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**Magnetic Properties of nickel hydroxides layers 30A apart obtained by intercalation with dodecyl sulfate ion** MOHINDAR SEEHRA, VIVEK SINGH, West Virginia University — Magnetic systems with reduced dimensionality make good test beds for checks on theoretical models [1]. Here, changes in the nature of magnetic ordering in quasi-2d system of layered Ni hydroxides (LH-Ni-) with variations in the interlayer spacing c are investigated. Magnetic properties of LH-Ni-DS with c $\approx$ 30 A$^\circ$ synthesized by intercalating dodecyl sulfate ion, $(C_{12}H_{25}OSO_3)^-$ between the layers are compared with those of LH-Ni-Ac (c $\approx$ 8.5 A$^\circ$ ) containing the acetate (Ac) ligand [2]. Measurements included those of magnetization M vs. T and H, ac susceptibilities (f = 0.1 Hz - 1000 Hz) and EMR (Electron Magnetic Resonance) spectra at 9.28 GHz. Results show that just like LH-Ni-Ac, LH-Ni-DS also orders ferromagnetically but with $T_c \approx 23$ K about 45 % larger than $T_c \approx 16$ K reported for LH-Ni-Ac.[2]. In EMR studies, linewidth is strongly temperature-dependent, decreasing with decreasing T from 300 K, reaching a minimum near 45 K and then increasing sharply for T $<$ 45 K, the latter due to short range magnetic ordering. These results differ with the model of Drillon et al [3] in which interlayer dipolar interaction between clusters of correlated spins in the layers yields $T_C$ nearly independent of c. Roles of magnetic anisotropy and exchange constants in determining $T_C$ in the LH-Ni systems is discussed.

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[2]. J.D. Rall & M.S. Seehra, J. Phys.:Condens.Matter 24, 076002(2012).
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