

## **Small angle X-ray scattering on biomacromolecular solutions: not only useful complement to high resolution structure methods**

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The last decades have been accompanied by impressive advancements for many of the structural biology techniques. Classical approaches such as NMR and macromolecular X-ray crystallography have profited from the developments in high-field magnets and synchrotron radiation, the latter allowing to study microcrystals – even *in vivo*. Paired with advances in automation, high throughput screening of drug candidates from every therapeutic area have become possible. The free electron lasers (FEL) may pave the way for the analysis of even smaller samples such as nanocrystals, nanoclusters and single molecules. Impressively, the “resolution revolution” in cryoEM has resulted in many intriguing new structures.

During this time tremendous progress was also achieved in small-angle X-ray scattering (SAXS) on biological solutions, and here we shall address the question what is the present place and future of solution SAXS amongst all these other structural techniques? What useful translational information can be obtained from a scattering profile? Recent advances in the experimental possibilities of SAXS as well as major progress in software for data collection and analysis will be discussed to demonstrate the unique structural biology niche that SAXS occupies. Extremely advantageous are relative simplicity of sample preparation, extremely rapid data collection coupled with nearly real-time extraction of structural parameters and models, and, last but not least, the ability to quantitatively characterize complicated systems and mixtures in native environments and their responses to changing physical and chemical conditions. Many new insights into challenging biological probes including large and transient complexes, flexible macromolecules as well as other exciting objects of various sizes have been gained with this low resolution technique and many more are still expected.

Various modes of access will be discussed regarding the support through European funded translational activities of iNEXT and User feedback will be sought for the further promotion of advanced mail-in operation and rapid access modes.