

عنوان مقاله:

Increasing the strength of the weld zones by in situ synthesis of hard phases of Al-Ni binary system during the FSSW process

محل انتشار:

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خلاصه مقاله:

This study tried to enhance the strength of weld zone by in situ synthesis of intermetallic compounds of Al-Ni binary system in the stirred zone of 1100-H12 aluminum alloy substrate during the FSSW process. XRD and EDS analysis showed that the only product of the reaction was Al₃Ni which dispersed homogeneously in the weld zone. The shear strength and micro hardness tests showed that the strength and hardness of the samples significantly increases by adding the mixture of Ni and Al. The results of the study showed that adding pure Ni particles will show more elevation of shear strength in comparison with adding the mixture of Ni and Al to the weld zone.

کلمات کلیدی:

Friction stir welding, Friction stir processing, In situ synthesis, Al₃Ni, Metalintermetallic composite, Mechanical properties, Micro hardness

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