

# SATELLITE WORKSHOP - Photon Science



## High-pressure Science in the Large Volume Press at P61B

30.01.2020

SemR 456, Bldg. 25f

Studies on mm-sized samples at high pressures (and temperatures) in the Large Volume Press using *in situ* X-ray techniques are now possible at beamline P61B. In the first half of 2020, commissioning continues with a Ge-SSD and a double-objective X-ray microscope for energy-dispersive X-ray diffraction in the energy range of 30 – 200 keV with an unprecedented amount of photon flux. Efforts to eliminate characteristic Pb emissions (from shielding) and to reduce the background in the diffraction patterns from scattered X-rays are promising. Dedicated radiography (imaging) experiments in the LVP can be carried out using a 2 mm x 2 mm beam. A precise detector positioning system (built by Kohzu) will be delivered and installed in the period of April – May 2020. Following this, a second Ge-SSD will be added to the detection set up. The LVP is fully adapted for many different anvil/assembly set ups and can operate in 3 modes of compression, particularly to enhance the opportunity to conduct *in situ* rock deformation studies. During this dedicated satellite meeting for the LVP beamline P61B, beamline status, ongoing research and collaborative efforts will be presented. The meeting offers an opportunity for current and new users to meet with the beamline staff and with each other to discuss new research ideas for high pressure studies in the fields of Earth and Materials sciences and organic/inorganic Chemistry. P61B is joining the current call for proposals for beam time starting in II-2020.

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## PROGRAMME

### Session 1

			Chair: R. Farla
14:00 – 14:10	<i>Introduction</i>	R. Farla	DESY
14:10 – 14:35	<i>In situ X-ray observation study using a large-volume press at ultra-high-pressure and ultra-high-temperature conditions</i>	T. Katsura	BGI, Univ. of Bayreuth
14:35 – 15:00	<i>Materials landscapes development in alloys and nitrides using pressure, temperature, X-rays and precession electron diffraction</i>	G. Serghiou	Univ. of Edinburgh
15:00 – 15:25	<i>Crystal structure evaluation of novel binary and ternary high-pressure nitrides, synthesized in the LVP at P61B</i>	L. Wiehl	T. U. Darmstadt

### 15:30-16:00 Coffee break (30 Min.)

### Session 2

			Chair: S. Bhat
16:00 – 16:25	<i>Chemical interaction in the B-X ( X = S, Se, Te ) systems at high pressure and high temperature</i>	V. Solozhenko	CNRS, Université Paris 13
16:25 – 16:40	<i>High-pressure synthesis of jadeite-based ceramic composites and their mechanical and optical performance</i>	E. Kulik	Univ. Kiel
16:40 – 16:55	<i>Supra-solidus phase relations of Ca-Mg-carbonates and melting point of hydrous magnesite in the upper mantle</i>	M. Sieber	GFZ, Potsdam
16:55 – 17:20	<i>Status and development of beamline P61B</i>	R. Farla	DESY
17:20 – 17:30	<i>Concluding remarks &amp; questions</i>		
17:30 – 19:00	<b>Beamline tour &amp; discussions</b>		

19:00

*End of the workshop*