especially at high temperatures is obtained. Each continuous fiber reinforced layer of the composite, regardless of the number of layers or orientation, has an axial flexural strength at room temperature greater than 70,000 psi and, in most instances, greater than 90,000 psi. As for fracture toughness, although specific fracture toughness measurements have not been made on the composites of the present invention, it is anticipated that each layer will have a critical stress intensity factor (K_{IC}) greater than 10×10^3 psi in.$^{\frac{1}{2}}$

It is particularly noteworthy that, even after initial fracture, composites of the present invention retain a substantial fraction of their original untested strength. This resistance to fracture, even in the presence of initiated damage, is distinctly different from the brittle nature of conventional ceramic articles.

The reinforced ceramics of the present invention have particular utility in environments where oxidation resistance, high strength, and toughness are required, and, because those properties are retained in a high temperature environment (e.g., in excess of 1000° C. and even in excess of 1200° C.), the inventive composites are eminently suitable for use in such applications as a gas turbine engine or internal combustion engine environment, and in high temperature structural ceramic components.

Although this invention has been shown and described with respect to detailed embodiments thereof, it will be understood by those skilled in the art that various changes in form and detail thereof may be made without departing from the spirit and scope of the claimed invention.

We claim:

1. A silicon carbide fiber reinforced glass-ceramic composite consisting essentially of about 15% to about 70% by volume of silicon carbide fibers implanted within a glass-ceramic matrix consisting essentially of:

MgO—5–15%,

As_2O_3—0.5–3%,

Al_2O_3—20–40%,

Nb_2O_5—0–10%,

SiO_2—40–60%,

Ta_2O_5—0–10%,

BaO—5–15%,

and when fully crystallized is predominantly barium osumilite, the composite having high strength and thermal stability at temperatures in excess of 1200° C.

2. The composite of claim 1 wherein the magnesium aluminosilicate contains about 7.4% MgO, about 28.1% Al_2O_3, about 49.7% SiO_2, about 14.1% BaO, and about 0.7% As_2O_3.

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