SATELLITE WORKSHOP - Photon Science

In situ high P studies using the Large Volume Press at P61B

01.02.2021

Studies on mm-sized samples at high pressures and temperatures in the Large Volume Press using in situ X-ray techniques will soon be possible using a 2nd Ge-detector at beamline P61B. This enables structure determination from powder diffraction data at two different detector angles offering better resolution and a larger q-range. Rudimentary stress analysis with both detectors at 0° and 90° azimuthal positions at the same angle will also be possible. For the latter, assemblies using sintered diamond anvils are currently tested to allow in situ rock deformation studies using triple-stage setups. Because P61B only receives 50% beam time, we strive to serve users in other ways without X-rays. Hence, additional in situ techniques are being developed such as acoustic emissions testing, e.g. to study brittle processes in samples under stress, and ultrasonic wave speed measurements using a state-of-the-art oscilloscope and function generator. These set ups will also be available for beam time. At this dedicated meeting you will learn about the status, development and future of the beamline (e.g. at PETRA IV). We hope this meeting offers an opportunity for you to connect with the beamline staff and other users visiting (or planning to visit) the beamline, to foster new research ideas in all fields related with bulk materials at high pressure. We encourage you to submit a proposal for regular beam time by the deadline of 01 March 2021.

Organisers: R. Farla, S. Bhat Contact: robert.farla@desy.de

PROGRAMME

Session 1 – Geosciences			Chair: R. Farla
13:00 – 13:10	*Introduction*	R. Farla	DESY
13:10 – 13:35	*Recent results and future projects for high-pressure-temperature in situ X-ray diffraction experiments at beam line P61B (20 + 5 min)*	T. Katsura	BGI, Univ. of Bayreuth
13:35 – 14:00	*Probing element partitioning in situ at high P and T with EDX (20 + 5 min)*	C. Sanloup	Uni. Paris
14:00 – 14:25	*Determination of akimotoite-bridgmanite (MgSiO3) phase transition at 1250-2050 K using a multi-anvil press with in-situ X-ray diffraction: Explanation of the 660-km discontinuity depressions beneath cold subduction zones (20 + 5 min)*	A. Chanychev	BGI, Univ. of Bayreuth / DESY
14:25 – 14:40	***Coffee break (15 Min.)***		
Session 2 – Materials sciences			Chair: S. Bhat
14:40 – 15:05	*In-situ investigation of solid-gas/fluid reactions at gigapascal pressures using LVP beamlines (20 + 5 min)*	U. Häussermann	Uni. Stockholm
15:05 – 15:30	*Phosphorus Nitrides under Pressure - ex-situ and in-situ (20 + 5 min)*	S. Ambach	LM Uni. München
15:30 – 15:55	*Multi-phase XRD analysis of materials synthesized with the LVP at P61B (20 + 5 min)*	L. Wiehl	T. U. Darmstadt
15:55 – 16:10	***Coffee break (15 Min.)***		
Session 3 – Beamline review and discussion			Chair: S. Bhat
16:10 – 16:35	*Status and development of beamline P61B (20 + 5 min)*	R. Farla	DESY
16:35 – 17:00	*Discussions for PETRA III and IV, close-out (25 min)*		
17:00	***End of the workshop***		