



(12) **United States Patent**
Eaton, Jr. et al.

(10) **Patent No.:** **US 6,387,456 B1**
(45) **Date of Patent:** **May 14, 2002**

(54) **SILICON BASED SUBSTRATE WITH ENVIRONMENTAL/THERMAL BARRIER LAYER**

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(*) 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.: **09/655,123**

(22) Filed: **Sep. 5, 2000**

Related U.S. Application Data

- (62) Division of application No. 09/292,349, filed on Apr. 15, 1999.
- (51) **Int. Cl.⁷** **C23C 4/06**; C23C 4/10
- (52) **U.S. Cl.** **427/452**; 427/450; 427/453
- (58) **Field of Search** 427/450, 452, 427/453

(56) **References Cited**

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Primary Examiner—Deborah Jones

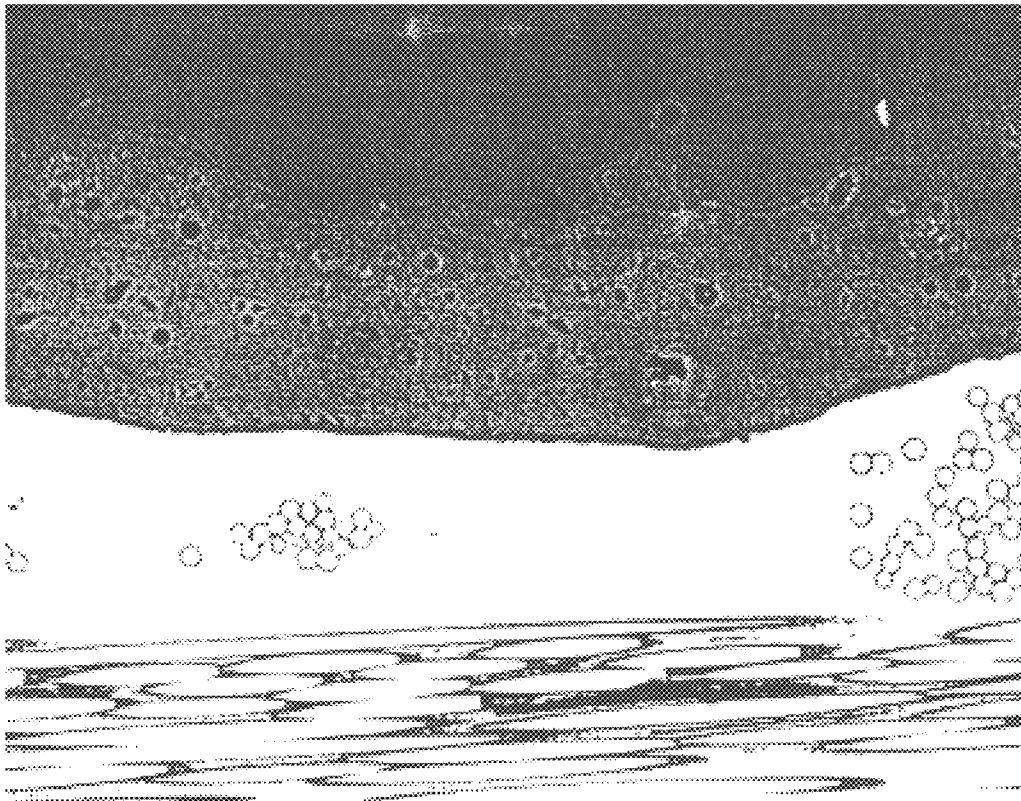
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(57) **ABSTRACT**

A barrier layer for a silicon containing substrate which inhibits the formation of gaseous species of silicon when exposed to a high temperature aqueous environment comprises a barium-strontium alumino silicate.

