

Magnetic equation of state for a description of nanosystems. Ultrafast laser-induced demagnetization in nanosized magnetic materials.

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Magnetic Equation of state for the systems with the reduced dimensions is presented. Particularly, the magnetic properties of the systems with confined dimensions such as 0D structure, 1D wires, thin films, multilayers^{1,2}(Fig.1) and nanoparticles are presented. An influence of the shape and size effects on the physical properties of nanosystems in the case of the systems of nanoparticles is discussed. The experimental results of laser induced demagnetization in the case magnetic materials are shown. Based on the magnetic state equation for structures with reduced dimensions, a model of very fast laser demagnetization for a thin magnetic layer is presented. Model parameters depend on the size of the considered system.

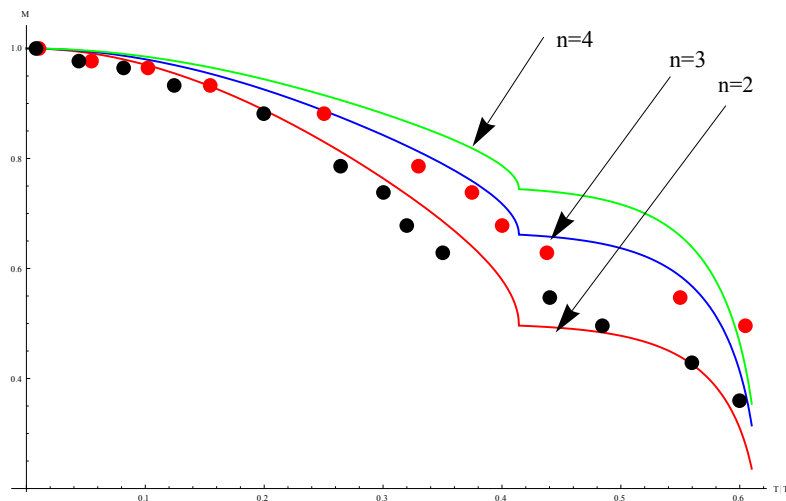


Fig.1. Magnetization for a thin layer system as a function of parameter $\chi = T/T_c$, and the number of monolayers n in Fe for system $(Fe15\text{\AA}/Cu15\text{\AA})_{60}$

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