

United States Patent [19]

Brennan et al.

[11] Patent Number: **4,588,699**

[45] Date of Patent: **May 13, 1986**

[54] **HIGH STRENGTH, THERMALLY STABLE
MAGNESIUM ALUMINOSILICATE
GLASS-CERAMIC MATRIX-SIC FIBER
COMPOSITES**

[75] Inventors: **John J. Brennan**, Portland, Conn.;
Kenneth Chyung; **Mark P. Taylor**,
both of Painted Post, N.Y.

[73] Assignee: **United Technologies Corporation**,
Hartford, Conn.

[21] Appl. No.: **476,301**

[22] Filed: **Mar. 17, 1983**

[51] Int. Cl.⁴ **C03C 10/06**; C03C 10/08;
C03C 14/00; C04B 35/56

[52] U.S. Cl. **501/9**; 428/698;
501/8; 501/32; 501/88; 501/89; 501/95

[58] Field of Search 501/8, 32, 9, 89, 95,
501/88; 428/697, 698

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,480,452 11/1969 Fleischner et al. 501/9

4,314,852 2/1982 Brennan et al. 501/95
4,324,843 4/1982 Brennan et al. 428/367
4,410,635 10/1983 Brennan et al. 501/88
4,415,672 11/1983 Brennan et al. 501/4

FOREIGN PATENT DOCUMENTS

1459178 12/1976 United Kingdom 501/9
1535202 12/1978 United Kingdom 501/8

Primary Examiner—Mark L. Bell

Attorney, Agent, or Firm—Harry J. Gwinnell

[57] **ABSTRACT**

A silicon carbide fiber reinforced barium modified magnesium aluminosilicate matrix composite is described having high strength and thermal stability at temperature in excess of 1200° C. The matrix material contains about 5% to about 14% magnesium oxide and about 5% to about 25% barium oxide. While any suitable ratios of fiber to matrix can be used, the composite for most applications for example, in the heat engine area, will contain approximately 20% to 50% by volume silicon carbide fibers.

2 Claims, 1 Drawing Figure

