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On the High-Pressure Behavior of Titanium Hydride PATRICIA E. KALITA, Department of Physics,University of Nevada Las Vegas, NV, USA, STANISLAS SINOGEIKIN, Geophysical Lab, Carnegie Institution of Washington, Washington DC, USA, KRISTINA E. LIPINSKA-KALITA, Department of Chemistry, University of Nevada Las Vegas, NV, USA, THOMAS HARTMANN, Harry Reid Center of Environ. Studies, Las Vegas, NV, USA, ANDREW CORNELIUS, Department of Physics,University of Nevada Las Vegas, NV, USA — Hydrogen storage research has recently invested a great deal of efforts into investigations of metal hydrides. Although titanium hydride is not the ideal candidate for storing hydrogen, Ti hydrides can act as active species to catalyze the reversible dehydrogenation of other hydrides and carbon nanotubes. In addition the basic science interest of this project lies in investigating the structure and especially the high-pressure behavior of TiH2. In the present study, we show the first in situ, high-pressure angle-dispersive and energy dispersive synchrotron x-ray diffraction studies of titanium hydride. We investigate the effects of hydrostatic and non-hydrostatic conditions. We also show the results of structural refinements as well as the bulk modulus of TiH2. To the best of our knowledge, this work is the first attempt to measure the equation of state of TiH2 using synchrotron x-ray diffraction and diamond anvil cells.

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