

Abstract Submitted
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Tailored Assembly of Organic Molecular Nanofibers into Advanced Donor-Acceptor Architectures VOLODIMYR DUZHKO, MICHAEL J. KELLEY, KENNETH D. SINGER, Case Western Reserve University — Non-covalent self-assembly of organic molecules in organic solvents provides a multifunctional approach toward producing organic semiconducting nanostructures having versatile, well-ordered, architectures¹ that are potentially integrable into useful electronic, optoelectronic and photonic device architectures. Aiming at molecular-scale tailoring of electron donor-acceptor blend architectures and rational engineering of their functionality for photovoltaic applications, we discuss our approach of solvent-based, electric-field-assisted² integration of self-assembled donor (phthalocyanine) nanofibers into an acceptor (perylene diimide) matrix (or vice versa). We present results of our systematic spectroscopic, X-ray diffraction and scanning electron microscopy studies revealing the structure and morphology of neat fibers and fiber blends in various phases.

¹V. Duzhko and K.D. Singer, J. Phys. Chem. C 2007, 111, 27.

²V. Duzhko, J. Du, C.A. Zorman, and K.D. Singer, J. Phys. Chem. C 2008, 112, 12081.

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