^{35}Cl NMR and μSR investigation of Kapellasite, a new S=1/2 *kagome* system

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Quantum fluctuations and a frustrated geometry are major ingredients to destabilize Néel ordering in antiferromagnets. The materials with a 2D triangular corner-sharing *kagome* network and S=1/2 spins can even turn into a quantum spin liquid state at low T. The first structurally perfect S=1/2 *kagome* material synthesized was Herbertsmithite $Cu_3Zn(OH)_6Cl_2$. Recently, other related compounds have become available like Kapellasite, a polymorph of Herbertsmithite. There, the 2D character is more pronounced since the *kagome* planes are only weakly coupled via hydrogen bonds.

We present ^{35}Cl NMR and μSR experiments, as well as magnetization (SQUID, VSM) and heat capacity measurements. ^{35}Cl NMR investigation reveals a multiplicity of magnetic sites which can be related to intersite mixing between Zn and Cu, in agreement with ICP and neutron diffraction analysis. This disorder does not induce any magnetic transition down to 20 mK as probed by the zero field μSR experiment. We have measured the ^{35}Cl NMR Knight shift which yields an intrinsic local susceptibility which differs from Herbertsmithite. These results are completed by low-T heat capacity experiments and interpreted within a J1-J2 model on the *kagome* lattice.

[1] R.H. Colman, C. Ritter and A.S. Wills. *Chem. of Mat.*, 2008, *20* (22), 6897