

Abstract Submitted
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Sensitivity of 1/f Noise to Chemical Constituents in Pentacene Thin Film Transistors¹ W. X. YAN, Thomas Jefferson High School for Science and Technology, Alexandria, VA 22312, E. GOMAR-NADAL, MASA ISHIGAMI, M. S. FUHRER, E. D. WILLIAMS, Department of Physics, University of Maryland, College Park, MD 20742 — This study systematically investigates the sensitivity threshold of 1/f noise for use as a device diagnostic tool, with pentacene thin-film transistors (TFTs) as a model. When pentacene in TFTs was mixed with an incremental series of the oxidative impurity 6,13-pentacenequinone (PQ), 1/f noise power rose proportionate to increasing impurities with a preliminary sensitivity threshold of $\geq 0.6\%$ PQ, coupled with a decreasing hole mobility. The result and further theoretical interpretation can supplement current quality assessments and help better understand the innate deficiencies in organic electronics, thus potentially improving their quality.

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