organic crystals due to their softness causing them to crack.

Therefore we have developed and tested different methods to obtain the required quality and low roughness surfaces of soft organic crystals. All polishing methods are based on a high speed air bearing which can be equipped with different tools. The crystal is mounted on a piezo driven x-,y-,z- stage and can be moved with respect to the polishing device.

Beside different conventional polishing heads containing diamond grains of different sizes a custom made dimaond cutting tool was used. It consists of a monocrystalline diamond knife which is rotating perpendicular to the crystal surface.

The crystal surfaces generated with the different methods were characterized by atomic force microscopy (AFM). We used tapping mode imaging to reduce the forces on the crystal during the scanning process. The best quality surfaces possess a root-mean-square (rms) roughness of 5.3 nm for a 5 µm x 5 µm area. The rms roughness for a 80 µm x 80 µm area which corresponds to about 75 % of the whole crystal surface is about 14.8 nm.

We also cutted crystals using a commercial microtome suitable for electron microscopy sample preparation. Surfaces with a rms roughness of 4.7 nm for a 50 µm x 50 µm area and 2.9 nm for a 5 µm x 5 µm area could be achieved.

One big advantage of the air bearing cutting device compared to the microtome is the fast and easy processing of a large amount of crystals with high quality surfaces suitable for crystallographic and related experiments.

The figure below shows the histograms of height levels of a crystal polished by a conventional polishing head (A) and a crystal polished by the diamond knife tool (B).


Keywords: organometallic, AFM

Compositional distribution of isomorphic crystals during spontaneous crystallization
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A non-trivial bimodal distribution of crystals in the isomorphic composition was revealed at spontaneous mass precipitation in aqueous solutions. Crystal ensembles of the series (Pb,Ba)(NO₃)₂, (Co,Ni)(NH₄)₂(SO₄)∙6H₂O, (Co,Ni)(K)(SO₄)∙6H₂O, (Al,Cr)(K)(SO₄)∙12H₂O and K(Cl,Br) were also estimated by means of X-ray micro-tomography (SkyScan 1172).

MS35.P38

A comparison towards counter-diffusion and sitting drop-vapor diffusion technique in improving resolution data of a novel organic solvent tolerant lipase
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Quality of diffraction data is important in order to generate a better electron density map which provides valuable, accurate information and enzyme functions in structure analysis afterward. To achieve the above objective, one way is to applied different kinds of crystallization techniques. In this study, we discussed about the improvement of crystal quality by counter-diffusion technique and sitting-drop-vapor diffusion technique.

Keywords: mass crystallization, isomorphism