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Spin freezing in the quasi-triangular layered magnet, $Cu_2(OH)_3NO_3$ S.A. SOLIN, F.M. WERNER, Washington University in St. Louis, JASON GARDNER, Indiana University, GEORG EHLERS, SNS, Oak Ridge National Laboratory — We have investigated the structural and magnetic properties of the spin S = 1/2 antiferromagnetic quasi-triangular lattice materials: $Cu_{2(1-x)}Zn_{2x}(OH)_3NO_3$ ($0 < x < 0.65$) using a.c. susceptibility, heat capacity [1,2] and neutron scattering. The spin 1/2 Cu planes in these layered compounds form a very slightly ($\sim 1\%$) distorted triangular lattice. We will briefly describe the techniques for synthesizing the hydrogenated, deuterated and intercalated forms of these compounds and also present a brief introduction to the bulk properties of this family of materials. We will discuss recent neutron scattering results from the pure compound. The temperature dependence of the quasielastic scattering reveals an abundance of slow spin dynamics at elevated temperatures. This scattering collapses as the system is cooled through its ordering temperature (11 K) and several magnetic Bragg reflections and a Q-independent mode are observed at finite energy. We will contrast these results with those seen in triangular systems with a Kagome motif.

[1] J. Wu, et. al., Europhys Lett, 93, 67001 (2011).
[2] J. Wu, et. al., J. Phys.: Condens. Matter 22, 334211 – 334222 (2010).

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