



Contribution ID: 442

Type: **Poster**

## Structure and Dynamics of Confined Liquids Studied by an X-ray Surface Force Apparatus

*Monday, 17 September 2018 17:55 (5 minutes)*

Structure and dynamics of confined liquids were probed by an in-situ X-ray surface force apparatus in plane-cylinder geometry. Our novel device can shear, compress and decompress soft matter within a precisely controlled slit pore confinement. Complementary structural information is obtained by X-ray scattering and simultaneous force measurements. Here, we present results on the structural relaxation of confined liquid crystals (LCs) as reaction to external stimuli. Experiments using high energy x-rays were performed at ID31, ESRF. For the smectic LC 8CB we investigated defect-formation and relaxation processes during subsequent compression and decompression cycles. In the second example, we investigate a thin film of the wet ionic liquid C10mim+Cl<sup>-</sup> in the columnar LC phase [1]. The observed mesoscopic orientation induced by oscillatory shear is explained by the anisotropic mobility of the amphiphilic cations.

References: [1] H.-W. Cheng et al., *Langmuir* 34, 2637 (2018)

**Primary author:** MEZGER, Markus (Johannes Gutenberg University Mainz, Institute of Physics)

**Co-authors:** Mrs MEROLA, Claudia (TU Wien, Institute for Applied Physics); Dr WEISS, Henning (Max Planck Institut for Polymer Research, Mainz); Dr CHENG, Hsiu-Wei (TU Wien, Institute for Applied Physics); Mr MARS, Julian (Max Planck Institut for Polymer Research, Mainz); Prof. VALTINER, Markus (TU Wien, Institute for Applied Physics); Dr HONKIMÄKI, Veijo (ESRF-The European Synchrotron, Grenoble)

**Presenter:** MEZGER, Markus (Johannes Gutenberg University Mainz, Institute of Physics)

**Session Classification:** Poster session 1

**Track Classification:** P2 Soft matter