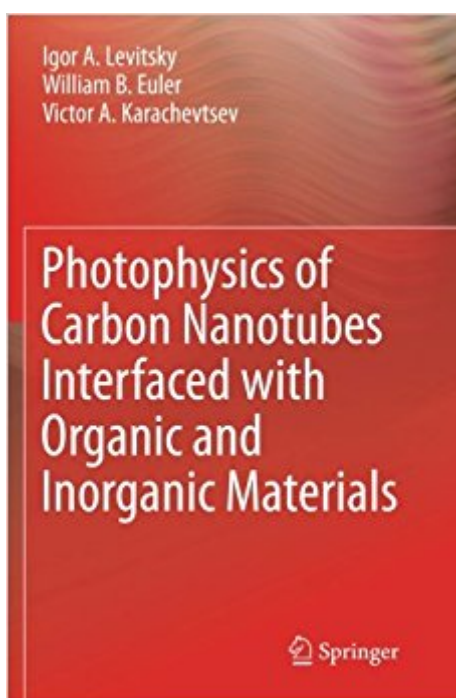




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Photophysics Of Carbon Nanotubes Interfaced With Organic And Inorganic Materials



Synopsis

This book surveys physical, optical and spectroscopic properties of nanocomposites formed from carbon nanotubes interfaced with organic and inorganic materials. Covers light harvesting, energy conversion, photoinduced charge separation and transport and more.

Book Information

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Photophysics of Carbon Nanotubes Interfaced with Organic and Inorganic Materials describes physical, optical and spectroscopic properties of the emerging class of nanocomposites formed from carbon nanotubes (CNTs) interfacing with organic and inorganic materials. The three main chapters detail novel trends in photophysics related to the interaction of light with various carbon nanotube composites from relatively simple CNT/small molecule assemblies to complex hybrids such as CNT/Si and CNT/DNA nanostructures. The latest experimental results are followed up with detailed discussions and scientific and technological perspectives to provide a thorough coverage of major topics including: Light harvesting, energy conversion, photoinduced charge separation and transport in CNT based nanohybrids CNT/polymer composites exhibiting photoactuation; and Optical spectroscopy and structure of CNT/DNA complexes. Including original data and a short review of recent research, Photophysics of Carbon Nanotubes Interfaced with Organic and Inorganic Materials makes this emerging field of photophysics and its applications available to academics and professionals working with carbon nanotube composites in fundamental and applied fields

Dr. I. A. Levitsky, Principal Scientist at Emitech, Inc. and Adjunct Faculty of Chemistry of the University of RI, has over 20 years of experience in experimental and theoretical study of optoelectronic properties of organic and nanocomposite materials, including carbon nanotubes, organic-inorganic nanocomposite and conjugated polymers. For the past ten years his scientific interests were concentrated on fundamental and applied aspects of optoelectronics and photophysics of various nanocomposites from carbon nanotubes and other organic and inorganic materials. In these studies the broad area of CNT based composites is covered from photoactuation phenomena to new generation of hybrid solar cells and photodetectors. He is the co-author of more than 50 publications in peer reviewed journals, and eight patents and patent applications. Dr. W. B. Euler, is a professor of Chemistry and co-director of the Center of the Sensor and Surface Technology Partnership of the University of RI. He has more than 90 publications in peer reviewed journals, covering topics such as solid state chemistry and physics, conducting materials, polymer synthetic chemistry, photochemistry, and IR, UV-Vis, and EPR spectroscopy. His interests also include carbon nanotube interaction with ionomeric polymers resulting in photomechanical effects. Dr. V.A. Karachevtsev, is Head of the Molecular Biophysics Department at the B.I. Verkin Institute for Low Temperature Physics & Engin., National Academy of Sciences of Ukraine. He is an author and co-author of 81 papers in peer reviewed journals. His research is focused on novel nanobiohybrids formed by interfacing carbon nanotubes with biological molecules/polymers and the study of their photophysical and biophysical properties. In these investigations he is combining the experimental methods (Luminescence, absorption, Raman & spectroscopy) with molecular dynamics simulations and ab initio calculation. An important aspect of his research is the application of these biohybrids in nanomedicine and biosensing.

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