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Book Review

"Hyper-Structured Molecules I Chemistry, Physics and Applications" edited by H. Sasabe, Gordon and Breach Science Publishers, 1999; ISBN 90–5699–133–7; 203 pages; $90; £57; EUR 82.

From the Preface, this monograph is the collected papers of the 1st International Forum on Hyper-Structured Molecules held in Kusatsu, Japan, 4–6 November, 1996. This forum was organized by the Hyper -Structured Molecules and their Application to Organic Quantum Devices group that has a five year program with the Core Research for Evolutional Science and Technology(CREST) program of the Japan Science and Technology Corporation. From the introductory chapter by the editor: "A molecule with a "topologically well-defined structure" such as dendrimer, dendritic macromolecules and hyper-branched polymer, is called a "hyper-structured molecule" here." The forum sought to discuss applications of these molecules in organic quantum devices involving light-emitting molecules, chemical amplification, and molecular magnets.

The book consists of twelve articles, nine by Japanese authors. The chapters are as follows: "Hyper-structured molecules for organic quantum devices" by H. Sasabe; "Programming molecules to form supramolecular materials" by S.I. Stupp, *et al.*; "The prospect of unimolecular rectification" by R.M. Metzger; "A synthetic approach to all-carbon molecular rods with organometallic terminals" by Y. Hayashi, *et al.*, "Star-branched functional polymers by living cationic polymerization", by M. Sawamoto, *et al.*, "Theoretical models for molecular spinics and the possibility of spin-mediated superconductivity in hyper-structural p-d, π-d and π-R systems" by K. Yamaguchi; "Approach to hyper-structured high spin molecules" by T. Sugawara; "Magnetic properties of layered organic/inorganic hybrid materials" by W. Fujita, *et al.*, "Construction of organized porphyrin array toward photoactive molecular systems – molecular architecture using phosphorus porphyrins" by H. Segawa; "Photon-pressure exertion on mesoscopic particles in the evanescent field" by S. Kawara; "Second-order nonlinear optics of chiral thin films" by A. Persoons, *et al.*

In addition to a three page subject index, the book also has five color figures, all from the article by S.I. Stupp, *et al.*. With the exception of the first, each article is individually referenced. The article by S.I. Stupp, *et al.*; discusses supramolecular structures of five systems, but gives the complete molecular formula for only one. The article by Metzger has been largely published elsewhere and includes the conceptually flawed attempts to use "$C_{16}H_{33}$Q-3CNQ"to test the Aviram-Ratner proposal for molecular rectification. Kawata's article is an interesting summary of attempts to use radiation pressure to manipulate materials on the nanoscale. The article by Persoons, *et al.* is an interesting summary of experiments using magnetic dipole and electric quadrupole transitions for second-order nonlinear optics.

This book will prove of interest to researchers involved with organic and polymeric materials, especially phenomena on the nanoscale.

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