

Bio-SAXS: Dedicated to Solution Scattering of Biological Macromolecules

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The new bio-SAXS beamline (ID14-3 at the ESRF, Grenoble, France) is dedicated exclusively to small-angle scattering experiments of biological macromolecules in solution and has been in user operation since November 2008. Originally running as a protein crystallography beamline, ID14-3 was refurbished, still as a part of the ESRF Structural Biology group, with the main aim to provide a facility with 'quick and easy' access to rapidly growing demands from crystallographers, biochemists and structural biologists. The beamline allows manual and automatic sample loading/unloading, data collection, processing (conversion of a 2-D image to a normalized 1D X-ray scattering profile) and analysis. The users obtain on-line standard data concerning the size (radius of gyration, maximum dimension and volume) and molecular weight of samples, which allow on-the fly ab-initio shape reconstruction in order to provide feedback enabling the data collection strategies to be optimized. Automation of sample loading is incorporated on the beamline using a device constructed in collaboration between the EMBL (Grenoble and Hamburg outstations) and the ESRF. Semi/automated data analysis is implemented following the model of the SAXS facility at X-33, EMBL Hamburg.