

13TH INTERNATIONAL CONFERENCE ON
ADVANCED MATERIALS AND NANOTECHNOLOGY
OCTOBER 26-28, 2017 OSAKA, JAPAN

Improve microstructure and mechanical properties of C_f/SiC-C_f/SiC joint by TiCoNb+Nb foil

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T_i35Co35Nb30 eutectic filler alloy was used to braze C_f/SiC composite. The results showed that there were many large TiCo intermetallic compounds in the brazing seam and the shear strength of the joint was only 34.4 MPa. To improve the microstructure and mechanical properties of the joint, Nb foil was introduced into the filler alloy. Nb can melt into the liquid solder to adjust liquid solder composition during brazing process. The effect of holding time on the microstructure and mechanical properties of brazed joints was investigated. With extending the holding time, the Nb foil thinning and disappeared gradually, TiCo and Nb (s,s) eutectic and CoNb₄Si compound increased and massive TiCo intermetallic compounds disappeared. The highest shear strength with 66 MPa was received while the joint brazed at 1300 °C for 15 min.

Biography

Qiang Zhang is currently pursuing his PhD from the Harbin Institute of Technology, China. He has published 2 academic papers in Journal of the European Ceramic Society and Materials Science and Engineering and was granted 2 patents.

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