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Crystal structure and magnetic behavior in CeAu₂Si₂ and CeAu₄Si₂¹ ANDRIY M. PALASYUK, JOHN D. CORBETT, ATHENA S. SEFAT, Ames Laboratory, Department of Chemistry, Iowa State University, Ames, Iowa, 50011, PAUL C. CANFIELD, Ames Laboratory, Department of Physics and Astronomy, Iowa State University, Ames, Iowa, 50011 — Interest in Ce-based compounds of systems like CeCu₂Si₂, CePd₂Si₂ and CeRu₂Si₂ has attracted much interest due to magnetic ordering, heavy Fermion behavior and superconductivity. This work is a comparative study of crystal structure and properties of CeAu_xSi₂ flux-grown crystals with x=2, 4. For CeAu_xSi₂ system, we have studied structure and anisotropic field- and temperature-dependent magnetization M(H, T). The single-crystal x-ray data indicate that CeAu₄Si₂ has CeRe₄Si₂-type structure and is orthorhombic (Cmmm) and CeAu₂Si₂ is tetragonal (I4/mmm). Although there is an extra layer of Au atoms in the CeAu₄Si₂ structure the magnetic ordering temperatures of CeAu₂Si₂ and CeAu₄Si₂ are remarkably similar. In this work we will examine and discuss the similarities and differences between the thermodynamic, transport and structural properties of these related materials.

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