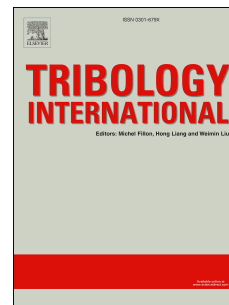


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# Microstructure and tribological properties of SiC matrix composites infiltrated with an aluminium alloy

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## Abstract

A simple melt infiltration process was adopted to form  $\text{Ti}_3\text{Si}(\text{Al})\text{C}_2$  on the surface of SiC ceramics. The  $\text{Ti}_3\text{Si}(\text{Al})\text{C}_2$  content increases with longer infiltration at 900°C. At 1000°C, the reaction layer contains mainly TiC and SiC. The tribological properties of the samples were investigated by wear testing. The hardness of the SiC ceramic with a  $\text{Ti}_3\text{Si}(\text{Al})\text{C}_2$  layer is  $610 \pm 82$  HV, while its friction coefficient is 0.34–0.38, which is ~75% that of pristine SiC. The  $\text{Ti}_3\text{Si}(\text{Al})\text{C}_2$  layer produced a good antifriction effect because plastic deformation occurs in the  $\text{Ti}_3\text{Si}(\text{Al})\text{C}_2$ , and  $\text{Ti}_3\text{Si}(\text{Al})\text{C}_2$  debris continually fills in the grooves during wear.

**Keywords:** Infiltration,  $\text{Ti}_3\text{Si}(\text{Al})\text{C}_2$ , Tribological properties, Microstructure

## 1. Introduction

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