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Degenerate Bose-Fermi mixtures of rubidium and ytterbium JIRAPHAT TIAMSUPHAT, VARUN VAIDYA, STEVEN ROLSTON, JAMES PORTO, Univ of Maryland-College Park — We report the realization of a quantum degenerate mixture of bosonic ^{87}Rb and fermionic ^{171}Yb atoms in a hybrid optical dipole trap with a tunable, species-dependent trapping potential. ^{87}Rb is shown to be a viable refrigerant for the non-interacting ^{171}Yb atoms, cooling up to 2.4×10^5 Yb atoms to a temperature of $T/T_F = 0.16(2)$ while simultaneously forming a ^{87}Rb Bose-Einstein condensate of 3.5×10^5 atoms. Furthermore we demonstrate our ability to independently tailor the potentials for each species, which paves the way for studying impurities immersed in a Bose gas.

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