US006737496B2

(12) **United States Patent**
**Hodd et al.**

(10) **Patent No.: US 6,737,496 B2**
(45) **Date of Patent: May 18, 2004**

(54) **PHOTOCURABLE SILOXANE POLYMERS**

(75) Inventors: **Kenneth A. Hodd**, Wales (GB); **Sverker Norrby**, Leek (NL)

(73) Assignee: **Pharmacia Groningen BV**, Groningen (NL)

( * ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **10/134,710**

(22) Filed: **Apr. 29, 2002**

(65) **Prior Publication Data**

US 2003/0088044 A1 May 8, 2003

**Related U.S. Application Data**

(62) Division of application No. 09/416,773, filed on Oct. 13, 1999, now Pat. No. 6,399,734.
(60) Provisional application No. 60/105,580, filed on Oct. 26, 1998.

(30) **Foreign Application Priority Data**

Oct. 13, 1998 (SE) ..... 9803481

(51) **Int. Cl.**[7] ..... **C08G 77/20**
(52) **U.S. Cl.** ..... **528/32**; 528/12; 528/33; 528/36; 528/43; 526/279
(58) **Field of Search** ..... 623/6.11; 528/32, 528/12, 33, 36, 43; 526/279

(56) **References Cited**

U.S. PATENT DOCUMENTS

| | | | |
|---|---|---|---|
| 4,042,613 A | | 8/1977 | Takamizawa et al. |
| 4,348,454 A | | 9/1982 | Eckberg |
| 4,423,195 A | | 12/1983 | Covington |
| 4,675,346 A | * | 6/1987 | Lin et al. |
| 4,778,862 A | | 10/1988 | Woo et al. |
| 5,224,957 A | | 7/1993 | Gasser et al. |
| 5,321,108 A | | 6/1994 | Kunzler et al. |
| 5,391,590 A | | 2/1995 | Gerace et al. |
| 5,411,553 A | | 5/1995 | Gerace et al. |

FOREIGN PATENT DOCUMENTS

| | | |
|---|---|---|
| EP | 0094153 | 11/1983 |
| EP | 0414219 | 2/1991 |
| EP | 0578087 | 1/1994 |
| JP | 91-257420 | 11/1991 |
| JP | 92-159319 | 6/1992 |
| JP | 93-164995 | 8/1993 |
| WO | WO 9947185 | 9/1999 |

OTHER PUBLICATIONS

Hettlich et al, *German J. Ophthalmol.,* 1:346–349 (1992).
Haefliger et al, *Journal of Refractive & Corneal Surgery,* 10:550–555 (1994).
CAPLUS, No. 1992:201158, document No. 116:201158 & JP, A2, 03257420, 19911115.
CAPLUS, No. 1993:588650, document No. 119:188650 & JP, A2,05164995, 19930629.
CAPLUS, No. 1993:27515, document No. 118:27515 & JP, A2, 04159319, 19920602.

* cited by examiner

*Primary Examiner*—Kuo-Liang Peng
(74) *Attorney, Agent, or Firm*—Dinsmore & Shohl LLP

(57) **ABSTRACT**

The present invention relates to photocurable siloxane polymers having functional acryl groups, useful in the preparation of intraocular lenses (IOLs). The polymers are siloxane copolymers, wherein the siloxane can be selected from the group consisting of diphenyl siloxane, phenylalkyl siloxane, dialkyl siloxane, and trifluoroalkyl alkyl siloxane. The invention also relates to methods for producing the said siloxane polymers, as well as to producing accommodating lenses in vivo, which means that the lens is formed in the capsular bag of the eye.

**16 Claims, No Drawings**