Macro is an m-valent radical of a macromer from which the number m of groups $\text{R}_x\text{—H}$ has been removed,each R_x , independently of the others, is a bond, —O— , $\text{—NR}_N\text{—}$ or —S— wherein R_N is hydrogen or lower alkyl, PI^* is a bivalent radical of a photoinitiator, R_{aa} is the moiety of a photoinitiator that forms the less reactive free radical on cleavage of the photoinitiator, and

m is an integer from 1 to 100,

b) a copolymerisable vinyl monomer and

c) a copolymerisable crosslinker.

The polymers are suitable especially for the production of mouldings, such as for contact lenses.

15 Claims, No Drawings