

Abstract Submitted  
for the MAR08 Meeting of  
The American Physical Society

**Magnetic and transport properties of the mixed valent vanadium oxides  $\text{LuV}_4\text{O}_8$  and  $\text{YV}_4\text{O}_8$** <sup>1</sup> S. DAS, A. NIAZI, D.C. JOHNSTON, Ames Laboratory and Department of Physics and Astronomy, Iowa State University, Ames, IA 50011 — Mixed valent vanadium oxides have been subjects of wide interest owing to their exotic properties such as heavy fermion behavior below 10 K in spinel  $\text{LiV}_2\text{O}_4$  and isosymmetrical phase transition and charge ordering in  $\text{YbV}_4\text{O}_8$ .  $\text{LV}_4\text{O}_8$  ( $L = \text{Y, Lu}$ ) crystallize in a structure similar to that of orthorhombic  $\text{CaFe}_2\text{O}_4$ , containing four inequivalent V sites arranged in zig-zag chains. The formal oxidation state of V in these compounds is 3.25. In this study, the magnetic and transport properties of these  $\text{LV}_4\text{O}_8$  compounds are reported. The magnetic susceptibility indicates two possible structural phase transitions in  $\text{YV}_4\text{O}_8$  in the temperature ( $T$ ) range 70–90 K. Anomalies in the heat capacity are also seen in this temperature range. The zero- field-cooled/field-cooled magnetic susceptibilities show possible canted antiferromagnetic ordering in both  $\text{YV}_4\text{O}_8$  and  $\text{LuV}_4\text{O}_8$  for  $T < 50$  K. For  $\text{LuV}_4\text{O}_8$ , the dc electrical resistivity of a sintered pellet measured using a standard four-probe technique shows a strong increase at  $T < 100$  K.

<sup>1</sup>Supported by the USDOE under Contract No. DE-AC02-07CH11358.

Supriyo Das  
Ames Laboratory

Date submitted: 30 Nov 2007

Electronic form version 1.4