



High-Pressure beam line at the new neutron source, J-PARC, in Japan

H. Kagi, M. Arai

Laboratory for Earthquake Chemistry, Graduate School of Science, High Intensity Proton Accelerator Project Division, High Energy Accelerator Research Organization, 1-1 Oho, Tsukuba 305-0801, Japan

J-PARC (Japan Proton Accelerator Research Complex) project is under construction in Tokai village, Ibaraki prefecture, Japan, to be completed by 2007 with collaboration between JAERI (Japan Atomic Energy Research Institute) and KEK (High Energy Accelerator Research Organization). The J-PARC project involves a neutron science facility (JSNS), which will give us two orders of magnitude higher neutron flux compared to the existing neutron facilities. The high-pressure science community in Japan has submitted a proposal for the development of a high-pressure beamline at JSNS. The proposal is now under review by the evaluation committee. If the proposal is approved, we will start construction of the new high-pressure beamline. The working group consists of scientists from broad background. Crystal structure of hydrogen-bearing materials including hydrous minerals, order-disorder transitions of minerals, structure of light element liquid at high pressure, etc. will be targets of our facility. Among them, one of the main highlights in our proposal is an application of neutron science into understanding of magma processes featuring active geothermal events in Japan. For this purpose, our facility will be dedicated to in-situ measurements of neutron diffraction not only at high pressure but also at high temperature with stable and uniform heating condition. We have been strongly experienced in experiments using a multi anvil high-pressure apparatus in synchrotron light source facilities such as Photon Factory at KEK and SPring-8. According to our proposal, a DIA-type large press will be installed at the new beamline. Details of the proposal will be discussed in the presentation.