

Abstract Submitted  
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**Study of biodegradable polymers for “green” devices** CARLOS PEREZ, XIAOMEI JIANG, University of South Florida, JIANG GROUP TEAM —  $\Pi$ -conjugated polymers such as polythiophenes are conventional picks for cost-effective organic solar cells. However, these organic semiconductors are not environment-friendly since the polymer back bones require temperature higher than 300<sup>0</sup>C to be decomposed, thus will cause potential environment problems upon disposal. In this work, the optical and electronic properties of biodegradable polymers, conjugated poly(disulfidediamine), were examined via continuous wave laser spectroscopy, FTIR spectroscopy and conductivity measurement. We found that the attachment of a side chain to aromatic ring increases both photo and thermal stability, as well as higher conductivity. Thermal annealing improved the film morphological, photophysical and electronic properties. Photo-Induced Absorption (PIA) reveals different features comparing with conventional pi-conjugated polymers. No observation of long-lived photoexcitations such as polarons or triplets which are common with pi-conjugated polymers. Instead, we found the formation of low energy species upon thermal annealing in these biodegradable polymers.

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