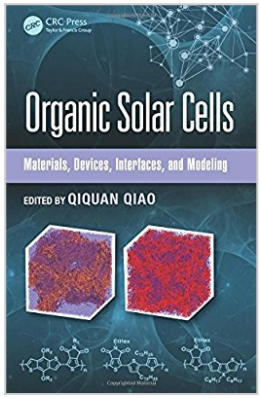

Organic Solar Cells: Materials, Devices, Interfaces, and Modeling (Devices, Circuits, and Systems)

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Current energy consumption mainly depends on fossil fuels that are limited and can cause environmental issues such as greenhouse gas emissions and global warming. These factors have stimulated the search for alternate, clean, and renewable energy sources. Solar cells are some of the most promising clean and readily available energy sources. Plus, the successful utilization of solar energy can help reduce the dependence on fossil fuels. Recently, organic solar cells have gained extensive attention as a next-generation photovoltaic technology due to their light weight, mechanical flexibility, and solution-based cost-effective processing.

Organic Solar Cells: Materials, Devices, Interfaces, and Modeling provides an in-depth understanding of the current state of the art of organic solar cell technology. Encompassing the full spectrum of organic solar cell materials, modeling and simulation, and device physics and engineering, this comprehensive text:

- Discusses active layer, interfacial, and transparent electrode materials
- Explains how to relate synthesis parameters to morphology of the photoactive layer using molecular dynamics simulations
- Offers insight into coupling morphology and interfaces with charge transport in organic solar cells
- Explores photoexcited carrier dynamics, defect states, interface engineering, and nanophase separation
- Covers inorganic–organic hybrids, tandem structure, and graphene-based polymer solar cells

Organic Solar Cells: Materials, Devices, Interfaces, and Modeling makes an ideal reference for scientists and engineers as well as researchers and students entering the field from broad disciplines including chemistry, material science and engineering, physics, nanotechnology, nanoscience, and electrical engineering.

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Editorial Review

Review

"This book provides the reader [with] comprehensive knowledge of organic solar cell technology ranging from materials, modeling, interfaces to devices. With this book available, the readers can have a broad understanding on the most recent and frontier development of organic solar cells that other books have not offered so far."
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