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A review of: "Electron Transfer in Biology and the Solid State. Edited by M. K. Johnson, B. R. King, D. M. Kurtz, Jr., C. Kotal, M. L. Norton, R. A. Scott. Adv. in Chemistry Series No. 226, American Chemical Society, Washington, DC, 1990, xxiii 470 pp., \$89.95. ISBN 0-8412-1675-4."

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BOOK REVIEW

Electron Transfer in Biology and the Solid State. Edited by M. K. Johnson, B. R. King, D. M. Kurtz, Jr., C. Kutal, M. L. Norton, R. A. Scott. Adv. in Chemistry Series No. 226, American Chemical Society, Washington, DC, 1990, xxiii + 470 pp., \$89.95. ISBN 0-8412-1675-4.

This book is an outgrowth of a symposium on electron transfer (ET) in biology, the solid state and inorganic compounds with unusual properties held in Athens, Georgia, in March, 1989. It consists of 23 chapters which appear in 6 sections. (1) Biological ET, (2) theoretical aspects of biological ET, (3) experimental approaches to biological ET: peptides and proteins, (4) experimental approaches to biological ET: inorganic complexes, (5) theoretical aspects of solid-state systems and (6) experimental aspects of solid-state systems.

In the first section R. J. P. Williams gives a brief overview of biological ET. The second section consists of two chapters; Reimers and Hush discuss the theoretical formalism for ET in bridged systems and compare their approach with those of others, and Sutin and Brunschwag outline their theoretical work on ET in biological systems. ET in biological systems is represented by six papers in section 3: Directional ET in ruthenium-modified cytochrome c systems (Isied); photoinduced ET across peptide spacers (Cabana and Schanze); energetics and dynamics of gated reactions: control of observed rates by conformational interconversion (Hoffman *et al.*); electron coupling and protein dynamics in biological ET reactions (Bashkin and McLendon); electrostatic, steric and reorganizational control of electron self-exchange in cytochromes (Dixon and Hong); ET kinetics of singly labeled ruthenium(II) polypyridine cytochrome c derivatives (Durham *et al.*). Section 4 has five papers: High-pressure studies of long-range ET reactions in solution (Lewis and Taveras); intramolecular ET from photoexcited Ru(II) diamine complexes to *N,N'*-diquaternarized bipyridines (Schmehl *et al.*); bridged mixed-valence systems: how polarizable bridging ligands can lead to interesting spectroscopic and conductive properties (Ondrechen *et al.*); chiral recognition by metal-ion complexes in ET reactions (Marusak *et al.*); the role of free energy in interligand ET (Orman *et al.*). In section 4 Whangbo describes: band orbital mixing and electronic instability of low-dimensional metals; Goodenough: ceramic superconductors: single-valent mixed-valent oxides and Burdett and Kulkarni: geometrical control of superconductivity in copper oxide based superconductors. The last section of the book contains six chapters: Organometallic chemical vapor deposition: strategies and progress in the preparation of thin films of superconductors having high critical temperatures (Tonge *et al.*); centered cluster halides for group-three and group-four transition metals: a versatile solid-state and solution chemistry (Rogel *et al.*); oxidative intercalation of graphite by fluoroanionic species: evidence for thermodynamic barrier (Bartlett *et al.*); intramolecular ET and electronic delocalization in molybdophosphate heteropoly anions (Barrows and Pope); organometallic ET salts with tetracyanoethylene exhibiting ferromagnetic coupling (Miller and Epstein); stabilization of conducting heteroaromatic polymers in large-pore zeolite channels (Bein *et al.*).

The book tries to cover a wide range of aspects of ET reactions and the proper forum for this book are mainly ET specialists. A more comprehensive overview of the biological ET would have strengthened the book for a reader outside the ET world. The book contains many interesting contributions, but a book based on the contributions to a meeting has certain advantages and disadvantages. Among the advantages are that several points of view are presented in an authoritative way and that the subjects treated are discussed by specialists in the field; one of the disadvantages is that the book has 23 contributed papers, some have the character of a review, some more of research papers.

The book should be interesting reading for research chemists and graduate students in different fields outside the ET world; it maintains the usual high standard of the series and can be recommended for all specialists in the field and libraries.

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