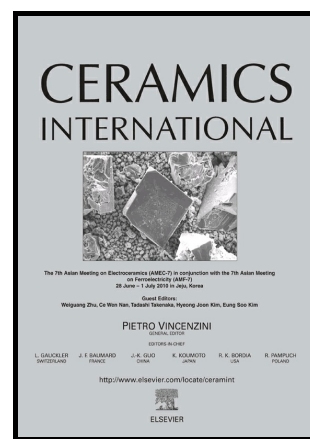


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**Zirconia ceramic and Nb joints brazed with Mo-particle-reinforced Ag-Cu-Ti
composite fillers: interfacial microstructure and formation mechanism**

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Abstract

Zirconia (ZrO_2) ceramic and Nb were successfully brazed using a Mo-particle-reinforced Ag-Cu-Ti composite filler. The effect of the Mo content of the composite filler on the interfacial microstructures and mechanical properties of ZrO_2 /Nb-brazed joints was investigated. The calculated Ti activity initially increased and then decreased as the Mo content was increased from 1 to 40 wt%, and played a decisive role in the evolution of interfacial products formed adjacent to the ZrO_2 ceramic. When 40 wt% Mo particles were added to the composite filler, $\text{TiO} + \text{Ti}_3\text{Cu}_3\text{O}$ reaction layers formed adjacent to the ceramic substrate. By decreasing the Mo content of the filler, the TiO layer became thinner or even vanished, whereas the thickness of the $\text{Ti}_3\text{Cu}_3\text{O}$ reaction layer increased gradually with decreasing Mo

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