

A NEW HIGH-THROUGHPUT SAXS SCREENING TOOL FOR ACCELERATED COMBINATORIAL MEASUREMENTS

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Small Angle X-ray Scattering (SAXS) is an established technique for nano-structure analysis in pharmaceutical applications like micro-emulsions and drug-encapsulation. However, the technique has not been widely used for combinatorial measurements till now. Technical limitations have prevented maintaining the desired resolution of the measurement while achieving the high through-put requirements of combinatorial measurements.

A combination of several technological concepts has lead to the design of a SAXS system for high-resolution and high-throughput measurements. The concept utilizes a slit-collimation SAXS camera with CCD detector, sample changer, and automation software.

The technical aspects include requirements to characterize materials in the small angle range for documentation of nano-structures in a size range from 0.2 to 150 nm, a short exposure time to reduce radiation damage and other stability effects, and a control software which can co-ordinate the system components, acquire data, and convert the two-dimensional scattering image into the desired result.

The concepts were integrated on a SAXSess system. First tests show that the system may characterize more than 48 samples during a 14 hour run (for example over night) and allow utilizing SAXS for combinatorial measurements.