Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Grazing-incidence X-ray Diffraction of Tetracene Thin Films on Hydrogenated Si(001) Substrate DE-TONG JIANG, ANDREW TERSIGNI, Dept. of Physics, University of Guelph, CHANG-YONG KIM, Canadian Light Source, JUN SHI, Dept. of Physics, University of Guelph, ROBERT GORDON, Physics Dept., Simon Fraser University, NING CHEN, Canadian Light Source, XIAORONG QIN, Dept. of Physics, University of Guelph — Ex situ grazing-incidence X-ray diffraction (GIXD) and wide angle Bragg diffraction have been performed on UHV epitaxially grown tetracene thin films on H/Si(001)-2x1 substrates. The in-plane lattices of the crystalline films were characterized by 2D reciprocal space imaging of the in-plane (11), (12) and (20) GIXD diffraction spots and the out-place lattices were characterized by the wide angle Bragg diffraction. The thickness of the tetracene films ranged from 1.2 monolayer (ML) to 15 ML. H/Si(001)-2x1 substrates with different surface roughness were used. The results indicate that the film structure characteristics are strongly influenced by the substrate conditions and under favorable conditions the homogeneous thin-film phase could dominate the growth up to about 8 ML. The implications of the results to the growth mechanisms and to thin film electronics applications will be discussed.

De-Tong Jiang
University of Guelph

Date submitted: 21 Nov 2008 Electronic form version 1.4