

# Tuning of structure and magnetocaloric effect of $\text{Mn}_{1-x}\text{Zr}_x\text{CoGe}$ alloy (where $x=0.03, 0.05, 0.07, 0.1$ )

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The aim of the present work was to study an influence of partial substitution of Mn by Zr in the MnCoGe alloys. The XRD studies revealed a coexistence of the orthorhombic TiNiSi-type and hexagonal Ni<sub>2</sub>In- type phases. The Rietveld analysis showed that the changes in lattice constants and content of recognized phases are depended on Zr addition. Moreover, the occurrence of structural transformation was detected. This transformation was confirmed by the analysis of the temperature dependence of exponent n given in the relation  $\Delta S_M = C \bullet (B_{MAX})^n$ . A decrease of the Curie temperature with an increase of Zr content in alloy composition was detected. The magnetic entropy change was 6.93, 13.42, 3.96 and 2.94 J/(kg K) for Mn<sub>0.97</sub>Zr<sub>0.03</sub>CoGe, Mn<sub>0.95</sub>Zr<sub>0.05</sub>CoGe, Mn<sub>0.93</sub>Zr<sub>0.07</sub>CoGe and Mn<sub>0.9</sub>Zr<sub>0.1</sub>CoGe, respectively. A significant rise of magnetic entropy change for sample doper by Zr ( $x=0.05$ ) was caused by structural transformation.