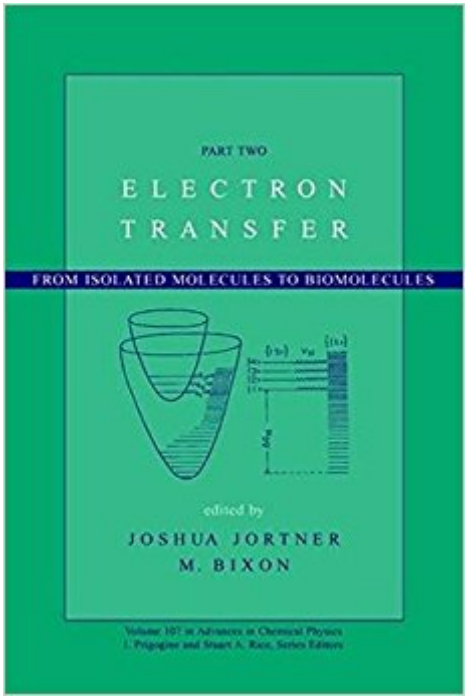
Electron Transfer: From Isolated Molecules To Biomolecules, Part 2 (Advances In Chemical Physics)



Synopsis

an integrated approach to electron transfer phenomena This two-part stand-alone volume in the prestigious Advances in Chemical Physics series provides the most comprehensive overview of electron transfer science today. It draws on cutting-edge research from diverse areas of chemistry, physics, and biology-covering the most recent developments in the field, and pointing to important future trends. This second volume offers the following sections: * Solvent control, including ultrafast solvation dynamics and related topics * Ultrafast electron transfer and coherence effects * Molecular electronics * Electron transfer and exciplex chemistry * Biomolecules-from electron transfer tubes to kinetics in a DNA environment Part One addresses the historical perspective, electron transfer phenomena in isolated molecules and clusters, general theory, and electron transfer kinetics in bridged compounds. Electron transfer science has seen tremendous progress in recent years. Technological innovations, most notably the advent of femtosecond lasers, now permit the real-time investigation of intramolecular and intermolecular electron transfer processes on a time scale of nuclear motion. New scientific information abounds, illuminating the processes of energy acquisition, storage, and disposal in large molecules, clusters, condensed phase, and biophysical systems. Electron Transfer: From Isolated Molecules to Biomolecules is the first book devoted to the exciting work being done in nonradiative electron transfer dynamics today. This two-part edited volume emphasizes the interdisciplinary nature of the field, bringing together the contributions of pioneers in chemistry, physics, and biology. Both theoretical and experimental topics are featured. The authors describe modern approaches to the exploration of different systems, including supersonic beam techniques, femtosecond laser spectroscopy, chemical syntheses, and methods in genetic and chemical engineering. They examine applications in such areas as supersonic jets, solvents, electrodes, semi- conductors, respiratory and enzymatic protein systems, photosynthesis, and more. They also relate electron transfer and radiationless transitions theory to pertinent physical phenomena, and provide a conceptual framework for the different processes. Complete with over two hundred illustrations, Part Two opens with solvent control issues, including electron transfer reactions and ultrafast solvation dynamics. Other topics include ultrafast electron transfer and coherence effects, molecular electronics, and electron transfer in exciplex chemistry. This volume concludes with a section on biomolecules-from electron transfer tubes to experimental electron transfer and transport in DNA. Timely, comprehensive, and authoritative, Electron Transfer: From Isolated Molecules to Biomolecules is an essential resource for physical chemists, molecular physicists, and researchers working in nonradiative dynamics today.

Book Information

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