The EPR results and interpretation of thermodynamic functions behaviour for SASD type crystals

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Basing on the EPR study and analyses of thermodynamic functions for modified two-sublattice Mitsui-type model in a wide temperature range we try to do the description of the experimentally observed anomalies which take place in SASD crystals family. The two isomorphic crystals $NaNH_4SO_4 \cdot 2H_2O$ and $NaNH_4SeO_4 \cdot 2H_2O$ differ not only in the phase transition temperatures (twice bigger in the second one), but in the type of phase transition order (the second order for the first one and the first order for the second one). All observed experimentally anomalies in dielectric susceptibility, entropy, heat capacity, lattice dynamics behaviour have been consistently studied. The change of the phase transition order has been found depending on the relative contributions of short and long range interactions between particles. In our opinion this situation is characteristic for the investigated crystals.

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