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Kondo ground state of 6 related Yb-based intermetallic compounds E-D. MUN, S. JIA, Ames Laboratory, Dept of Physics and Astronomy, Iowa State University, M.S. TORIKACHVILI, Dept. of Physics, San Diego State University, A.S. SEFAT, S.L. BUD'KO, P.C. CANFIELD, Ames Laboratory, Dept of Physics and Astronomy, Iowa State University — Isostructrural YbT_2Zn_{20} (T=Fe, Co, Ru, Rh, Os, Ir) have less than 5% concentration atomic Yb, in which the Yb atoms fully occupy one unique crystallographic site of cubic (-43m) symmetry. This series of compounds offer the opportunity to systematically study Kondo lattice systems approaching the single ion limit. With the thermodynamic and transport measurements, we show that the Kondo ground state has different degeneracies for T=Fe, Ru, Rh, Os and Ir, reflecting the competition between the different Kondo temperatures (T_K) and the similar crystal-electric field (CEF) splitting temperatures (T_{CEF}). On the other hand, the unusual thermodynamic behavior at low temperature suggests that $YbCo_2Zn_{20}$ has low T_K and seems to be very close to a quantum critical point.

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