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Magnetic order and frustrated dynamics in $\text{Li}(\text{Ni}[0.8]\text{Co}[0.1]\text{Mn}[0.1])\text{O}_2$: a study by μSR and SQUID magnetometry

Friday, 16 September 2011 12:49 (2 minutes)

Recently, the mixed metal oxides of the form $\text{Li}(\text{Ni}[1/3]\text{Co}[1/3]\text{Mn}[1/3])\text{O}_2$, have become the centre of attention as promising candidates for novel battery material. These materials have also revealed very interesting magnetic properties. The title compound, was from magnetometry measurements [1] found to be a percolating spin system interacting via AFM and FM superexchange interactions of different strength. On cooling, evidence of spin glass behaviour in 2D is found followed by a completely frustrated system in 3D at the lowest temperature. From aging experiments, a coexistence of ordered and frustrated states are found. The aging behaviour prevails up to the paramagnetic region which suggests that parts of the compound remain frustrated for all temperatures below T_c . Our wTF μSR results clearly show how the magnetically ordered fraction is gradually building up in steps over an extended temperature range. From ZF μSR we further see that no clear long-range magnetic order is present at lowest temperature as indicated by the absence of clear oscillations in the time spectrum. [1] J.M. Wikberg et al., *J. Appl. Phys.* 180, 083909 (2010).

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