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High Pressure Seebeck Coefficient Measurements Using Paris-Edinburgh Cell JASON BAKER, RAVHI KUMAR, HiPSEC and Department of Physics, University of Nevada, Las Vegas, CHANGYONG PARK, CURTIS KENNEY-BENSON, HPCAT, Geophysical Laboratory, Carnegie Institution of Washington, NENAD VELISAVLJEVIC, Shock and Detonation Physics Group, Los Alamos National Laboratory, HIPSEC AND DEPARTMENT OF PHYSICS, UNIVERSITY OF NEVADA, LAS VEGAS COLLABORATION, HPCAT, GEOPHYSICAL LABORATORY, CARNEGIE INSTITUTION OF WASHINGTON COLLABORATION, SHOCK AND DETONATION PHYSICS GROUP, LOS ALAMOS NATIONAL LABORATORY COLLABORATION — We have developed a new type of sample cell assembly for the Paris-Edinburgh (PE) type large volume press for simultaneous x-ray diffraction, electrical resistance, and thermal measurements at high pressures. We demonstrate the feasibility of performing in situ measurements of the Seebeck coefficient over a broad range of pressure-temperature conditions by observing the well-known solid-solid and solid-melt transitions of bismuth (Bi) up to 3GPa and 450 K. We observed a gradual increase in the Seebeck coefficient which becomes positive during transition to the Bi - II phase. Also, we have performed successful Seebeck coefficient measurements on the thermoelectric material PbTe. This new capability enables us to directly correlate pressure-induced structural phase transitions to electrical and thermal properties.

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