

Abstract Submitted
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Experimental discrimination of geminate versus non-geminate recombination in a-Si:H SANG-YUN LEE, THOMAS HERRING, DANE McCAMEY, Department of Physics and Astronomy, University of Utah, USA, CRAIG TAYLOR, Colorado School of Mines, Department of Physics, USA, KLAUS LIPS, Helmholtz-Zentrum Berlin fuer Materialien und Energie, Abteilung Silizium-Photovoltaik, Germany, JIAN HU, FENG ZHU, ARUN MADAN, MV Systems, Inc., USA, CHRISTOPH BOEHME, Department of Physics and Astronomy, University of Utah, USA — Hydrogenated amorphous silicon (a-Si:H) is an important material for solar cells, thin film transistors, and other devices. An open fundamental question in a-Si:H is which excess charge carrier recombination processes are geminate (correlated) or non-geminate (non-correlated). While both mechanisms cause photoluminescence (PL), only non-geminate recombination impacts photocurrent (PC). To answer this question, we have conducted pulsed Optically and Electrically Detected Magnetic Resonance (pODMR and pEDMR) spectroscopy on a-Si:H. The results allow an assignment of non-geminate and geminate processes to various previously known recombination mechanisms.

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