



US006706066B1

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

(10) **Patent No.:** **US 6,706,066 B1**  
(45) **Date of Patent:** **Mar. 16, 2004**

(54) **FLOATING PHAKIC REFRACTIVE LENS  
DESIGN FOR PRESERVING EYE  
DYNAMICS**

(75) Inventors: **Stephen Q. Zhou**, Irvine, CA (US);  
**Christopher D. Wilcox**, Mission Viejo,  
CA (US)

(73) Assignee: **Medennium, Inc.**, Irvine, CA (US)

(\*) Notice: Subject to any disclaimer, the term of this  
patent is extended or adjusted under 35  
U.S.C. 154(b) by 98 days.

(21) Appl. No.: **09/597,345**

(22) Filed: **Jun. 19, 2000**

**Related U.S. Application Data**

(60) Provisional application No. 60/152,052, filed on Sep. 2,  
1999.

(51) **Int. Cl.**<sup>7</sup> ..... **A61F 2/16**

(52) **U.S. Cl.** ..... **623/6.56**

(58) **Field of Search** ..... 623/6.11-6.62

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

- 4,254,511 A \* 3/1981 Chase et al. .... 623/6.11
- 4,424,597 A \* 1/1984 Schlegel ..... 623/6.11
- 4,585,456 A 4/1986 Blackmore ..... 623/6

- 4,702,244 A \* 10/1987 Mazzocco ..... 623/6.25
- 5,258,025 A 11/1993 Fedorov et al. .... 623/6
- 5,480,428 A 1/1996 Fedorov et al. .... 623/6
- 6,066,172 A \* 5/2000 Huo et al. .... 623/6.56
- 6,152,958 A \* 11/2000 Nordan ..... 623/6.25

**FOREIGN PATENT DOCUMENTS**

WO 9817205 10/1997

\* cited by examiner

*Primary Examiner*—David H. Willse

*Assistant Examiner*—Javier G. Blanco

(74) *Attorney, Agent, or Firm*—Frost Brown Todd LLC

(57) **ABSTRACT**

Phakic refractive lens (PRL) for correcting myopia or hyperopia are disclosed. The lens is implanted in the posterior chamber of the eye, with no permanent point of fixation, such that it floats between the patient's iris and natural lens. The lens corrects refractive errors in the eye, while maintaining the fluid dynamics of the eye and not causing stress or damage to eye structures. The lenses are made from a flexible material (such as those having a hardness of from about 20 to about 50 Shore A), having a specific gravity of from about 0.9 to about 1.2 g/cm<sup>3</sup>, and have a mass per unit area of from about 0.03 to about 0.30 mg/mm<sup>2</sup>. The method for using those lenses and surgical kits including those lenses are also disclosed.

**18 Claims, 4 Drawing Sheets**

