

# X-ray Studies of Annealing in Thin-film Semiconductors

Roy Clarke

*MHATT-CAT Center for Real-time X-ray  
Studies at the Advanced Photon Source and*

*University of Michigan  
Ann Arbor, MI 48109-1120*

One of the most important issues in thin-film heterostructures is the nature of the interfaces. In general, their structure is likely to involve some degree of lattice strain, especially when the film is deposited on a mismatched substrate. The evolution of the film stress and its behavior during post-deposition processing is critical for many device applications, in particular where extreme operating conditions are encountered. In this presentation we illustrate the use of real-time x-ray scattering for in-situ annealing studies of semiconductor films, emphasizing the advantages of appropriate x-ray optics and fast area detectors.