Additional Examples 25 and 26 are set forth below for further illustration.

EXAMPLE 25

10 g of polydimethylsiloxanes (silicone oil) was blended with 15 g of spherical gas atomized powder (less than 44 μm particle size) of Al—Si (12.2% atomic % of Si) alloy and 1.5 g of amorphous submicron boron powder (from Aldrich Chemical Co.). The mixture was blended for 2 hours at room temperature to produce a homogeneous tacky glue like paste. This material was then loaded into a polyethylene syringe for convenient dispensing. The glue was applied onto the surfaces of the SiC CFCC (2.6 mm×4.1 mm×38 mm) bars to be joined together and were spread evenly with a small laboratory spatula. These bars were then butt joined by pushing the bars together with hand pressure and were fired to 1200° C. at the rate of 10° C./min. and holding for 2 hours at 1200° C.

EXAMPLE 26

10 g of methylsesquisiloxane polymer (SR350 from GE Silicones) was dissolved in 5 ml of toluene and blended with 15 g of spherical gas atomized powder (less than 44 μm particle size) of Al—Si (12.2% atomic % of Si) alloy and 1.5 g of amorphous submicron boron powder (from Aldrich Chemical Co.). The mixture was gradually concentrated while stirring to produce a homogeneous tacky glue like paste. This material was then loaded into a polyethylene syringe for convenient dispensing. The glue was applied onto the surfaces of the SiC CFCC (2.6 mm×41 mm×38 mm) bars to be joined together and were spread evenly with a small laboratory spatula. These bars were then butt joined by pushing the bars together with hand pressure and were fired to 1200° C. at the rate of 10° C./min. and holding for 2 hours at 1200° C.

The invention is not limited to the embodiments set forth above, and the invention is set forth in the following claims.

What is claimed is:

1. A bonded assembly comprising first and second materials selected from the group consisting of a ceramic material and a ceramic composite material bonded at an interface by a composite bond joint comprising metallic phase regions comprising aluminum disposed in a ceramic matrix.

2. The assembly of claim **1** wherein the metallic phase regions comprise aluminum and silicon alloy particles.

3. The assembly of claim **2** wherein the aluminum and silicon alloy particles comprise a aluminum-silicon eutectic composition.

4. The assembly of claim **3** wherein the aluminum-silicon eutectic composition comprises about 12.2 atomic % Si.

5. The assembly of claim **1** wherein the composite bond joint further includes aluminum oxide particles dispersed in the ceramic matrix.

6. The assembly of claim **1** wherein the ceramic material comprises monolithic SiC and the ceramic matrix comprises SiC.

7. The assembly of claim **6** wherein the ceramic composite material comprises SiC fibers in a SiC matrix and the ceramic matrix comprises SiC.

8. A repaired material selected from the group consisting of a ceramic material and ceramic composite material comprising a composite filler material bonded in a crack, hole, or depression of said repaired material, said filler material comprising metallic phase regions comprising aluminum disposed in a ceramic matrix.

9. The assembly of claim **8** wherein the metallic phase regions comprise aluminum and silicon alloy particles.

10. The assembly of claim **9** wherein the aluminum and silicon alloy particles comprise a aluminum-silicon eutectic composition.

11. The assembly of claim **10** wherein the aluminum-silicon eutectic composition comprises about 12.2 atomic % Si.

12. The repaired material of claim **8** wherein the composite filler material further includes aluminum oxide particles dispersed in the ceramic matrix.

13. The repaired material of claim **8** wherein the ceramic material comprises monolithic SiC and the ceramic matrix comprises SiC.

14. The repaired material of claim **8** wherein the ceramic composite material comprises SiC fibers disposed in a SiC matrix and the ceramic matrix comprises SiC.

15. The repaired material of claim **8** which is a tube.

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