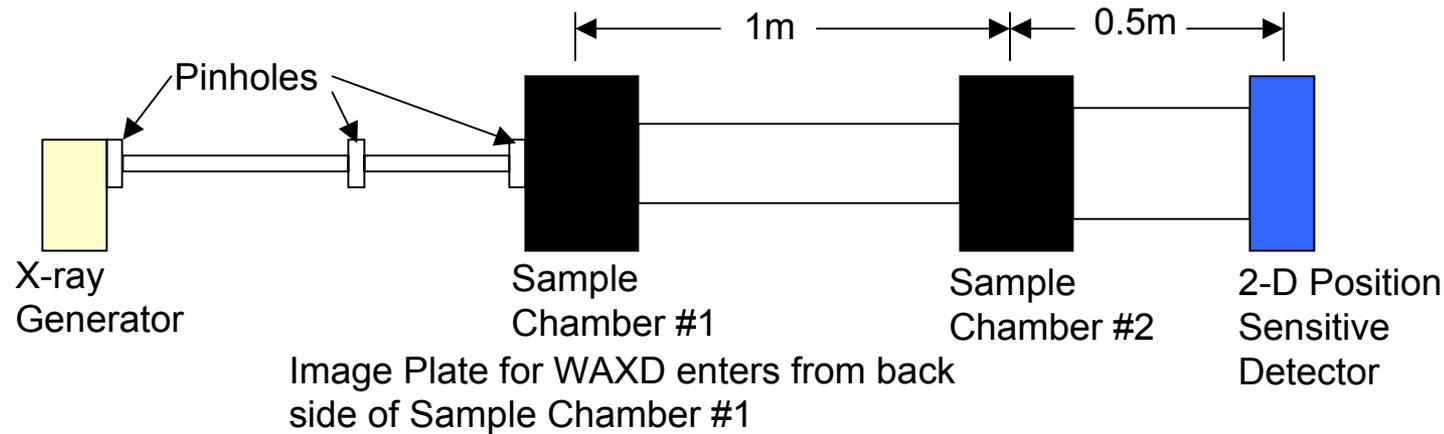


Acquisition of Multi-Angle X-ray Scattering Facility

J.E. Spruiell, University of Tennessee, Knoxville

DMR-0216252



The q -ranges for SAXS measurements are:

Sample Chamber #1: $0.05 < q < 1.4 \text{ nm}^{-1}$

Sample Chamber #2: $0.15 < q < 5 \text{ nm}^{-1}$

WAXD measurements: $5^\circ < 2\theta < 65^\circ$

Sample Temperature: $23^\circ < T_s < 300^\circ\text{C}$



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Research. The instrumentation funded by this award is installed in the Central X-ray Diffraction Laboratory on the University of Tennessee, Knoxville Campus. It has become an indispensable research tool in numerous research projects, including **3 MS theses, 4 PhD dissertations,** and the projects of **2 Research Professors.** The equipment also services several external users, including **4 scientists from Oak Ridge National Laboratory, 1 scientist from Florida State University, 1 scientist from Mexico** and an occasional scientist or engineer from industry. The facility has also been used by **3 undergraduate research participants.**

Education. The instrument is now used in laboratory experiments conducted in one undergraduate and three graduate courses: MSE 405 Structural Analysis of Materials; MSE 572 X-ray Diffraction; MSE 550 Laboratory Methods in Polymer Engineering. It has allowed us to introduce many students to scattering phenomena.