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"This book takes an unconventional and unique approach to introduce material synthesis and interface engineering for clean energy applications by presenting various case studies largely based on the authors' research work. This approach allows the readers to jump directly to topics of interest for self-education or for general reference because each case study is self-contained and self-explanatory."

Prof. Guozhong Cao
University of Washington, USA

"This book provides great insights on the materials and interfaces for clean energy, such as lithium-ion batteries, perovskite solar cells, and electrocatalytic water splitting. Both materials and their interfaces are critical in determining the performance of final energy devices, providing both depth and breadth of information to the readers."

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Syracuse University, USA

Currently, the reliance on fossil fuels raises concerns on the increasing global energy demand, the rapid anthropogenic climate changes, and the growing environmental problems. The grand challenge is to search for viable carbon-neutral sources of renewable energy. Nanomaterials are arguably the base that integrates nanotechnology, information technology, and biotechnology, the major drivers of the technological development today. Over the past decades, the understanding of form–function relations surrounding nanomaterials has significantly brightened the prospects of the transition from fossil fuels to solar fuels. This book introduces the latest developments in nanomaterials aimed at applications in clean energy areas. It overviews the close link between nanomaterials development and energy applications from the experience and perspective of the authors. It discusses the bottom-up synthesis and interface engineering of new materials of different dimensions and describes their applications in future energy devices such as secondary batteries, novel solar cells, luminescent devices, and water splitting electrolyzers.



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