

Advanced Characterization of Surface Passivation and Passivated Contacts in Silicon Photovoltaics

Kristopher Davis
U.S. Photovoltaic Manufacturing Consortium

Crystalline silicon (c-Si) photovoltaics (PV) currently dominates the solar industry with over 93% market share. However, the majority of c-Si PV cells manufactured today are limited, in large part, by recombination occurring at the Si surfaces. Recent advances in surface passivation and passivated contacts have led to significant improvements in c-Si PV cells, enabling open-circuit voltages greater than 700 mV and efficiencies greater than 25%. As new passivation materials and deposition methods emerge, there is a critical need to develop characterization methods that: quantify recombination and resistive losses in these materials; and provide fundamental understanding of the influence of structure and composition on performance. This presentation provides a snapshot of passivation and passivated contact technology and avenues of research that can assist in pushing these materials to new heights.

<http://www.fsec.ucf.edu/people/bios/Davis.htm>