

Abstract Submitted
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Fluorescence of Dendrons based on Donors and Acceptor with Different Linkages J.H. PARK, Y. WU, The Ohio State Univ. Columbus, OH 43210, D.A. MODARELLI, Univ. of Akron, Akron, OH 44325, J.R. PARQUETTE, A.J. EPSTEIN, The Ohio State Univ. Columbus, OH 43210 — Earlier indirect studies utilizing wavelength and bias spectra of photocurrent in simple photovoltaic cells demonstrated charge transfer (CT) in 1st generation dendritic macromolecules prepared using two different donor (tetraphenylporphyrin) groups bound to an acceptor (naphthalenediimide) group. We report here fluorescence for solid-state films and solutions of these donor and dendrons. Using 460nm excitation, fluorescence (660nm, 715nm) in solution samples can be observed for both donor and dendron but fluorescence in the solid state can be observable only in donor sample due to fluorescence quenching within the dendron. This demonstrates intermolecular CT from donor to acceptor. Fluorescence lifetime measurements (460nm 1.5nsec FWHM pulse excitation) of donor and dendron solutions show that it depends on length of the linkage between donor and acceptor. This shows a direct relaxation path from donor to acceptor (intramolecular CT). The separation of the exciton to separate electron and on the donor and acceptor portions of the dendron would open the potential for its use in photovoltaic application. Supported in part by DOE #DE-FG02-01ER45931

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