

Abstract Submitted  
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**Crystal Synthesis of Novel Yb-Pt-Pb Phases**<sup>1</sup> CARLOS MARQUES, Brookhaven National Laboratory and Stony Brook University, YURI JANSSEN, Brookhaven National Laboratory, MARCUS BENNET, University of Michigan, MOO SUNG KIM, KEESEONG PARK, Brookhaven National Laboratory, PETER KHALIFAH, MEIGAN ARONSON, Brookhaven National Laboratory and Stony Brook University — We have used flux techniques to explore the Yb-Pt-Pb ternary phase diagram, and have grown a number of intermetallic compounds including YbPt, Yb<sub>3</sub>Pt<sub>5</sub>, and the new Yb<sub>5</sub>Pt<sub>9</sub>, YbPt<sub>2</sub>, Yb<sub>3</sub>Pt<sub>4</sub> and Yb<sub>2</sub>Pt<sub>2</sub>Pb, as well as Yb<sub>3</sub>Pt<sub>5</sub>Si and YbPtSi. The crystal structure of these different compounds will be compared. A particular focus has been the synthesis of single crystals of quantum critical antiferromagnet (AF) Yb<sub>3</sub>Pt<sub>4</sub>, and we show that it is possible to synthesize crystals which are large enough for neutron diffraction measurements. Laue patterns and neutron rocking curves along with other methods show that these crystals are of very high quality. Initial results of neutron diffraction and inelastic scattering experiments on single Yb<sub>3</sub>Pt<sub>4</sub> crystals and arrays of multiple Yb<sub>3</sub>Pt<sub>4</sub> crystals will be presented.

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