

INVESTIGATION OF CO-CRYSTALLIZED PHARMACEUTICAL INGREDIENTS USING SYNCHROTRON RADIATION

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Co-crystals are widely discussed, particularly for pharmaceutical applications. The term is most commonly used in order to describe a crystal containing two or more components together. Thus, co-crystals may encompass molecular compounds, molecular complexes, solvates, inclusion compounds, channel compounds, clathrates and other types of multi-component systems in a crystalline state. The production and especially a detection of co-crystals, however, are far from being clear, as no clear structure based definition of a co-crystal exists.

At Fraunhofer ICT various processing methods for pharmaceutical co-crystals are tested, amongst them supercritical fluid technologies and mechanical processes. The microstructures of samples obtained from these tests have been investigated by means of X-ray diffraction at the ANKA Synchrotron, in order to distinguish co-crystals from pure physical blends. Co-crystallization tests have been performed with combinations of the pharmaceutical ingredients paracetamol, cholesterol, caffeine, ibuprofen and lactose.