

W0340

High-pressure X-ray Crystallographic Studies of Viral Assemblies. K. Brister¹, R. Fourme², H.-K. Mao³, J.E. Johnson⁴, T. Lin⁴, ¹Consortium for Advanced Radiation Sources (CARS), Univ. of Chicago, Chicago, IL, USA, ²Synchrotron Soleil, Univ. Paris-Sud, Orsay, France, ³Geophysical Laboratory, Carnegie Inst. of Washington, Washington, DC, USA, ⁴Dept. of Molecular Biology & Center for Integrative Molecular Biosciences, The Scripps Research Inst., La Jolla, CA, USA.

Diffraction for the icosahedral virus Cowpea Mosaic Virus (CPMV) can be dramatically improved when pressure is applied to the crystals (See Figure 1). This method, besides having an intrinsic scientific interest, would be of great value in x-ray crystallography if shown to be generally applicable.

Using the facilities of HP-CAT at the Advanced Photon Source near Chicago, we have reproduced the results previously obtained at the European Synchrotron Radiation Facility (ESRF) in Grenoble, France¹, and have extended these studies data sufficient for the structural study of the pressure effects on the CPMV structure. This opens the way for in-depth studies for application of this method to virus and protein crystallography.

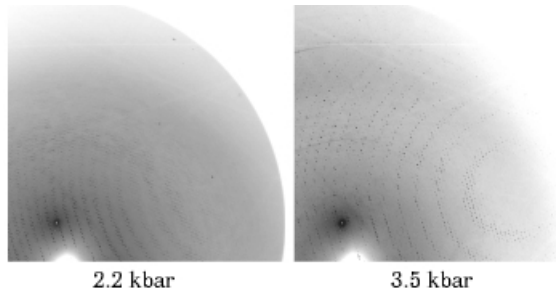


Figure 1: Diffraction patterns from a CPMV in a diamond anvil cell. The left hand pattern shows diffraction to 3 Å at 2.2 kbar while the right hand pattern shows diffraction to 2.1 Å at 3.5 kbar.

¹R. Fourme, I. Ascone, R. Kahn, M. Mezouar, P. Bouvier, E. Girard, T. Lin, and J.E. Johnson, *Structure* 10, 1409-1414 (2002).