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Titolo	Ultrafast dynamics at the nanoscale : biomolecules and supramolecular assemblies // edited by Irene Burghardt, Stefan Haacke
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Descrizione fisica	1 online resource (470 pages) : illustrations
Disciplina	547.139
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Lingua di pubblicazione	Inglese
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Note generali	Includes index.
Nota di contenuto	Section I. Experiment -- Section II. Theory.
Sommario/riassunto	Ultrafast Dynamics at the Nanoscale provides a combined experimental and theoretical insight into the molecular-level investigation of light-induced quantum processes in biological systems and nanostructured (bio)assemblies. Topics include DNA photostability and repair, photoactive proteins, biological and artificial light-harvesting systems, plasmonic nanostructures, and organic photovoltaic materials, whose common denominator is the key importance of ultrafast quantum effects at the border between the molecular scale and the nanoscale. The functionality and control of these systems have been under intense investigation in recent years in view of developing a detailed understanding of ultrafast nanoscale energy and charge transfer, as well as fostering novel technologies based on sustainable energy resources. Both experiment and theory have made big strides toward meeting the challenge of these truly complex systems. This book, thus, introduces the reader to cutting-edge developments in ultrafast nonlinear optical spectroscopies and the quantum dynamical simulation of the observed dynamics, including direct simulations of two-dimensional optical experiments. Taken together, these techniques attempt to elucidate whether the quantum coherent nature of ultrafast

events enhances the efficiency of the relevant processes and where the quantum-classical boundary sets in, in these high-dimensional biological and material systems. The chapters contain well-illustrated accounts of the authors' research work, including didactic introductory material, and address a multidisciplinary audience from chemistry, physics, biology, and materials sciences. The book is, therefore, a must-have for graduate- and postgraduate-level researchers who wish to learn about molecular nanoscience from a combined spectroscopic and theoretical viewpoint.

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