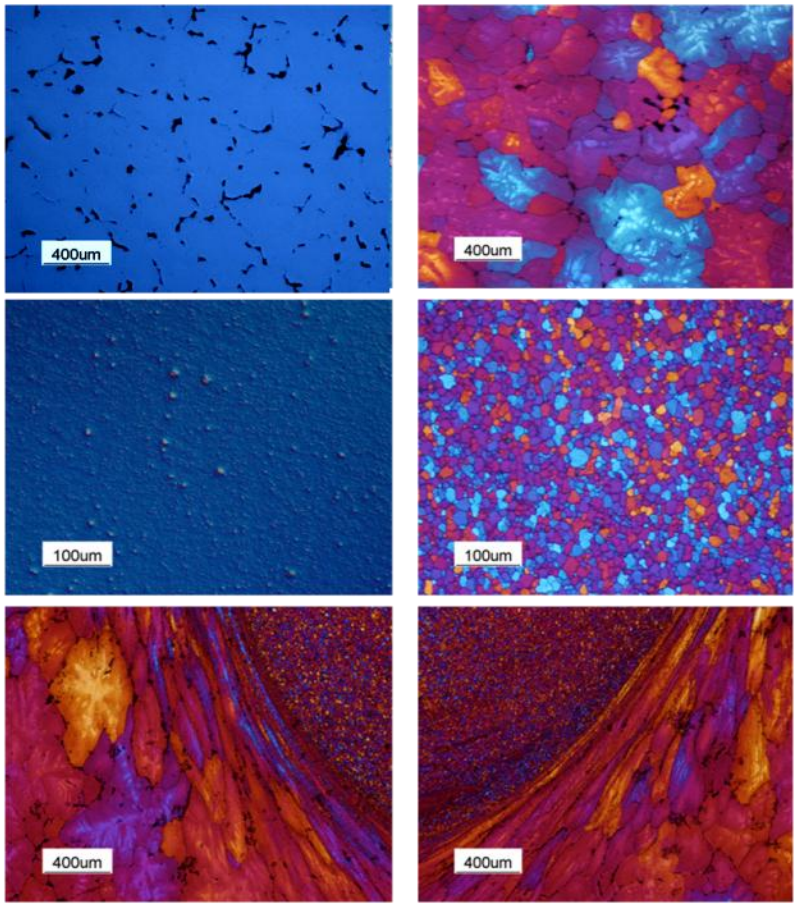
THE ADVANCED CASTING RESEARCH CENTER – ACRC

Project Fact Sheet

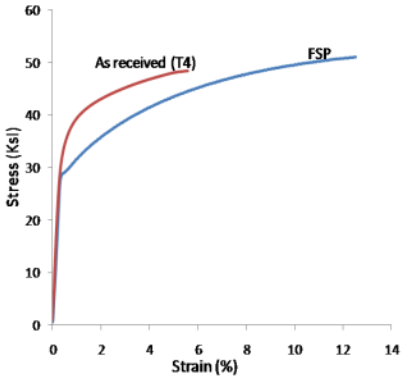
MICROSTRUCTURE EVOLUTION DURING FRICTION STIR PROCESSING OF ALUMINUM CAST ALLOYS

Microstructure evolution during friction stir processing (FSP) of Al A206 was confirmed and evaluated; the potential of FSP to form a particle-reinforced zone in standard Al cast components was investigated.

Microstructure of A206



Typical stress vs. strain curves of A206



	T4	After FSP
0.2% Y.S (Ksi)	36	28.5
UTS (Ksi)	48.3	53
Elongation (%)	5.7	13.7

BENEFITS

FSP achieves microstructure refinement, densification and homogeneity.

FSP controls microstructure and mechanical properties by varying processing parameters.

FSP can optionally adjust the depth of the processing zone by changing the length of the tool pin.

FSP is a versatile technique with a comprehensive function for the fabrication processing and synthesis of materials.

FSP can be incorporated as a post-casting process along with machining.

IMPACT

FSP is an effective solid-state-post-processing technique.

FSP is a green and energy-efficient method without deleterious effects.

FOR MORE INFORMATION, PLEASE CONTACT:

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