Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

High Quality Organic Semiconductor Thin-film Transistors Printed on Plastic Substrates using Transfer Printing[1] Y. SHAO, S.A. SOLIN, Washington University in St. Louis, D.R. HINES, V.W. BALLAROTTO, E.D. WILLIAMS, University of Maryland — Transfer Printing has been used to fabricate organic thin-film transistors onto plastic substrates. This method uses pressure and temperature to transfer a patterned layer from one substrate (on which the thin-film material was originally fabricated) to a second substrate. This thermal treatment is similar to an annealing process and is therefore expected to improve the quality of organic films from the small molecule and polymeric classes. X-ray diffraction patterns of a pentacene thin-film transfer printed onto a plastic substrate show sharp $(00l)$ reflections corresponding to a c-axis correlation length of $432\mathring{A}$. X-ray diffraction patterns of the original pentacene thin-film thermally evaporated onto an SiO_2 surface also show sharp $(00l)$ reflections but exhibit a c-axis correlation length of $392\mathring{A}$. The transistor characteristics of these high quality, transfer printed organic materials will be correlated with thin-film quality.

[1]WU supported by NSF grant ECS-0329347, U of M supported by the Laboratory for Physical Science

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Date submitted: 30 Nov 2004 Electronic form version 1.4