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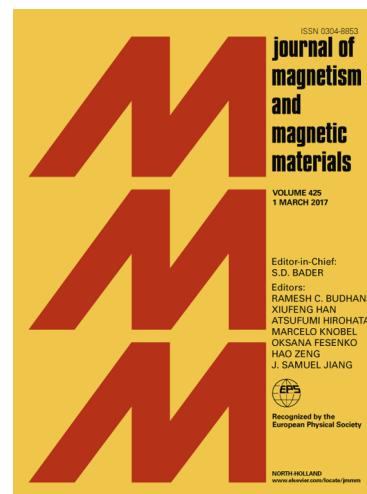
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The Effect of Different Minor Additions on the Magneto-caloric Effect of
FeZrB Metallic Ribbons near Room Temperature

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Abstract

For room-temperature magnetic refrigerators, magnetocaloric materials are critical for their performance and reliability. Among various magnetocaloric materials, Fe-based metallic glasses, especially in the FeZrB system, have been intensively studied recently due to their promising properties such as low fabrication cost and broad magnetic entropy change peak. In order to further improve the magnetocaloric effect (MCE), the influence of minor additions of Co, Er, Sm and Mn on the MCE of FeZrB-based metallic glasses was systematically investigated in this work. The composition-dependent Curie temperatures (T_C) were studied and the magnetic field-dependent MCE was investigated. In two compositions, $\text{Fe}_{88}\text{Zr}_7\text{B}_3\text{Co}_2$ and $\text{Fe}_{86}\text{Zr}_8\text{B}_4\text{Sm}_2$, it was found that their Curie temperatures were close to room temperature and the values of the refrigerant capacity and peak magnetic entropy change were larger than those reported for Fe-based metallic glass at room temperature.

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