Abstract Submitted
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The origin of magnetic ordering in quasi-two-dimensional quantum magnets Cu(*tn*)Cl_2 and Cu(*en*)$(H_2O)_2SO_4$[1] ALZBETA ORENDACOVA, P.J. Safarik University, Park Angelinum 9, 041 54 Kosice, Slovakia, LUCIA BARANOVA, Technical University of Kosice, Vysokoskolska 4, 042 00 Kosice, Slovakia, ROBERT TARASENKO, MARTIN ORENDAC, ALEXANDER FEHER, P.J. Safarik University, Park Angelinum 9, 041 54 Kosice, Slovakia, RUDOLF SYKORA, DOMINIK LEGUT, VSB-Technical University of Ostrava, 17.listopadu 15, Ostrava 70833, Czech Republic — A comparative analysis of magnetic properties of Cu(*en*)$(H_2O)_2SO_4$ (*en* = $C_2H_8N_2$) (1) and Cu(*tn*)Cl_2 (*tn* = $C_2H_{10}N_2$) (2) has been performed to search for the origin of magnetic ordering observed in (1) at $T_c = 0.9$ K while hidden in (2). Previously, both materials were approximated by a quasi-two-dimensional (2d) spin 1/2 Heisenberg model on the square lattice with effective intralayer and interlayer coupling $J/k_B = 3$ K and $J' = 10^{-3}J$, respectively. The first principles calculations revealed in (1) a spatial anisotropy of exchange coupling within a layer, $J_1/J_2 = 0.15$, in accordance with a proximity of data to 2d behavior. Considering only effect of interlayer coupling, $T_c = 0.8$ K was evaluated, while $T_c = 0.85$ K, when a weak ising-like spin anisotropy, $\Delta = 0.015$ was introduced into Heisenberg layers. The effects of spin and spatial anisotropy on the ordering of (1) and the absence of a phase transition in (2) are discussed.

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