A LABORATORY BASED X-RAY REFLECTIVITY SYSTEM

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X-ray Reflectivity (XRR) over the last decade has proved to be a versatile and powerful technique by which the thickness of thin films, surface roughness and interface roughness can be determined. The systems amenable to study range from organic monolayers (liquid or solid substrates) to layered metal or semiconductor systems. Access to XRR has been limited by the requirement for synchrotron radiation sources. The development of XRR systems for the laboratory environment was pioneered by Weiss *et al.*[1]

An X-ray Reflectometer has been constructed by the Department of Physics (Australian Defence Force Academy) and the Research School of Chemistry (Australian National University). The general principles of the design were similar to those described by Weiss *et al.*[1] The reflectometer is currently in the early stages of commissioning, with encouraging results thus far. The reflectivity of a 31 layer Ba-Arachidate film can be seen in Fig. 1. The diffraction pattern of Mobil Catalytic Material (MCM), consisting primarily of SiO_2, is displayed in Fig. 2. The poster will describe the reflectometer, its operation and present a summary of the most important results obtained to date.

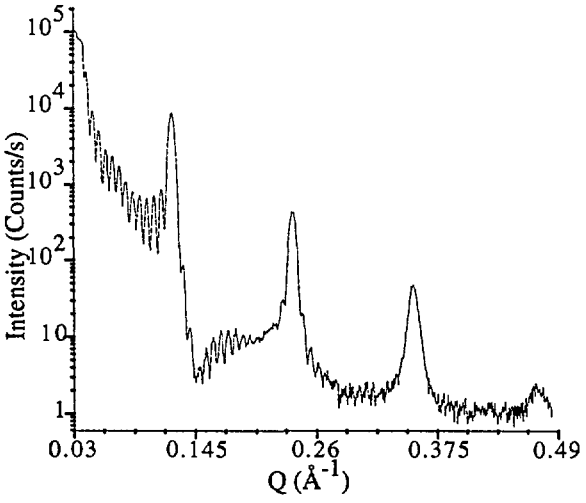

Fig. 1 Reflectivity of a Ba Arachidate film.

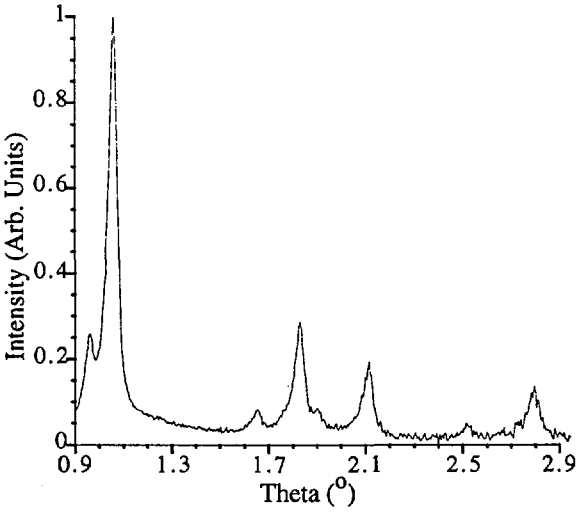

Fig. 2 Diffraction pattern from MCM.

1. A.H. Weiss, M. Deutsch, A. Braslau, B.M. Ocko, and P.S. Pershan (October 1986) Rev. Sci. Instrum. **57(10)**, 2554 - 2559.