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Trap States in Copper Phthalocyanine Thin Films using Photogenerated Currents[1] THOMAS GREDIG, JORGE GUERRA, MATTHEW BYRNE, EVAN SILVERSTEIN, California State University Long Beach — The efficiency of organic solar cells is limited by several factors including the photocurrent generation process. Copper phthalocyanine thin films with different grain structures are prepared via thermal evaporation onto interdigitated gold electrodes. The samples are analyzed with atomic force microscopy and then exposed to light pulses to explore the time dependence of photogenerated currents in phthalocyanine thin films. The average grain size is obtained from the correlation length of the height-height correlation function and varies from 30-200nm. The dependence of the recombination of photo-excited, dissociated charge pairs on the electric field is compared with the Onsager mechanism and a simple dual trap state model from which relevant time scales are extracted.

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