28 Claims, 4 Drawing Sheets



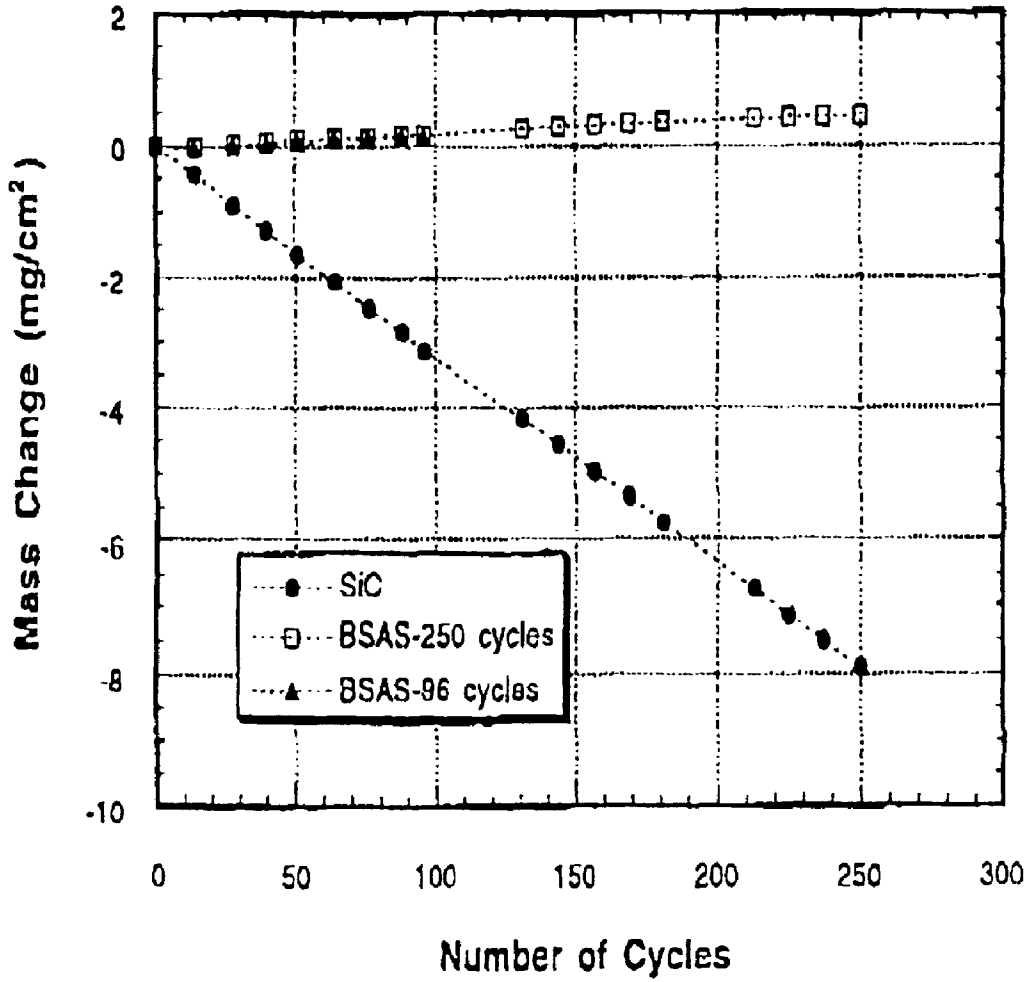


Fig. 1

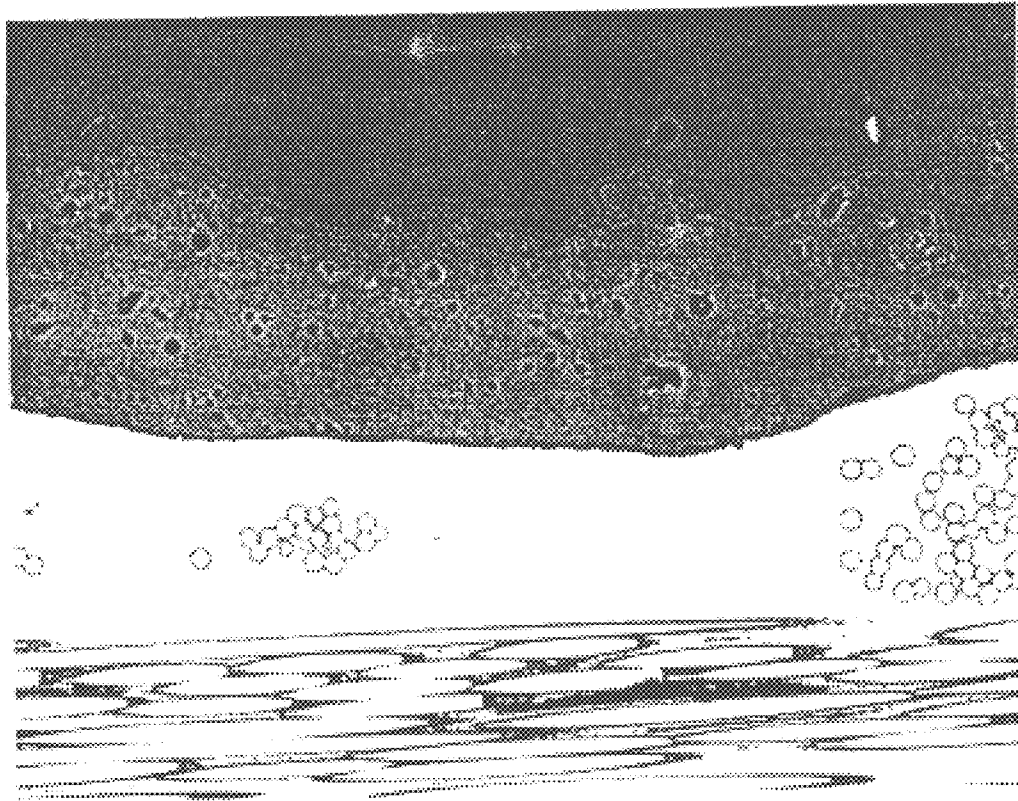


Fig. 2

