

8th International Conference on Physical and Numerical Simulation of Materials Processing (ICPNS)

14–17 October 2016

Seattle, Washington | Hosted by Purdue University

**SESSION 8: POSTER, GRAND PACIFIC BALLROOM**

**SUNDAY, OCTOBER 15, 2016**

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## **Influences of Er, Al–Ti–B alloy, and Al–Sr combined addition on microstructure and mechanical properties of A356 aluminum cast alloy**

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### **ABSTRACT**

Modification and refining have been widely used to enhance the properties of Al–Si cast alloys and are achieved through either chemical or physical means. The most common elements used in the modification of Al–Si alloys are Sr, Na, Sb, and Al–Ti–B master alloy. It was said Er has the same functions. In this work, Er with Al–Ti–B and Al–Sr were combined and added in the A356 aluminum cast alloy, and the refining and modification effects were investigated through SEM, TEM, and material testing system. The relationships have been established between the additions and UTS, elongation and microstructures with and without the heat treatment T5 and T6. The optimum process parameters have been determined by orthogonal method.

**KEYWORDS:** A356 aluminum alloy, grain refining, modification, microstructure, mechanical properties