Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Tuning the Quantum Critical Points in $CeCoIn_5$ and $CeRhIn_5$ Through Pt Doping: Synthesis, Single Crystal and Physical Property Studies PAUL TOBASH, KRZYSZTOF GOFRYK, FILIP RONNING, JOE THOMPSON, Los Alamos National Laboratory, STANISLAV STOYKO, ARTHUR MAR, Department of Chemistry, University of Alberta, ERIC BAUER, Los Alamos National Laboratory — The well known $CeCoIn_5$ and $CeRhIn_5$ compounds provide an excellent opportunity for understanding the physics of heavy fermion superconductivity as well as quantum criticality in correlated electron intermetallics. Besides using hydrostatic pressure as a means to tune the physics of these materials, chemical doping has also proved essential for moving through the superconducting/magnetic boundary in these materials. We extend chemical substitution in $CeCoIn_5$ and $CeRhIn_5$ to another transition metal, Pt, and report on the synthesis, structure, and physical properties of single crystals of $CePt_xCo_{1-x}In_5$ and $CePt_xRh_{1-x}In_5$. Single crystal X-ray diffraction confirmed the tetragonal structure of both systems which crystallize with the $P4/mmm$ space group and are derivatives of the parent compounds $CeCoIn_5$ and $CeRhIn_5$, respectively. We report the physical property measurements, which include magnetic susceptibility, heat capacity, and electrical resistivity.

Paul Tobash
Los Alamos National Laboratory

Date submitted: 23 Nov 2010 Electronic form version 1.4