

## عنوان مقاله:

State of the art in friction stir welding and ultrasonic vibration-assisted friction stir welding of similar/dissimilar aluminum alloys

## محل انتشار:

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## خلاصه مقاله:

Researchers have worked on many facets of joining of similar/dissimilar aluminum alloys using different joining techniques and came up with their own recommendations. Friction Stir Welding (FSW) is widely preferred for joining aluminum alloys being an economical alternative to produce high-quality welds. However, obtaining high strength welded joints without the detrimental and visible effects still needs attention considering the effect of hybrid FSW techniques, tool material and geometry, process parameters (tool rotation, welding speed, and plunge depth), and post welding treatments. This study presents the state of the art with the authors' own inferences on the evaluation of FSW performances in terms of joint tensile strength, fatigue strength, corrosion resistance, residual stresses, microstructure, and microhardness. This study also presents attempts made by the researchers on modeling and parametric optimization of FSW to finding scope for application of advanced optimization techniques and development of predictive models for mechanical properties of welded joints. This study emphasizes more studies required on the comparative evaluation of FSW performance with the application of ultrasonic frequency combinedly or individually on advancing and retreating sides of plates.

## کلمات کلیدی:

UVeFSW, Hybrid welding, Aluminum alloy, Tool geometry, Post-weld treatments, Optimization techniques

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