

EQUAL CHANNEL ANGULAR PRESSING OF AN AA6061 ALUMINUM ALLOY COMPOSITE REINFORCED WITH MULTIWALLED CARBON NANOTUBE

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Abstract

There has been increase in the need for materials that combine high mechanical resistance and low weight. Aluminum alloys based metal matrix composites (MMC) are very interesting because they combine these properties. Processing materials by ECAP (Equal Channel Angular Pressing) is an efficient technique for producing ultrafine-grained metals by imposing severe plastic deformation, and when applied to metal matrix composites, in particular Aluminum based composites, has potential to produce a reasonable high amount of this nanostructured material. Currently there is little literature specifically related to the ECAP processing of carbon nanotubes reinforced AA6061 composites. Development and research to optimize the mechanical properties of aluminum alloys are imperative in current world. By combining these powerful techniques to improve the mechanical properties of this important aluminum alloy, it is possible to obtain a material with unique characteristics. AA6061 composite reinforced with multi-walled carbon nanotubes (MWCNT) in different levels were processed by ECAP using route B_C and temperature of 200°C.

Key words: ECAP. Metal matrix composite. Severe plastic deformation. Aluminum alloy. Carbon nanotube.