

Abstract Submitted
for the SHOCK13 Meeting of
The American Physical Society

High pressure x-ray diffraction and Raman spectra study of V_2O_3

LIGANG BAI, MICHAEL PRAVICA, YUSHENG ZHAO, Department of Physics and Astronomy, University of Nevada Las Vegas and High Pressure Science and Engineering Center (HiPSEC), Las Vegas, NV 89154, SERENA CORR, School of Chemistry, University of Glasgow, Glasgow, Scotland, YANG DING, The Advanced Photon Source, Argonne National Laboratory, Argonne, IL 60439, USA, STAS V. SINOGEIKIN, YUE MENG, CHANGYONG PARK, GUOYIN SHEN, High Pressure Collaborative Access Team, Geophysical Laboratory, Carnegie Institution of Washington, Argonne, IL 60439 USA — The structural and vibrational properties of V_2O_3 have been investigated on basis of synchrotron X-ray diffraction and Raman scattering in a diamond anvil cell. The structure analysis based on the Rietveld refinement methods shows the pressure dependence of V-O and V-V bonding distances. The compressibility of volume and cell axis under different pressure medium is discussed. The pressure dependence of Raman modes was obtained and compared with the existing low temperature measurements. A new high pressure phase of V_2O_3 was observed by x-ray diffraction and also predicted by ab initio method. This new phase has similar structure with low temperature phase.

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Date submitted: 25 Feb 2013

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