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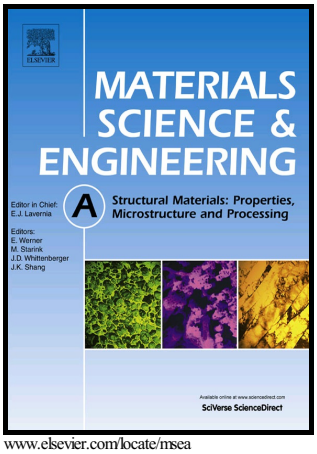

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Influence of tool pin eccentricity on microstructural evolution and mechanical properties of friction stir processed Al-5052 alloy

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Abstract

Stir tools with different pin eccentricities were applied to the friction stir processing of Al-5052 alloy. Results show that pin eccentricity enhances material flow and refines grains of stir zone. The stir zone produced by a stir tool with 0.4 mm pin eccentricity performs the highest hardness and yield strength, attributing to the enhanced grain-boundary strengthening.

Keywords: aluminum alloy; friction stir processing; pin eccentricity; microstructure; mechanical properties