

HYDROSTATIC PRESSURE CELL INTEGRATED IN A LABORATORY BASED SAXS SYSTEM.

Manfred Kriechbaum^{1,2)}, Sabine Bodner²⁾, Philipp Herrnegger^{1,2)}, Heinz Amenitsch¹⁾ and Peter Laggner^{1,2)}.

¹⁾Institute of Biophysics and Nanosystems Research, Austrian Academy of Sciences, Graz, Austria and ²⁾Hecus X-Ray Systems GmbH., Graz, Austria.

Based on the experience of a previously developed high-pressure SAXS system at the synchrotron ELETTRA [1-2] and combining the availability of a high-flux laboratory small-angle X-ray scattering (SAXS) camera employing a high-brilliance micro-beam delivery system with point-focus, we have developed a novel and compact pressure cell and control system for numerous applications for nanostructural investigations with small-angle X-ray scattering (SAXS). The pressure cell can be pressurized up to moderate 1000 bar and its angular range encompasses 0 - 30° (2 θ). The application range is widely spread from studying phase diagrams of lyotropic or thermotropic liquid crystalline systems or polymers and their barotropic phase transitions. The pressure cell can also be utilized in experiments with super-critical CO₂ and Grazing Incidence (GI)-SAXS of oriented and aligned lipid systems on solid supports.

Selected examples of high-pressure SAXS experiments and results will be shown.

1] K. Pressl, M. Kriechbaum, M. Steinhart and P. Laggner, Rev. Sci. Instrum. 68/12, 4588-4592 (1997)

2] M. Steinhart, M. Kriechbaum, K. Pressl, H. Amenitsch, P. Laggner and S. Bernstorff, Rev. Sci. Instrum. 70/2, 1540-1545 (1999)