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Structural disorder and magnetic properties of $NaNi_{0.5}Mn_{0.5}O_2$ and $LiNi_{0.5}Mn_{0.5}O_2$.[1] NATASHA CHERNOVA, MIAOMIAO MA, JIE XIAO, M. STANLEY WHITTINGHAM, Institute for Materials Research, SUNY Binghamton, JULIEN BREGER, JORDI CABANA, CLARE GREY, Department of Chemistry, SUNY Stony Brook — Magnetic properties of layered O(3) compounds $LiNi_{0.5}Mn_{0.5}O_2$ and $NaNi_{0.5}Mn_{0.5}O_2$ are studied using AC susceptibility and DC magnetization techniques in order to elucidate magnetic interactions within transition metal (TM) layers and between them in compounds with various TM distributions. In ideal layered $NaNi_{0.5}Mn_{0.5}O_2$, antiferromagnetic (AF) ordering transition at 60 K and a spin-flop transition at 5 K in the magnetic field of 2.2 T are found. Upon lost of Na, AF order changes with ferrimagnetic, which may be caused by Ni^{2+} migration to the Na layer. $LiNi_{0.5}Mn_{0.5}O_2$ with flower or zigzag TM order show ferrimagnetic ordering at around 100 K, and significant magnetization hysteresis below this temperature, indicating presence of Ni^{2+} in the Li layer. Magnetic interactions in all compounds are analyzed and models of spin order at low temperatures are proposed.

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