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Time Resolved Photoluminescence of Semiconductor Thin Films for Photovoltaics PAUL ROLAND, KHAGENDRA BHANDARI, NABA PAUDEL, YANFA YAN, RANDY ELLINGSON, University of Toledo — Minority carrier lifetime is a fundamental material property of key interest in photovoltaic devices which, combined with diffusion coefficient and device architecture, determines the probability of a charge carrier contributing to the photogenerated current. Time resolved photoluminescence is a non-destructive optical technique which probes the decay rate of charge carriers within a material or thin film stack following excitation from an ultrafast laser pulse. Here, we present mean carrier lifetime measurements of a variety of photovoltaic materials and devices, focusing on Cadmium Telluride and Lead Sulfide Quantum Dots.

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