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Magnetocaloric Effect and Thermal Expansion in $Mn_{1-x}Fe_xAs$[1]
ARIANA DE CAMPOS[2], Montana State University, SERGIO GAMA, Universidade Estadual de Campinas, BRANDOM MCGUIRE, JOHN J. NEUMEIER, Montana State University — The magnetocaloric effect (MCE) is an active research area because of the prospect of replacement of conventional gas compression technology for refrigeration by magnetic devices based on MCE. The compound MnAs exhibits an extremely large MCE called the colossal magnetocaloric effect (CMCE) [1], but it appears only under high pressures. In this work we report the magnetocaloric effect in MnAs obtained by different methods. We will show results in compounds of $Mn_{1-x}Fe_xAs$ [2] which exhibits CMCE at ambient pressure tuned by the Fe substitution. We will also report preliminary results of thermal expansion measurements for some of these materials.

[1] S. Gama, et al., PRL 93, 237202 (2004).
[2] A. de Campos, et al., Nature Materials 5, 802 (2006).

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[2]Universidade Estadual de Campinas

Ariana de Campos
Montana State University

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