

Abstract Submitted
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Photophysics of Poly(3-dodecylthiylenevinylene) with Controlled Regioregularity EVAN LAFALCE, University of South Florida, Dept. of Physics, XIAOMEI JIANG, University of South Florida, Dept. of Physics — Poly(thienylene vinylene) (PTV) is a conductive polymer with potential applications for use in photovoltaics owing to its low-band gap, good hole-mobility and low oxidation potential. It is generally considered a non-luminescent material and reports suggest its emissive properties are highly dependent upon the excitation, conjugation length, alkyl side group and regio-regularity, complicating the interpretation of the non-radiative decay routes for photo-generated excitations. Better understanding of this behavior could explain the low efficiencies so far observed in PTV based solar cells and lead to improved performance. We have studied photoluminescence of Poly(3-dodecyl -2,5-thienylene vinylene) as a function of regio-regularity in thin films and solutions. By varying the excitation, temperature, and also by controlling the morphology through the use of different solvents, concentrations, and film preparation techniques, we hope to deduce the physical mechanisms competing with radiative recombination. Complimentary characterization of films through XRD and electro-absorption yield detailed information about the semi-crystalline structure and electronic levels, respectively.

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