

Abstracts

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Influence of non-stoichiometry on the frustrated honeycomb system $\text{Li}_3\text{Ni}_2\text{SbO}_6$

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In this work we present the results of the investigation of new quasi two-dimensional (2D) honeycomb-lattice compound $\text{Li}_3\text{Ni}_2\text{SbO}_6$ and non-stoichiometric $\text{Li}_0, 8\text{Ni}_0, 6\text{Sb}_0, 4\text{O}_2$. The magnetization and NMR data reveal the change of the sign of magnetic interactions and suppressing of the magnetic correlations at low temperatures with doping. We assume the crossover to the cluster spin glass state in $\text{Li}_0, 8\text{Ni}_0, 6\text{Sb}_0, 4\text{O}_2$ instead of the antiferromagnetic transition in $\text{Li}_3\text{Ni}_2\text{SbO}_6$. Also from NMR data we conclude that the vacancies in the lithium subsystem rise the lithium mobility at high temperatures.

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Polarizability of methane cryodeposits

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Experimental studies of the effect of methane deposition temperature on the value of the polarizability of the resulting thin films are reported. The values of the coefficients of refraction and density of the methane, which was obtained during the same experiment, allows to determine the polarizability of the methane molecules in the solid phase. These calculations were performed using the Lorentz-Lorenz equation by analogy to the calculations of the polarizability of carbon dioxide carried out in [1]. Measurements in the vicinity of the phase transition temperature $T = 20.4$ K in the range 14–32 K were carried out, meaning, the samples were investigated in two different states of the rotational subsystem of the crystal lattice of methane [2].

[1] M. Domingo, R. Luna, M.A. Satorre, C. Santonja, C. Millán, J. of Low Temp. Phys. 181, 1 (2015).

[2] A. J. Nijman A. J. Berlinsky, Phys. Rev. Lett. 38, 408 (1977).