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## Synthesis and Characterization of Transition Metal Nitrides

<u>Eugene Gregoryanz</u>, Geophysical Laboratory, Washington DC, USA <u>e.gregoryanz@gl.ciw.edu</u>

C. Sanloup, A. Young, M. Somayazulu, H.K. Mao and R. Hemley, Geophysical Laboratory, Washington DC, USA

The interest in the synthesis of the new materials has been always driven by the applications relevant to the technology and fundamental science. Transition metal carbides and nitrides form refractory high-strength high-hardness materials [1]. Recent discovery of platinum nitride (PtN) [1] showed the possibility of synthesis of the novel materials at high pressures (e.g. 50 GPa) and temperatures and their recovery to the ambient conditions in the diamond anvil cell. Here, we present two novel transition metals nitrides IrN and  $OsN_2$  synthesized at extreme conditions having exceptionally high bulk moduli. Using synchrotron x-ray radiation, Raman spectroscopy and electron microprobe analysis we characterize the new materials and compare them with other known transition metals nitrides.

References:

- [1] P. McMillan, Nat. Mat., 2002, vol, 1, 19.
- [2] E. Gregoryanz et al. Nat. Mat., 2004, vol. 3, 294.