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Suppression of the gamma-alpha structural phase transition in Ce_{0.8}La_{0.1}Th_{0.1} by large magnetic fields JOHN SINGLETON, FIVOS DRYMIOTIS, NEIL HARRISON, Los Alamos National Laboratory, Los Alamos, NM87545, USA, LUIS BALICAS, National High Magnetic Field Laboratory, Tallahassee, FL32310, USA, ALIMAMY BANGURA, The Clarendon Laboratory, Parks Road, Oxford OX1 3PU, United Kingdom, JASON LASHLEY, CHUCK MIELKE, Los Alamos National Laboratory, Los Alamos, NM, 87545, USA, ZACHARY FISK, Department of Physics, University of California, Davis, CA95616, USA, ALBERT MIGLIORI, JAMES SMITH, Los Alamos National Laboratory, Los Alamos, NM87545, USA — The $\gamma - \alpha$ transition in Ce_{0.8}La_{0.1}Th_{0.1} is measured as a function of applied magnetic field using both resistivity and magnetization. The $\gamma - \alpha$ transition temperature decreases with increasing magnetic field, reaching zero temperature at approximately 56 T. The magnetic-field dependence of the transition of the transition temperature may be fitted using a model that invokes the field and temperature dependence of the entropy of the 4f-electron moments of the γ -phase, suggesting that the volume collapse in cerium and its alloys is primarily driven by entropic considerations. We thank DOE-LDRD-DR20030084, NSF-DMR-0433560, DOE-DE-FG03-03NA00066 and the State of Florida for support of this research.

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