

Experiment Report Form



Experiment title: Graphene to Diamondene transition from high-pressure PDF and X-ray diffraction data		Experiment number: CH-5439
Beamline: ID15B	Date of experiment: from:04.05.2018 to:07.05.2018	Date of report: 12.08.2019
Shifts: 9	Local contact(s): Dr. Michael Hanfland	<i>Received at ESRF:</i>

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Report:

We collected powder XRD data for two systems of chemically modified graphenes. We collected experimental data up to 20 GPa (RT) in He as pressure transmitting media. We also monitored our systems using off-line Raman as complementary technique. Later we managed to get experimental data above 30 GPa at PETRA P02.2 beamline to extend pressure region. Our data (see figure below) suggest existence of phase transition above 30 GPa. and in the frame of our project we obtained experimental evidence for such transition proposed theoretically in the past. All our data will be compared with our own theoretical modelling of the system of interest. Our data show structural plasticity of chemically functionalized graphenes. Such transition has never been observed in pure graphene and might be specific only for chemically functionalized systems.

