9.7 cm

THE INFLUENCE OF NON-MAGNETIC SUBSTRATE ON SPATIAL DISTTRIBUTION OF GAUSSIAN FLUCTUATION OF MOLECULAR FIELD IN MAGNETIC NANO-PARTICLES AND ULTRA-THIN FILMS

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An Ising model of nano-particles and ultra-thin films of the sc structure deposited on a non-magnetic substrate is considered. The substrate was assumed to affect the crystal field around atoms lying closest to it. Consequantly, the one-ion anisotropy constant of spin moments of these atoms becomes dependent on the appropriate component of the tensor of the magnetic structure deformation. This dependence was assumed to be linear. To obtain approximations of the Gaussian fluctuations of molecular field[1] the equilibrium reduced density operator[2], along with the Feynman diagram technique for high density expansion were used. As a result, the temperature dependencies of the spatial distributions of mean fluctuations of the molecular field were obtained versus the changes in one-ion anisotropy constant induced by the non-magnetic substrate.

1. Z. Onyszkiewicz, Physica A **103**, 257 (1980).
2. Z. Onyszkiewicz, Physics Lett. A **163**, 450 (1992).

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