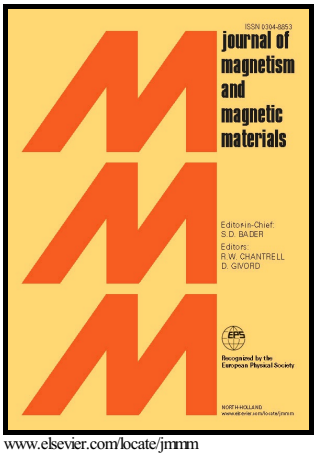

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Effect of C and Ce addition on the microstructure and magnetic property of the mechanically alloyed FeSiBAlNi high entropy alloys

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Abstract

The effects of elemental addition, C and Ce, on the microstructure, thermal property and magnetic property of mechanically alloyed FeSiBAlNi (based-W5) high entropy alloys (HEAs) have been investigated in depth in the present work. The amorphous HEAs have been successfully fabricated by mechanical alloying. The results reveal that Ce addition obviously shortens the formation time of fully amorphous phase, therefore leading to the enhanced glass forming ability (GFA) of the based-W5. The final products of as-milled FeSiBAlNiC alloy consist of the main amorphous phase and a small amount of Si nanocrystals. In addition, C and Ce addition are both beneficial to enhance the thermal stability. The coercivity force (H_c)