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Phase transformations during mechanical alloying of FeAl and FeAlSn alloys

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Fe₇₂Al₂₈ and Fe₇₂Al₂₆Sn₂ alloys were milled for 24 hours, using vials and balls of stainless steel and a ball-to-powder weight ratio (BPR) of 16:1 in a planetary ball mill. The characterization of powders from each interval of milling was performed by X-ray diffraction, Mössbauer spectroscopy, scanning and transmission electron microscopy. After 8 hours of milling formation of a nanocrystalline Fe(Al) solid solution occurs. Fe(Al, Sn) was formed after 12 hours of milling. The grain size decreases to 5 nm after 24 hours of milling. The Mossbauer spectra revealed that the FeAl and FeAlSn alloys formed during the low energy ball milling process contained different magnetic phases.

Biography

Zineb Hamlati is an Assistant Professor at the Aeronautic Department, University of Blida 1 in Algeria. She has earned her PhD from the Department of Mechanical Engineering of USTHB (Université des Sciences et de la Technologie Houari Boumediene), Master of Aeronautic degree from the Aeronautic Institute of University of Blida1, Algeria in 2007 and her BSc (State Engineer) from same university in 2000.

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