

## عنوان مقاله:

Fabrication of Aluminum  $50\%SiC$  Surface Composite on Tungsten Inert Gas Weld Joint by Novel Direct Friction Stir Processing Technique

## محل انتشار:

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## خلاصه مقاله:

For the creation of surface reinforcement particles in the metal matrix, friction stir processing is frequently utilized. Formation of aluminum/SiC surface composite on Tungsten Inert Gas (TIG) butt weld of Al $50\%SiC$  by a novel technique of direct friction stir processing (DFSP) using a hollow tool is successfully demonstrated in this present work. Deposition of SiC in the stir zone of DFSP was confirmed by X-Ray diffraction (XRD) method. Micro analysis of weld joint was achieved using metallographic microscope and scanning electron microscope (SEM). Microstructure of stir zone of DFSP shows finely distributed SiC reinforcement particles in aluminum matrix. Absence of detrimental intermetallics was confirmed by energy dispersive spectroscopy (EDS) analysis. Tensile strength of DFSPed specimen was found to be ۲۲۷.۳ MPa which is ۱۹.۵% lower than UTS of autogenous TIG weld specimen. Microhardness of SZ of DFSP was found to be increased from TIG weld microhardness of ۸۶ Hv to ۱۰۷ Hv due to presence of SiC particles

## کلمات کلیدی:

Autogenous Tungsten Inert Gas Welding, Direct friction stir processing, hollow tool, Surface modification

## لینک ثابت مقاله در پایگاه سیویلیکا:

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