STRENTHENING OF ALUMUNIUM WITH ADDITION OF NANO-SILICON CARBIDE BY USING POWDER METALLURGY METHOD

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CHAPTER 3: RAW MATERIALS & METHODOLOGY

ABSTRACT

This study focuses on nano silicon carbide particulate-reinforced metal-matrix composites processing route using two different powder metallurgy techniques; cold press-sintered and hot press-vacuum. Two kinds of SiC particulates (SiC_p), whose diameters 60 pm and 50-200 nm were separately incorporated into Al-lwt% SiC and Al-3wt% SiC by mechanical milling. The microstructures of the samples were investigated by means scanning electron microscopy and correlated to their mechanical properties through hardness and three-point bending test. The experiment showed that hot press-vacuum route resulted a smaller size and amount of the pores compared to cold press-sintered, thus led to the dramatically improvement in mechanical properties which result an improvement of hardness from 105.7 Hv to 450.6 and strength from 4.7 MPa to 16.2 MPa.