

Abstract Submitted  
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**Investigation of the superconducting and normal state properties of the filled-skutterudite system  $\text{PrPt}_4\text{Ge}_{12}$  via chemical substitution.** INHO JEON, KEVIN HUANG, DUYGU YAZICI, NORAVEE KANCHANAVATEE, BENJAMIN D. WHITE, SOOYOUNG JANG, NAVEEN POUSE, M. BRIAN MAPLE, University of California, San Diego, PEI-CHUN HO, California State University Fresno — We report a systematic chemical substitution study on the unconventional superconductor system  $\text{PrPt}_4\text{Ge}_{12}$ , which Sb ions are substituted for Ge. Polycrystalline samples of  $\text{PrPt}_4\text{Ge}_{12-x}\text{Sb}_x$  up to  $x = 5$  were synthesized and investigated by means of x-ray diffraction, electrical resistivity, magnetic susceptibility, and specific heat measurements. We observed a suppression of superconductivity with increasing Sb substitutions and evidence for a weak “rattling” mode associated with the Pr ions, characterized by a value of  $\Theta_E \sim 60$  K. As part of a systematic study of the effect of various elemental substitutions on the properties of  $\text{PrPt}_4\text{Ge}_{12}$ , measurements of the superconducting and normal state properties of the  $\text{Pr}_{1-x}\text{Eu}_x\text{Pt}_4\text{Ge}_{12}$  system are currently being performed. This work was supported by the U. S. Department of Energy, Office of Basic Energy Sciences, Division of Materials Sciences and Engineering under Grant No. DE-FG02-04-ER46105 (characterization and physical properties measurements), and the National Science Foundation under Grant No. DMR 1206553 (low-temperature measurements).

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