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Thermal and Magnetic Properties of Ferromagnetic $YbPt_2$[1] MOO SUNG KIM, University of Michigan, MARCUS BENNETT, University of Michigan, MEIGAN ARONSON, University of Michigan, JASMINE MILLICAN, Louisiana State University, JULIA CHAN, Louisiana State University — We present the results of magnetization and heat capacity measurements carried out on needle-like single crystals of $YbPt_2$. Above 250 K, the magnetic susceptibility is well described by a Curie-Weiss expression with a moment of 3.35 μ_B per Yb and a Weiss temperature of 73 K, indicating ferromagnetic interactions among almost localized moments. At the lowest temperatures, the magnetization is increasingly nonlinear in field, approaching a saturation value of 3.5 μ_B/Yb at 1.8 K. However, an Arrott plot analysis indicates that ferromagnetic order occurs at a much lower temperature, approximately 0.85 K. Above $\sim$10 K,we find that the heat capacity $C=\gamma T+\beta T^3$, with γ=0.358 J/mol-K^2, while between 10 K and 3 K, C/T drops by a factor of four, perhaps due to the opening of a gap at the Fermi surface. A large anomaly is found in the heat capacity at 0.83 K, suggesting that the transition to the ferromagnetic state is weakly first order. Our results imply that $YbPt_2$ is a rare example of a heavy fermion ferromagnet.

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