

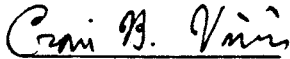
Abstract Submitted  
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Suggested title of session  
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Ternary Superconducting Materials

Low Temperature Heat Capacity of Superconducting Ternary Iron Silicides. C.B. VINING and R.N. SHELTON, Ames Lab.-USDOE\* and Dept. of Physics, Iowa State U.--The heat capacity of superconducting ternary rare earth-iron silicides,  $\text{Lu}_2\text{Fe}_3\text{Si}_5$  ( $T_c=6.09\text{K}$ ),  $\text{Sc}_2\text{Fe}_3\text{Si}_5$  ( $T_c=4.46\text{K}$ ) and  $\text{Y}_2\text{Fe}_3\text{Si}_5$  ( $T_c=2.15\text{K}$ ) is reported for the temperature range 0.5K to 24K. Data for a sample of  $\text{Sc}_2\text{Fe}_3\text{Si}_5$  are in good agreement with a simple Debye model,  $C=\gamma T+\beta T^3$ , from 5K to 15K, which is above the superconducting transition. It is necessary to include a small  $T^5$  term in the heat capacity to properly fit the data above 15K. Analysis of the normal state data yields  $\gamma=22.2$  mJ/mole-K<sup>2</sup> and a rather large Debye temperature of  $\Theta_D=562\text{K}$ . At 4.46K a jump in the specific heat is observed,  $\Delta C/\gamma T_c=0.76$ , indicating bulk superconductivity. This jump in the specific heat is smaller than the BSC value of  $\Delta C/\gamma T_c=1.43$ . Results of measurements on  $\text{Lu}_2\text{Fe}_3\text{Si}_5$  and  $\text{Y}_2\text{Fe}_3\text{Si}_5$  are also reported.  
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- ( ) Prefer Poster Session  
 (X) Prefer Standard Session  
 ( ) No preference

  
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