

AN INVESTIGATION INTO METAL MATRIX COMPOSITES (AL/SiCp) CHARACTERISTICS PROCESSED BY EQUAL-CHANNE ANGULAR PRESSING (ECAP)

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Abstract

In the present study, hot extrusion and then ECAP were used after consolidation of Al-SiCpAl-MMC by powder metallurgy method with 2.5, 5, 7.5 and 10 vol. % SiCp. Optical and SEM microscopes were used to study the effect of hot extrusion and ECAP on the distribution of SiCp particles. Physical properties, density and porosity, and mechanical properties, compression and hardness tests, of the produced composites were investigated. The results show that the porosity found in samples is reduced significantly after sintering and also after extrusion and ECAP process. Micrographs of ECAPed samples show finely distributed reinforcement particles as compared to as extruded samples, which is also proved by the quadrant method. It was found that ECAP refines the particulate size of reinforcement material SiCp particles which have been significantly reduced in their values from 60 to less than 0.5 μm . The compressive strength and hardness of the ECAP samples show an increase in their values rather than the