

Abstract Submitted
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Structural, magnetic, electronic properties of the filled skutterudite $\text{EuFe}_4\text{As}_{12}$ HELGE ROSNER, ANDREAS LEITHE-JASPER, WALTER SCHNELLE, MIRIAM SCHMITT, YURI PROTS, MPI CPfS Dresden, ANGELA TRAPANANTI, CORNELIUS STROM, ESRF Grenoble, YURI GRIN, MPI CPfS Dresden — The filled skutterudite $\text{EuFe}_4\text{As}_{12}$ has been synthesized and its structural, electronic, magnetic and thermodynamic properties have been carefully investigated. In this compound, the Fe and Eu moments order ferrimagnetically at $T_C = 151$ K, the highest magnetic ordering temperature among filled skutterudite compounds. LDA+ U band structure calculations confirm the observed magnetic polarizations and suggest that the conduction electrons in $\text{EuFe}_4\text{As}_{12}$ have a large spin polarization, although slightly smaller than in the isostructural $\text{EuFe}_4\text{Sb}_{12}$. We present a joint experimental and theoretical study of the electronic and magnetic properties for both compounds, including the isostructural $\text{EuFe}_4\text{P}_{12}$, where the exchange of the pnictide can be considered as chemical pressure. To separate the influence of mere volume effects and a change of the pnictide we also studied the behaviour under hydrostatic pressure for $\text{EuFe}_4\text{As}_{12}$, both experimentally and theoretically.

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