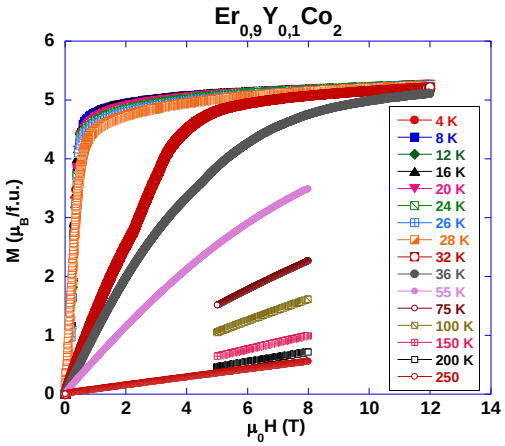
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MAGNETIC AND MAGETOCALORIC PROPERTIES OF $(Er_{1-x}Y_x)Co_2$ COMPOUNDS

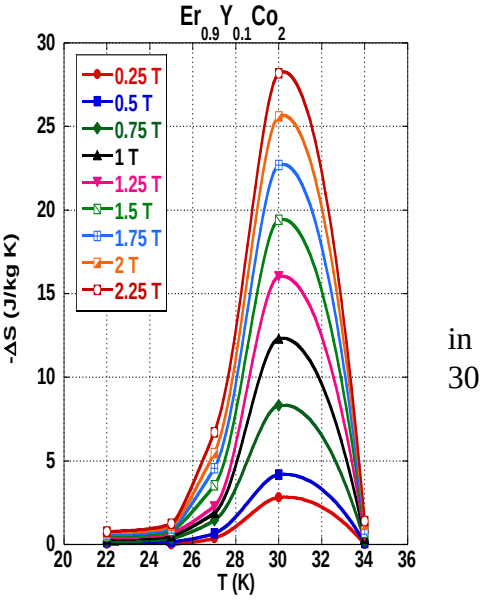
Istvan BALASZ-MURESAN[1], Izabela BALASZ[1], Emil BURZO[1]

[1] *Faculty of Physics, Babes-Bolyai University 40084 Cluj-Napoca, Romania*

The $(Er_{1-x}Y_x)Co_2$ compounds with $x \leq 0.3$ crystallise in a cubic $MgCu_2$-type structure. The compounds ate ferrimagnetically ordered. The magnetic transitions are of first order for compounds with $x \leq 0.1$ – Fig.1 – and for higher Y content of second order. The reciprocal susceptibilities follow non-linear temperture dependences.



The entropy chnages, ΔS, have been determined from magnetizations isotherms by using Maxwell relation. High magnetocaloric effect has been observed in compounds which show first order magnetic transition. As example, $Er_{0.9}Y_{0.1}Co_2$, a value ΔS=-28 J/kg K was observed at T≅ 30 K, in field of 2.25 T- Fig.2.



The ΔS_{max} values increase with external field, according to a H^n law, in fields H > 1 T, in agreement with the predicition of mean field theory. The magnetocaloric effect is strongly diminished in compounds which show a second order magnetic transition.

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