

Fundamentals of Ion-Irradiated Polymers. Edited by Dietmar Fink (HMI Berlin). Springer-Verlag: Berlin, Heidelberg, New York. 2004. xvi + 404 pp. \$139.00. ISBN 3-540-04027-7.

Irradiation of polymers with energetic particles, ions, and electromagnetic radiation is of interest to researchers in many areas of industrial chemistry. This text, the first of a two part series, deals specifically with the techniques of ion irradiation of polymers and the role ion irradiation plays in the generation of images that are vital to the area of microelectronics. Although several authors contribute to the 10 chapters of this book, continuity is maintained by the input of the editor in several cases. Various technical procedures are outlined, but little actual chemistry is given. This is also apparent in the references, which are mainly to journals of an applied nature rather than to those of the chemical societies. This approach overlooks the basic premise of the irradiation of the polymers in which chemical change is produced that results in cross-linking or degradation, the precise effect depending on the actual polymer. In turn, the chemistry produces structural changes that eventually lead to a required image. To fully understand the process, the researcher needs to have knowledge of the polymer itself, the nature of the process of energy loss in the medium, and the chemical consequences of the radiation. Although brief outlines of these events are given in the text, again little chemistry is discussed. There is much to know in these areas; unfortunately, the obvious references to prominent published work are missing. I do not think that chemists will find this book to be of interest to them. However, it may serve as a reference source for industrialists who are directly concerned with the application of ion irradiation of polymers to microelectronics.

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Advances in Chemical Physics, Volume 131. Edited by Stuart Rice (The University of Chicago). John Wiley & Sons, Inc.: Hoboken, NJ. 2005. x + 528 pp. \$175.00. ISBN 0471-44526-6.

Unsigned book reviews are by the Book Review Editor.

This book contains six chapters on a variety of topics in the field of chemical physics: (1) "Polyelectrolyte Dynamics" by Muthukumar; (2) "Hydrodynamics and Slip at the Liquid-Solid Interface" by Ellis and Thompson; (3) "Structure of Ionic Liquids and Ionic Liquid Compounds: Are Ionic Liquids Genuine Liquids in the Conventional Sense?" by Hamaguchi and Ozawa; (4) "Chemical Reactions at Very High Pressure" by Schettino et al.; (5) "Classical Description and Nonadiabatic Quantum Dynamics" by Stock and Thoss; and (6) "Non-Born-Oppenheimer Variational Calculations of Atoms and Molecules with Explicitly Correlated Gaussian Basis Functions" by Bubin et al. An author and a subject index complete the book.

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Strategic Applications of Named Reactions in Organic Synthesis; Background and Detailed Mechanisms. By László Kürti and Barbara Czakó (University of Pennsylvania). Elsevier Academic Press: San Diego, CA. 2005. iii + 758 pp. \$94.95. ISBN 0-12-429785-4.

This is an elegantly produced, user-friendly book on the most frequently used named reactions in organic synthesis. Two pages are devoted to each of the 250 named reactions described; each is introduced, mechanistically illustrated, and explained using a four-color system and further characterized by examples of its synthetic applications. References to the literature are extensive and up to date, and there are several useful appendices: List of named reactions in chronological order of their discovery; Reaction categories—Categorization of named reactions in tabular format; Affected functional groups—Listing of transformation in tabular format; and Preparation of functional groups—Listing of transformations in tabular format. The book also includes a thorough index and a helpful list of abbreviations.

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