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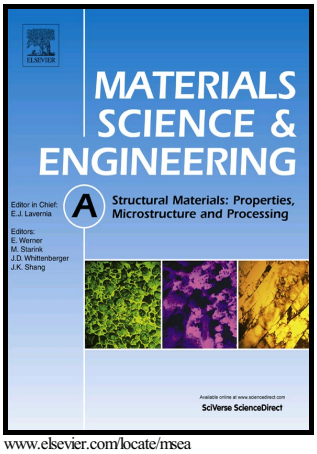


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# Welding parameters analysis and microstructural evolution of dissimilar joints in Al/Bronze processed by friction stir welding and their effect on engineering tensile behavior

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## Abstract

The effect of welding parameters on the joint properties in dissimilar friction stir welding (FSW) between AA5052 alloy and C22000 Bronze alloy was investigated in this study. The FSW process was carried out at rotational speeds of 800, 1000, 1250 and 1400 revolutions per minute (rpm) and welding speeds of 20, 31.5 and 50 mm/min. Results showed that welding under 800 rpm is impossible due mainly to the lack of heat input as well as the appearance of tunnel defects. Results also showed that the increase of rotational speed causes an increase in the fraction of intermetallic layer and the appearance of ring/layer pattern in nugget zone. As well, it was found from EBSD analysis that the difference in stacking fault energy of Aluminum and