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Optimization in Friction Stir Processing Method with Emphasis on Optimized Process Parameters Laboratory Research

Authors : Atabak Rahimzadeh Ilkhch

Abstract : Friction stir processing (FSP) has promised for application of thermo-mechanical processing techniques where aims to change the micro structural and mechanical properties of materials in order to obtain high performance and reducing the production time and cost. There are lots of studies focused on the microstructure of friction stir welded aluminum alloys. The main focus of this research is on the grain size obtained in the weld zone. Moreover in second part focused on temperature distribution effect over the entire weld zone and its effects on the microstructure. Also, there is a need to have more efforts on investigating to obtain the optimal value of effective parameters such as rotational speed on microstructure and to use the optimum tool designing method. the final results of this study will be present the variation of structural and mechanical properties of materials in the base of applying Friction stir processing and effect of (FSP) processing and tensile testing on surface quality. in the hand, this research addresses the FSP f AA-7020 aluminum and variation f ration of rotation and translational speeds.

Keywords : friction stir processing, AA-7020, thermo-mechanical, microstructure, temperature
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