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Tuning of the spin liquid ground state in the kagome system $\mathbf{Pr_3Ga_5XO_{14}}$[1] C. R. WIEBE, H. D. ZHOU, Y.-J. JO, M. A. CASTELLANO, L. BALICAS, M. J. CASE, Y. QIU, J. R. D. COPLEY, V. RAMACHANDRAN, N. S. DALAL, J. S. GARDNER — We report on the single crystal growth of the series of kagome oxides $Pr_3Ga_5XO_{14}$ (X = Si, Ti, Ge, and Sn). The material $Pr_3Ga_5SiO_{14}$ has near neighbor antiferromagnetic interactions between the Pr spins (θ = -2.3 K), but there is no long range order down to 0.035 mK (f $\sim$ 66). The presence of 2D low energy spin excitations results in a strong T^2 component to the specific heat typical of other kagome systems such as SCGO. By tuning the size of the lattice through substitution on the Si site, one can adjust the exchange between the spins in a regular fashion. Our data shows a systematic decrease in the amplitude of the T^2 component of the specific heat as the magnetic exchange becomes weaker through Ti and Ge substitution. In the case of Sn doping, the system orders as the dipolar interactions dominate over the weak antiferromagnetic exchange. To our knowledge, this is the first example of a tunable spin liquid kagome system.

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