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Nota di contenuto	Part I: Photovoltaics -- CdTe Solar Cells -- Mesoscopic Solar Cells -- Organic Solar Cells -- Photovoltaic Energy, Introduction -- Photovoltaics, Status of -- PV Policies and Markets -- Silicon Solar Cells, Crystalline -- Silicon Solar Cells, Thin-film -- Solar Cells, Chalcopyrite-Based Thin Film -- Solar Cells: Very High Efficiencies Approaches -- Solar Cells: Energy Payback Times and Environmental Issues -- Part II: Solar Radiation -- Photosynthetically Active Radiation: Measurement and Modeling -- Solar Constant and Total Solar Irradiance Variations -- Solar Irradiance, Global Distribution -- Solar Radiation for Solar Energy Utilization -- Solar Radiation Spectrum -- Solar Radiation, Spatial and Temporal Variability -- Topographic Solar Radiation Modeling for Environmental Applications.- Part III: Solar Thermal Energy -- Concentrating Receiver Systems (Solar Power Tower)

Sommario/riassunto

The tiny portion of the sun's energy that reaches the earth in one year is approximately 10,000 times the energy consumption of humankind during that same period. Absorbed in the atmosphere and on the surface of the earth, it is responsible for the temperature range that enables our diverse ecosystems to exist, and also for a significant portion of the available renewable and fossil energy supplies. Featuring 30 authoritative, peer-reviewed entries from the Encyclopedia of Sustainability Science and Technology, this volume presents fundamental principles and cutting-edge technologies for sustainably harnessing this vital resource. Sections on photovoltaics, solar thermal energy, and solar radiation provide a comprehensive introduction for those new to these fields, as well as new insights for advanced researchers and industry experts.