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nc-AFM study of C₆₀ islands on organic compound crystals

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Organic layered compound crystals have rarely been investigated by the means of room temperature noncontact atomic force microscopy (nc-AFM). This kind of material offers the possibility to design surfaces with different chemical compounds and molecular orientations [1]. The study of adsorbed molecules on such surfaces under ultra-high vacuum (UHV) conditions might be of great interest in the field of optoelectronics. In this study the behaviour of fullerene (C₆₀) molecules on the salt bis(benzylammonium)bis(oxalate)cupurate(II) (BNL) was investigated. BNL is a transition-metal oxalate complex which exhibits layer-type crystal structures [2]. The C₆₀ molecules were deposited on the substrate by thermal deposition and formed small islands. High resolution images of the substrate and the C₆₀ islands 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 islands. Tip-induced shape modifications of these C₆₀ islands was also observed and analysed.

[1] G. Fessler et al., Appl. Phys. Lett., 98(8), 083119, 2011.

[2] S. Decurtins et al., Mol. Cryst. Liq. Sci. Technol., Sec A 305, 227, 1997.

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