

Abstract Submitted
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Structural and magnetic phase transitions in TbRuAsO and DyRuAsO¹ MICHAEL MCGUIRE, ANDREW MAY, OVIDIU GARLEA, BRIAN SALES, Oak Ridge National Laboratory — The compounds $LnRuAsO$ ($Ln =$ lanthanide) are isoelectronic, isostructural, $4d$ transition metal analogues of the parent phases of 1111-type iron superconductors, but display markedly different behaviors. Recent results from crystallographic and physical properties measurements on TbRuAsO and DyRuAsO reveal particularly unusual properties in these materials. Analysis of low temperature x-ray and neutron powder diffraction data indicate a symmetry-lowering crystallographic phase transition in DyRuAsO at 25 K, and ordering of rare-earth magnetic moments at 7.0 and 10.5 K for TbRuAsO and DyRuAsO, respectively. The structural distortion observed in DyRuAsO (to space group $Pmmn$) is different than the well-known distortion that occurs in $LnFeAsO$. In addition, the findings indicate some coupling between the magnetism and the lattice, and hints of Ru magnetism are observed. A response to the structural transition is apparent in the magnetic susceptibility, and the associated heat capacity anomaly responds strongly to a magnetic field.

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