

Abstract Submitted  
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**Controllable thin film crystal growth of a novel squaraine molecule in organic solar cells**<sup>1</sup> BRAD CONRAD, Appalachian State University, SUSAN SPENCER, Rochester Institute of Technology, CORTNEY BOUGHER, JESSE BROWN, KYLE KELLEY, Appalachian State University, PATRICK HEAPHY, VICTOR MURCIA, CAMERON GALLIVAN, AMBER MONFETTE, JOHN ANDERSEN, JEREMY CODY, Rochester Institute of Technology, TONYA COFFEY, Appalachian State University, CHRISTOPHER COLLISON, Rochester Institute of Technology — We will discuss the formation, structures, and properties of squaraine and squaraine-PCBM blend thin-films using Atomic Force Microscopy, electrical characterization, UV-VIS-NIR, and Thin-film Xray Diffraction. Film properties are inferred from spectroscopic measurements and are correlated with crystallinity as determined by TFXRD and AFM. A comprehensive explanation of DiPSQ(OH)<sub>2</sub> structures is provided and related to measured efficiencies up to 4.3. By controlling the blend ratio and other fabrication conditions, crystalline regions of higher mobility can be developed so as to make significant gains in power conversion efficiency, necessary to achieve long term goals for commercially viable NIR-active OPV devices.

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