Patterning of C₆₀ Islands on Organic Layer Compound Crystals

S. Freund¹, A. Hinaut¹, R. Pawlak¹, Shi-Xia Liu², S. Decurtins², E. Meyer¹ and **Th. Glatzel¹**

¹Department of Physics, University of Basel, Klingelbergstrasse 82, CH-4056 Basel ²Department of Chemistry, University of Bern, Freiestrasse 3, CH-3012 Bern

Organic layered compound crystals offer the possibility to design surfaces with different chemical compounds and molecular orientations [1]. The analysis of the frictional behaviour showed variations in the lateral force down to the single molecular scale highlighting the exceptional properties and possibilities of such materials [2]. However, also the adsorption and formation of molecular assemblies is likely be influenced and the patterning by molecular assemblies of such surfaces can be tuned and adopted.

In this presentation, the behaviour of adsorbed fullerene (C_{60}) molecules on the organic layered compound crystal bis(benzylammonium)bis(oxalate)cupurate(II) (BNL) will be discussed. The C_{60} molecules were deposited on the substrate by thermal deposition and high resolution AFM images of the C_{60} nanopatterns were obtained. Manipulations of the molecular islands have been induced by controlled tip interactions. It was observed that they can be split up and redistributed by these interactions to form larger patterns. Furthermore, also tip-induced shape modifications were observed. The figure below shows such a C_{60} island which was transformed by the AFM tip from a triangular to a hexagonal shape.



Fig. 1: nc-AFM images of a C60 nanopattern on the organic layer compund BNL. The shape was modified by the AFM tip from triangular a) to hexagonal b).

- [1] S. Decurtins, et al., Mol. Cryst. Liq. Sci. Technol., Sec A 305, 227, (1997).
- [2] G. Fessler, I. Zimmermann, Th. Glatzel, et al., APL 98, 083119, (2011).