

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Electric and Optical Performances of Perylene Diimides (PDI) and Their Applications in Electronic Devices YONG MIN, J.H. PARK, A.R. CARTER, A.J. EPSTEIN, Physics and Chemistry Department, the Ohio State University — Perylene diimide (PDI) based compounds were synthesized through a condensation reaction of perylene dianhydride (PDO) with various amines such as, 1-amino octane (PDI-C8), 1-amino hexane (PDI-C6), etc. The chemical structure and their electric and optical properties have being identified and characterized by UV- Vis, FTIR, CV, etc. It was found that the band gaps and charge motilities of these compounds can be adjusted by the monomer selection and condensation reaction controlling. Self-assembled PDI nano fibers can be formed through solvents interaction methods. For example, a PDI-C8 nano fiber was made through mixing the PDI-C8/Chloroform solution with Hexane. The diameters and lengths of those nano fibers can be adjusted through the PDI solution concentration and interaction temperature. The PDI materials can also dissolve in many organic solvents such as Chloroform, and Dichlorobenzene, for spinning coating and solution blending during the fabrication of organic photovoltaic device. In summary, PDI materials have many unique features such as high thermally stable, low cost, broad product offering, excellent electronic properties, and flexible in processing, which are very attractive in making electronic devices such as, OLED, OPV, and organic transistors.

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Date submitted: 07 Dec 2009

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