

Abstract Submitted  
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**Entropy changes and the caloric effects in  $R_5Si_2Ge_2$  ( $R=Gd$  and  $Tb$ )**<sup>1</sup> NILSON DE OLIVEIRA, Universidade do Estado do Rio de Janeiro — It has been experimentally shown that at ambient pressure, the compound  $Gd_5Si_2Ge_2$  undergoes a first order transition with giant magnetocaloric effect around this room temperature. Experimental data also show that an applied pressure increases the critical temperature of this compound and keeps the first order phase transition. On the other hand, experimental data show that the compound  $Tb_5Si_2Ge_2$  undergoes a second order phase transition with a normal magnetocaloric effect around 100 K. It has also been shown that an applied pressure increases its critical temperature without changing the order of the phase transition. In this work, we calculate the magnetocaloric and barocaloric effects in  $Gd_5Si_2Ge_2$  and  $Tb_5Si_2Ge_2$ . For this purpose, we use a model of localized magnetic moments including the magnetoelastic interaction. In the model, the order of the phase transition is controlled by the ratio between the exchange interaction and the magnetoelastic coupling parameter. Our calculations show that these compounds exhibit large values of the entropy changes upon pressure variation in good agreement with the available experimental data.

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