

Wetting in Al composites reinforced with SiC particles

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Aluminium matrix composites have been wide used essentially due to the good relation between weight and mechanical resistance.

To develop a ceramic particle/matrix interface with good characteristics, it is essential to control the interface reactivity, avoiding the formation of undesirable reaction products such as Al_4C_3 . Essentially, there are three methods to prevent the Al_4C_3 formation: Si addition to Al matrix, coating of the SiC particles and to promote a passive oxidation of SiC particles. The last method has been the most used due to its simplicity.

In this work the formation of a SiO_2 layer, in SiC particles surface, was made by exposing the particles to temperatures above $800^\circ C$, in air. SiC particles with different grain size (12.8 and $37.6 \mu m$), were used. The oxidation behaviour was followed by TGA. Also, the wettability between the SiC particles and the Al matrix (Al-10Si-4.5Cu-2Mg) was investigated by measuring the contact angle as a function of temperature and/or time. XRD, SEM, AFM and EDS techniques were used to characterize the SiC particles surface, before and after the tests.