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Trap States in Organic Semiconductor Thin Films using Photogenerated Currents JORGE GUERRA, THOMAS GREDIG, California State University Long Beach, Dept. of Physics and Astronomy, 1250 Bellflower Blvd., Long Beach, CA 90840-3901 — Charge transport in semiconducting organic thin films for small molecules is strongly biased by the distribution of trap states present in the system. These trap states are mostly due to the inherently lower purity of small organic molecules and growth defects. Here, the trap states are explored and mapped using a time dependence study of photgenerated currents in thermally evaporated thin film copper phthalocyanine samples using the techniques described by Twarowski [1]. Although we use a different contact configuration and substantially thinner films than those used by Twarowski the method describes the system well up to first orders. The dependence of the recombination of photo-excited, dissociated charge pairs on the electric field also agrees with the Onsager mechanism [2] as predicted by Twarowski. We also explore the limitations of these models and discuss the potential of a more robust description for this type of system. This work is supported by NSF CAREER grant 0847552.

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