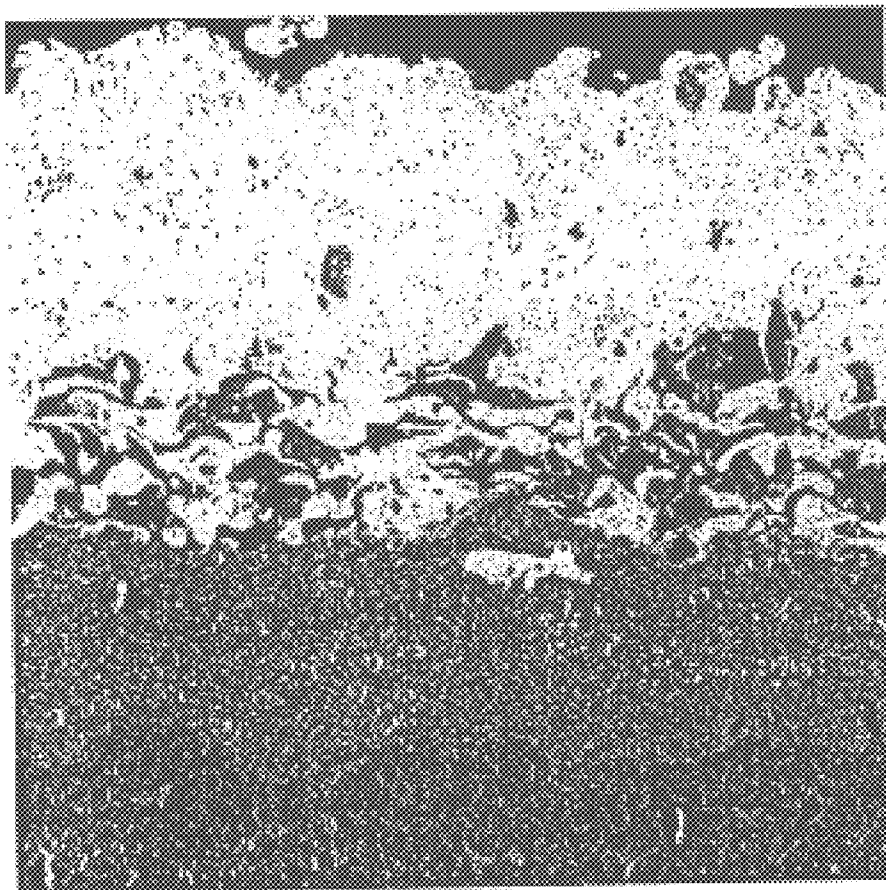


Fig. 3

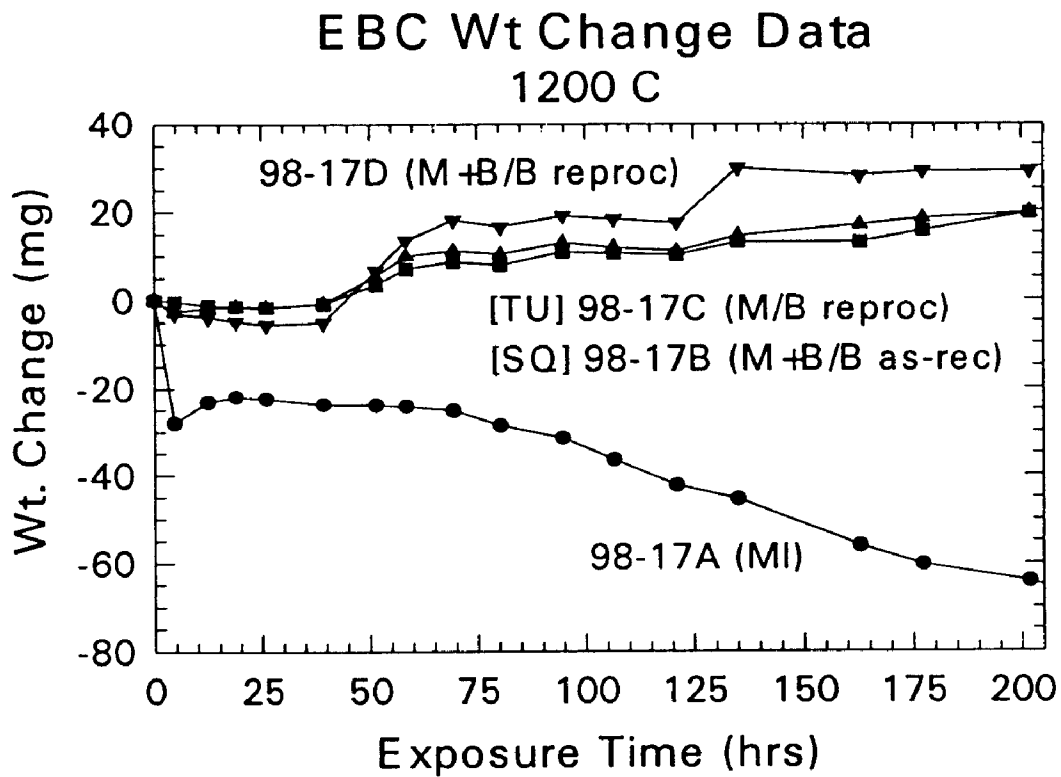


Fig. 4

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