Magnetic properties of [Ni(en)(H2O)4]SO4·2H2O - S=1 quantum magnet.

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We have realized the study of magnetic properties of the compound [Ni(en)(H2O)4]SO4·2H2O (NEHS), that represents a potential realization of an S = 1 spatially anisotropic triangular lattice characterized by the competition between quantum fluctuations, geometrical frustration and single-ion anisotropy. In physical measurements there were used the methods of heat capacity, susceptibility and magnetization in the temperature range from 1.8 to 300 K in magnetic fields up to 5 T. Analysis of experimental data clearly demonstrates the dominant effect of crystal field on the magnetic properties. NEHS represents the so-called ,,large - D \"system, system with D » J and D > 0. The analysis confirmed that the compound can be treated as a spin 1 single molecule magnet with g = 2.16 and nonmagnetic ground state introduced by easy-plane single-ion anisotropy D/kB \approx 11.6 K and neglecting in-plane anisotropy E/D < 0.1.