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Latest developments in laboratory SAXS/WAXS instruments

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Xenocs provides complete solutions for characterizing the nanostructure and morphology of materials. The product portfolio of the company includes innovative high-performance instruments that combine Small and Wide Angle X-ray Scattering techniques (SAXS/WAXS) for soft matter, nanomaterials, or polymers characterization. Founded as a spinoff company from the Institute Laue Langevin, in Grenoble, France, Xenocs supplies its solutions to leading research and development institutions around the world. On January 2017, Xenocs acquired the Danish company SAXSLAB Aps, recognized leader in high end Small Angle X-ray Scattering laboratory equipment, and its subsidiary SAXSLAB US Inc. based in Northampton, MA, USA.

In parallel to the advent of dedicated synchrotron radiation sources and beamlines, several breakthroughs have been accomplished for laboratory analytical x-ray instrumentation and in particular for Small Angle X-ray Scattering (SAXS) instrumentation. Breakthroughs include X-ray micro-focus sources with aspheric multilayer coated optics, scatterless collimation [1], sample environment, software and hybrid pixel photon counting detectors as well as instrument design with for example multiple source energy capability [2].

Today, these technologies combine to provide in-laboratory SAXS instruments, with a performance comparable to that previously achieved only at synchrotrons. Flexible instrument designs provide simultaneous measurement of Wide Angle X-ray Scattering (WAXS) signal in various sample forms (including thin film) and experimental conditions. The state-of-the-art performance opens the way for a wide range of applications, including scattering from soft matter. Performance and possibilities will be illustrated through a few application examples such as characterization of highly diluted macromolecules or in-situ dynamic studies of complex soft materials.

This presentation will review the latest developments of Xenocs SAXS/WAXS instruments and a special emphasis will be done on how well they complement large research facilities through customer cases.

[1] Y.Li et al., J. Appl. Cryst., 2008, 41

[2] S. Koppoju et al., J. Appl. Cryst., 2015, 48

Summary

In parallel to the advent of dedicated synchrotron radiation sources and beamlines, several breakthroughs have been accomplished for laboratory analytical x-ray instrumentation and in particular for Small Angle X-ray Scattering (SAXS) instrumentation. This presentation will review the latest developments of Xenocs SAXS/WAXS instruments and a special emphasis will be done on how well they complement large research facilities through customer cases.

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