Magnetic excitation in artificially designed oxygen molecule magnet

TAKATSUGU MASUDA, International Schools of arts and sciences, Yokohama city university, SATOSHI TAKAMIZAWA, KAZUMA HIROTA, MASAAKI OHBA, SUSUMU KITAGAWA — We performed inelastic neutron scattering experiment to study magnetic excitation of O$_2$ molecules adsorbed in microporous compound. The dispersionless excitation with characteristic intensity modulation is observed at $\bar{\hbar}\omega = 7.8$ meV at low temperature. The neutron cross section is explained by spin dimer model with intradimer distance of 3.1 Å. Anomalous behaviour in the temperature dependence is discussed in the context of enhanced magnetoeelasticity in the soft framework of O$_2$ molecule.

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