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Magnetic frustration and spin glass behaviour in layered lithium oxide, $\mathbf{LiNi_{0.65}Co_{0.25}Mn_{0.10}O_2}$. MAGNUS WIKBERG, PETER SVEDLINDH, Dep. Eng. Sciences, Uppsala University, MOHAMMED DAHBI, ISMAEL SAADOUNE, ECME, LP2E2M, FST Marrakech, University Cadi Ayyad, TORBJORN GUSTAFSSON, KRISTINA EDSTROM, Dep. of Materials Chemistry, Uppsala University — Samples of $Li_xNi_{0.65}Co_{0.25}Mn_{0.10}O_2$ with different amount of Li (x) have been investigated with ac and dc SQUID magnetometry, X-ray diffraction as well as with neutron scattering. The $Li_xNi_{0.65}Co_{0.25}Mn_{0.10}O_2$ exhibit a rhombohedral structure (space-group $R\bar{3}m$) with non-magnetic Li^+ layers alternating with transition metal (TM) slabs with edge-sharing oxygen octahedras. The nickel slabs contain several intralayer interactions of both antiferromagnetic (AFM), ferromagnetic (FM) type, e.g. 90^o Ni^{2+}-O-Mn^{4+} and 90^o Ni^{3+}-O-Ni^{3+}, respectively. Also, the presence of Ni^{2+} in the Li-plane further induces AFM and FM couplings due to 180^o superexchange interactions between Ni^{2+} in the Li-plane and TM- ions present in the slabs. The resulting magnetic structure shows no evidence of long range order due to a high degree of spin frustration, thus yielding magnetic properties reminiscent of a spin glass.

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