Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Growth mechanism and control of pentacene thin film on chemically heterogeneous surface Y. FUJIKAWA, Institute for Materials Research, Tohoku University, Y. TSURUMA, Department of Complexity Science and Engineering, The University of Tokyo, A. AL-MAHBOOB, Institute for Materials Research, Tohoku University, S. IKEDA, Department of Complexity Science and Engineering, The University of Tokyo, J.T. SADOWSKI, G. YOSHIKAWA, T. SAKURAI, Institute for Materials Research, Tohoku University, K. SAIKI, Department of Complexity Science and Engineering, The University of Tokyo — Film growth on the substrate, which exhibits heterogeneity within the plane, is becoming increasingly important for the construction of future nanodevices. By means of photoemission electron microscopy (PEEM), we observed the evolution of pentacene ultrathin films grown on SiO_2 substrates with pre-deposited Au microelectrodes for organic thin film transistor fabrication. [1] The results clearly indicate that pentacene nucleation is suppressed around the periphery of bare Au electrodes, leaving grooves at the boundary. In the case of thiol-treated Au electrodes, however, the nucleation occurs even at the boundary, leaving no grooves there in successive growth. This improvement of connectivity between the pentacene film on a channel and that on a Au electrode can be ascribed to the reduction in mass flow of pentacene molecules from the channel to the electrode driven by heterogeneous surface energy. [1] Tsuruma *et al.*, Adv. Mater., published online.

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Date submitted: 20 Nov 2009 Electronic form version 1.4