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Magnetic Properties of Yb₂Pt₂Pb with the Shastry-Sutherland Lattice MOO SUNG KIM, Brookhaven National Laboratory, MARCUS BENNETT, University of Michigan, MEIGAN ARONSON, Brookhaven National Laboratory — We have synthesized single crystals of Yb₂Pt₂Pb, which crystallize in the tetragonal U₂Pt₂Sn-type structure. Comparison of the crystal structure with that of other compounds reveals a structure dependent Yb valence state of Yb₂T₂M (T=transition metal; M=Cd, In, Sn, and Pb). The magnetic susceptibility χ of Yb₂Pt₂Pb is highly anisotropic. The $\chi_{[100]}$ for $B\parallel[100]$ is thirty times larger than $\chi_{[001]}$ for $B\parallel[001]$ at the lowest temperatures. A broad maximum in $\chi_{[100]}$ is found around 3 K just above magnetic transition temperature 2.07 K. In agreement, the electrical resistivity shows a broad maximum around 5 K and the specific heat shows a long tail up to 8 K, due to the magnetic frustration originating from antiferromagnetic exchange interaction between Yb ions arranged in the network of the Shastry-Sutherland lattice.

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