

NEW DEVELOPMENTS IN MICRO&NANODIFFRACTION FOR POLYMERS AND BIOPOLYMERS

Christian Riekkel

European Synchrotron Radiation Facility, B.P. 220, F-38043 Grenoble Cedex

The talk will focus on emerging research opportunities due to synchrotron radiation micro&nanobeams for the study of radiation sensitive organic and biological materials. Beam sizes down to about 300 nm are now becoming routinely available and allow SAXS/WAXS studies with unprecedented spatial resolution. This together with batch processing software and fast CCD-detectors starts providing “diffraction images” of materials ranging from polymers to biopolymers. Laser-microdissection can be used to generate specific sections of fibers and more complex materials such as starch granules. I will also give an overview on recent developments in sample environments including microfluidics and inkjet systems. Typical applications are protein aggregation, local hydration or chemical reactions in picoliter volumes. I will finally describe the status of the nanofocus-branch of the ESRF-ID13 beamline, which aims at providing beam sizes in the range of 100 nm and smaller.