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Properties of the low dimensional $Sr_2Cu(W_{1-x}Mo_x)O_6$ spin system[1] OMAR CHMAISSEM, Northern Illinois University, DeKalb IL and Argonne National Laboratory, Argonne IL, MAXIM AVDEEV, SERGEY DANILKIN, Australian Nuclear Science and Technology Organisation, Bragg Institute, Australia, SAMI VASALA, HISAO YAMAUCHI, MAARIT KARPPINEN, Department of Chemistry, Aalto University, Finland — Low-dimensional spin systems have gained much attention in solid state physics. Such systems could have a ground state with no long-range magnetic order and an energy gap in the spin excitation spectrum, offering the possibility of a quantum spin-liquid phase. Quantum fluctuations causing the spin-liquid state are particularly strong in systems with reduced dimensionality and a low spin value; and magnetic frustration can further enhance the fluctuations. Among various low-dimensional spin systems, the S = 1/2 Heisenberg frustrated square lattice model is especially interesting due to its relevance to high-T_C superconducting cuprates, whose undoped parent materials are S = 1/2 square-lattice antiferromagnets. Sr_2CuWO_6 and Sr_2CuMoO_6 have been found to be quasi-two-dimensional S = 1/2 magnetic systems with a square lattice of Cu-ions. These compounds show low-dimensional magnetic properties, with no clear indication of long-range order in magnetic susceptibility. I will discuss the materials properties and the observation of long range magnetism by neutron diffraction and other techniques.

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