

P025 A microfluidic cell for the study of protein aggregation by synchrotron radiation micro-SAXS/WAXS

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The aggregation of fibroin forms the basis of silk formation. Until now small- and wide-angle X-ray scattering (SAXS/WAXS) on fibroin aggregation has been limited to Couette cell experiments using synchrotron radiation¹. In order to get closer to the geometry of natural silk protein aggregation, lamellar-flow microfluidic mixing cells are preferred. The current generation of cells has mixing channels of 100-200 μm diameter. These are ideal for probing the aggregation zone by microbeam SAXS/WAXS techniques, developed at the ID13 microfocuss beamline². The poster will give an overview on the experimental techniques and highlight some of the first results obtained. The techniques under development are of more general interest for the study of "precious" proteins.

1. Roessle, M., Panine, P., Urban, V.S. & Riekkel, C. Structural evolution of regenerated silk fibroin under shear: combined wide- and small-angle X-ray scattering experiments using synchrotron radiation. *Biopolymers* 74, 316-327 (2004).
2. Riekkel, C. New avenues in x-ray microbeam experiments. *Re. Progr. Phys.* 63, 233-262 (2000).