

CHARACTERIZATION AND PROPERTIES OF ALUMINIUM- SILICA SAND NANOPARTICLE COMPOSITES

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ABSTRACT

Aluminium base alloys have mostly been used as structural components and aerospace application due to light weight and environmental resistance. However aluminium pure powder product's applications were limited despite many potential merits. The present study aims to develop an aluminium matrix composite with nanoparticle silica sand. The nanoparticle silica sand with average particle size of less than 100nm was produced by several stages of ball mill and heating combinations. Aluminium matrix composites with 2, 4, 6 and 8 wt.% of nanoparticles silica sand were developed through powder metallurgy technique. It was observed that addition of 8 wt.% nanoparticles silica sand was able to increase the hardness and tensile strength of the composites up to 50 HRB and 323.77 MPa, respectively. Despite of decreasing in its density the composite showed improvement in mechanical properties.

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