International Review of Mechanical Engineering, vol. 7(7), 2013, pages 1340-1346

The effect of sintering duration on mechanical properties of Al/SiC composites

Abstract

Metal matrix composites (MMCs) have become attractive in a variety of applications due to its advantage of having intermediate properties between metal and ceramic. This paper presents the investigation of the effect of sintering duration on mechanical properties of Al/SiC composites. In the present work, SiC particle reinforced Al matrix composites were produced via powder metallurgical processing. Pure aluminium powder with a particle size of 63 μm and silicon carbide powder with a particle size of 37μm were used. The range of sintering duration was 1, 2, 3, 4, 5 and 6 h at a fixed temperature of 590 °C. The compressive, hardness and impact tests were performed on the sintered samples to characterize the mechanical properties. It was found that as the sintering duration increased from 1 to 6 hours, the mechanical properties of the samples were enhanced. Furthermore, microscopic observations showed that the porosity level decreased as the sintering duration was increased.

Keywords

Aluminium based composite; Mechanical property; Powder metallurgy; Sintering duration