Abstract Submitted
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$SmPt_4Ge_{12}$ – a filled skutterudite with exotic heavy-fermion properties ANDREAS LEITHE-JASPER, ROMAN GUMENIUK, WALTER SCHNELLE, HELGE ROSNER, MICHAEL NICKLAS, MICHAEL SCHÖNEICH, ULRICH SCHWARZ, YURI GRIN, Max-Planck-Institute for Chemical Physics of Solids — Ternary samarium-filled platinum-germanium skutterudite $SmPt_4Ge_{12}$ was prepared at a pressure of 5.0(0.5) GPa and a temperature of 1070(70) K. The compound crystallizes in the cubic space group $Im\bar{3}$ ($a = 8.6069(4)$ Å) and is isotypic with $LaFe_4P_{12}$. X-ray absorption spectroscopy measurements show that samarium in $SmPt_4Ge_{12}$ has a temperature-independent intermediate valence ($\nu = 2.90 \pm 0.03$). Magnetization data reveal van-Vleck paramagnetism above ∼50 K. The low-temperature specific heat displays a broad anomaly centred at 2.9 K and a large linear coefficient $\gamma' = 450$ mJ mol^{-1}K^{-2} suggesting heavy-fermion behaviour. This state is remarkabkly field-independent and resembles the physics of $SmOs_4Sb_{12}$. [1] R Gumeniuk et al. New J. Physics 12 (2010) 103035.

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