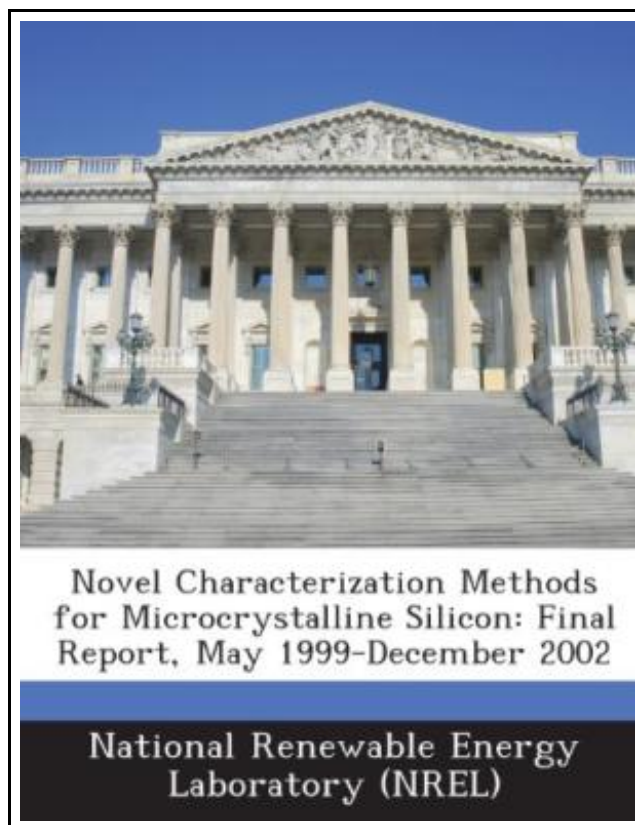


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Bibliogov, United States, 2012. Paperback. Book Condition: New. 246 x 189 mm. Language: English . Brand New Book ***** Print on Demand *****.The work carried out under this subcontract has provided advanced characterization supporting the development of these materials for photovoltaic applications. The studies, using time-resolved optical methods and positron annihilation spectroscopy, focus on characterization of carrier processes and defect states that are important to understand, and thereby control, to optimize photovoltaic efficiency. This work advances the objectives of the NREL/DOE National Photovoltaic Program by providing unique and innovative characterization methods for photovoltaic materials, by advancing the development of a promising new class of photovoltaic materials through interaction with ongoing materials research at NREL, and by advancing the fundamental scientific understanding of this important class of electronic materials. In this work, systematic studies as a function of key material parameters have been carried out to develop a more detailed understanding of conductivity processes. Femtosecond laser spectroscopic techniques are used to probe photoexcited carrier processes, including carrier trapping and recombination, as well as carrier thermalization, providing key parameters for conductivity models. An important part of the work involves the application of recently developed methods for generation and detection of femtosecond pulses in the far-infrared (or THz) spectral range. Time-resolved measurements of photoexcited carrier dynamics using far-infrared probe pulses provide a direct measure of the photoconductivity on fast time scales. As discussed below, our time-resolved THz measurements are particularly sensitive to carrier dynamics involving band tail states, and have provided new insight into conductivity processes in disordered electronic materials. Positron annihilation spectroscopy (PAS) measurements on a variety of materials have provided unique information on the nature and concentration of defect states.



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