

**RELATIONSHIP OF ADIABATIC, ISOTHERMAL  
AND FIELD CONSTANT CHANGES  
OF A MAGNETIC ENTROPY**

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**ABSTRACT**

The character of a magnetic entropy change under the influence of the magnetic field for different isobaric thermodynamic processes is discussed. The general equations describing the relationship of adiabatic, isothermal and field constant ways of changing of magnetic entropy are presented. It is shown that a value of total magnetic entropy adiabatic change of can be close to isothermal one (for, example, at elevated temperature and/or a small value of magnetocaloric effect) as well as to constant field one (in the case of large magnetocaloric effect and/or a small value of magnetization and low temperature).

**INTRODUCTION**

Up to present a question about different contributions to magnetic entropy change caused by the magnetic field change and their relation is unclear. At the same time it is very important from the point of view of application of different magnetic materials in magnetic refrigerators and cryocoolers and estimation of their efficiency for this purposes. The main goal of this short communication is to clarify the question concerning different contributions to magnetic entropy change and give a push to future experimental and theoretical investigations of this question. We show that total value of magnetic entropy change under the effect of magnetic field during, for example, isobaric – adiabatic process consists of isothermal and isofield parts. The influence of both these parts on the total MCE value can be significantly changed depending from the range of magnetic field and temperature under investigation.

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