



## **High-Pressure Neutron Scattering Studies of Complex Earth Materials**

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Major progress in high-pressure techniques and neutron instrumentation during the past decade now allows detailed crystallographic studies on a wide variety of complex earth materials. Such studies are of interest to planetary scientists, materials scientists, physicists and chemists alike as new classes of substances and phenomena are appearing under compression, many of them involving light elements such as hydrogen and requiring precise *in situ* studies of structure, magnetic properties and phonons. Neutron scattering methods are particularly versatile as they allow investigation of both structural details and structural dynamics of the atomic arrangement in materials. In this talk, I will illustrate these possibilities by a number of recent powder and single-crystal neutron scattering experiments under ambient and high-pressure conditions. The examples discussed in this talk will serve to illustrate the potential and current limitations of the study of complex minerals by neutrons. Although most of this work concerns techniques exploiting the capability of the “Paris-Edinburgh” high pressure cell, complementary techniques using diamond anvil methods will be presented. Prospects for single-crystal neutron diffraction studies of complex earth materials under high pressure will also be discussed.