

Abstract Submitted
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Heat capacity measurements of sub-milligram quantities of mantle minerals DAVID W. COOKE, F. HELLMAN, University of California at Berkeley, A. NAVROTSKY, M. DOROGOVA, C.E. LESHER, University of California at Davis — Knowledge of heat capacities and standard entropies of mantle minerals is necessary for thermodynamic modeling of high P-T equilibria. However many of these materials can only be prepared in milligram quantities in a multianvil apparatus or in microgram quantities in a diamond anvil cell. This eliminates traditional adiabatic calorimetry techniques for C_p measurements. Our microcalorimeters have been used to successfully measure thin films, multilayers, and magnetic single crystals. Using these “calorimeters on a chip”, we are measuring the heat capacity of the Fe_2SiO_4 olivine and spinel polymorphs from 2 K to room temperature. This will provide a direct measurement of the entropy of the olivine-spinel transition and will uncover possible magnetic phase transitions at low temperature in the spinel phase. We would like to thank the DOE for funding this research.

David W. Cooke
University of California at Berkeley

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