Abstract Submitted
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Magnetic phase diagram of the randomized two dimensional Heisenberg antiferromagnet $\mathbf{(QuinH)_2CuCl_{4x}Br_{4(1-x)} \cdot 2H_2O}$ FAN XIAO, Paul Scherrer Inst, ROB WILLIAMS, TOM LANCASTER, Durham University, CHRISTOPHER LANDEE, MARK TURNBULL, Clark University — A family of randomized two-dimensional quantum Heisenberg antiferromagnets (2DQHAF) $(QuinH)_2CuCl_{4x}Br_{4(1-x)} \cdot 2H_2O$ (QuinH=quinolinium) have been synthesized and characterized. In such systems, the original interaction in the square lattice parent compound ($x = 0$) is partially replaced by a different exchange strength. Zero-field muon spin relaxation (ZF μ^+SR) experiments have revealed that the magnetic long range ordering can be strongly suppressed by the introduction of the second interaction and the ordering temperature T_N drops sharply as x increases. No 3D long range ordered state was observed in the compounds with $x > 0.25$ and the system stays disordered down to the lowest accessible temperature. The structure, magnetic properties and the $T_N - x$ phase diagram of the family will be presented.

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