



Fabricating of Aluminum 7075 based hybrid composite using ceramic particles

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Abstract: Strengthening the components and decreasing its weight is already the aim of many researchers in different area such as aerospace and transportation industries. The aim of this work is to process the Al 7075 based hybrid composite using SiC and B₄C reinforcement particles and studying the microstructure and mechanical properties. For this purpose hot press (HP) and accumulative roll bonding (ARB) was used. In this case after processing four strip with same dimensions and surface treatment, 0.8 vol. % of mentioned reinforced particles (0.4 vol. % SiC and 0.4 vol. %) were uniformly dispersed between four strips. Then afterward single press HP and two pass ARB have been carried out in 370°C and 320°C respectively. The microstructure and mechanical properties of processed samples is evaluated by OM, SEM, XRD, Tensile test and Microhardness. The microstructural results after single HP and two pass ARB interface bonding was improved. The mechanical results show processed sample was 1.5 times strengthen than as-received material.

Keywords: Mechanical properties, Al 7075, microstructure, Accumulative roll bonding, Hybrid composite.