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Titolo	Solar Cells and Modules / / edited by Arvind Shah
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Descrizione fisica	1 online resource (XX, 346 p. 225 illus., 176 illus. in color.)
Collana	Springer Series in Materials Science, , 0933-033X ; ; 301
Disciplina	621.31244 621.381542
Soggetti	Surfaces (Physics) Interfaces (Physical sciences) Thin films Energy policy Energy and state Optical materials Electronic materials Semiconductors Surface and Interface Science, Thin Films Energy Policy, Economics and Management Optical and Electronic Materials
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Solar Irradiation (and other Illumination Conditions) -- Theory of the p-i-n Solar Cell -- Amorphous and Microcrystalline Silicon -- Contact Layers, TCO Layers and Light Trapping -- Thin-Film Silicon Solar Cell Design Options -- Thin-Film Silicon Solar Cell Performance -- Thin-Film Silicon Solar Panels and Modules -- Module Fabrication Issues (Including Encapsulation) -- Module Testing: STC and Field Performance -- Application Aspects -- Life Cycle Analysis.
Sommario/riassunto	This book gives a comprehensive introduction to the field of photovoltaic (PV) solar cells and modules. In thirteen chapters, it addresses a wide range of topics including the spectrum of light received by PV devices, the basic functioning of a solar cell, and the

physical factors limiting the efficiency of solar cells. It places particular emphasis on crystalline silicon solar cells and modules, which constitute today more than 90 % of all modules sold worldwide. Describing in great detail both the manufacturing process and resulting module performance, the book also touches on the newest developments in this sector, such as Tunnel Oxide Passivated Contact (TOPCON) and heterojunction modules, while dedicating a major chapter to general questions of module design and fabrication. Overall, it presents the essential theoretical and practical concepts of PV solar cells and modules in an easy-to-understand manner and discusses current challenges facing the global research and development community.