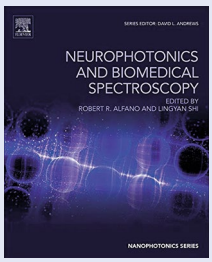
ON OUR BOOKSHELF

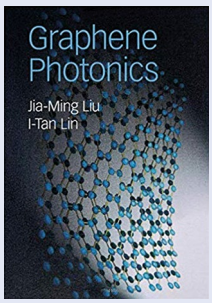


Neurophotonics and Biomedical Spectroscopy

Edited by Robert R. Alfano and Lingyan Shi

ELSEVIER: 2019. 610PP. US$150.00.

This title gives an overview of the spectroscopic properties of tissue and tissue–light interactions, and describes techniques to exploit these properties in imaging. Composed of 34 chapters, it is divided into two parts: topics on optical spectroscopy biopsy and on optics in the brain. This book details non-invasive optical spectroscopic methods that detect the onset and progression of diseases and other conditions, such as pre-malignancy, cancer and Alzheimer's disease. It discusses neurophotonics for investigating single- and multiphoton excitation optical signatures of normal/diseased nerve tissues and of the brain. A broad range of ultraviolet, visible, near-infrared and infrared optical and spectroscopic techniques to diagnose tissue changes are covered, for example, label-free in vivo and ex vivo fluorescence spectroscopy, Stoke-shift spectroscopy and resonance Raman spectroscopy.

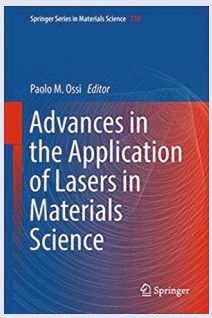


Graphene Photonics

By Jia-Ming Liu and I-Tan Lin

CAMBRIDGE UNIVERSITY PRESS: 2018. 300PP. £69.99.

This text covers the fundamental concepts, theoretical background, the main experimental observations and device applications of graphene photonics. Topics covered include the basic properties and band structure of graphene, as well as its electronic, optical, optoelectronic and nonlinear optical properties, and plasmonics and photonics devices based on graphene. The connections between theory, modelling, experiment and device concepts are demonstrated throughout, and every optical process is analysed through formal electromagnetic analyses.

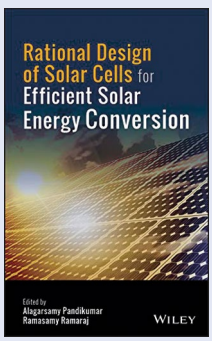


Advances in the Application of Lasers in Materials Science

Edited by Paolo M. Ossi

SPRINGER: 2018. 395PP. £109.99.

This volume describes both the fundamental science of laser interactions in materials science and the emerging applications enabled by the irradiation of materials by pulsed laser systems. The 13 chapters discuss how laser irradiation can result in efficient material synthesis, characterization and device fabrication at various length scales from atomically thin 2D materials to microstructured periodic surface structures. Other topics include laser-induced extreme thermodynamic conditions in condensed matter to produce nanomaterials for catalysis and photocatalysis, ultrafast laser micro- and nanoprocessing of transparent materials, laser ablation propulsion and its applications in space, and laser-synthesized nanoparticles for therapeutic drug monitoring.



Rational Design of Solar Cells for Efficient Solar Energy Conversion

Edited by Alagarsamy Pandikumar and Ramasamy Ramaraj

WILEY: 2018. 400PP. £148.00.

Containing 12 chapters, this book reviews the most recent solar technology and materials used to manufacture solar cells with high energy-conversion efficiency. A wide range of solar cells, including dye-sensitized solar cells, organic solar cells, polymer solar cells, perovskite solar cells and quantum dot solar cells, is described. For instance, it covers the development of components, such as photoanodes, sensitizers, electrolytes and photocathodes, for high-performance dye-sensitized solar cells. Highly stable inverted organic solar cells based on interfacial layers, rational strategies for large-area perovskite solar cells and the role of hot electrons in biomolecule-based quantum dot hybrid solar cells are also discussed.

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