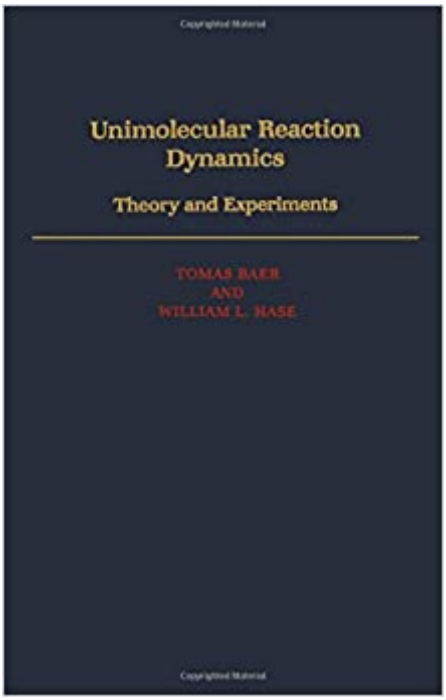
Unimolecular Reaction Dynamics: Theory And Experiments (International Series Of Monographs On Chemistry)



Synopsis

This book provides a penetrating and comprehensive description of energy selected reactions from a theoretical as well as experimental view. Three major aspects of unimolecular reactions involving the preparation of the reactants in selected energy states, the rate of dissociation of the activated molecule, and the partitioning of the excess energy among the final products, are fully discussed with the aid of 175 illustrations and over 1,000 references, most from the recent literature. Examples of both neutral and ionic reactions are presented. Many of the difficult topics are discussed at several levels of sophistication to allow access by novices as well as experts. Among the topics covered for the first time in monograph form is a discussion of highly excited vibrational/rotational states and intramolecular vibrational energy redistribution. Problems associated with the application of RRKM theory are discussed with the aid of experimental examples. Detailed comparisons are also made between different statistical models of unimolecular decomposition. Both quantum and classical models not based on statistical assumptions are described. Finally, a chapter devoted to the theory of product energy distribution includes the application of phase space theory to the dissociation of small and large clusters. The work will be welcomed as a valuable resource by practicing researchers and graduate students in physical chemistry, and those involved in the study of chemical reaction dynamics.

Book Information

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Customer Reviews

"The authors bring complementary expertise to this book. . .Both experiments and theory are

treated with considerable depth. . . .From start to finish this book is excellent. . . .Anyone working in this field or in related fields will want to own this book."--Journal of the American Chemical Society"The authors are to be congratulated and thanked for a timely and important contribution to the textbook literature in the field of unimolecular reactions. They have produced a remarkably balanced and integrated account of both experiment and theory, which is already becoming a standard reference for workers in the field." --Journal of Chemical Education

The field of unimolecular reaction has witnessed impressive advances in both experimental and theoretical techniques during the past 20 years. These developments have resulted in experimental measurements that finally permit critical test of the major assumptions made more than 60 years ago when Rice and Ramsperger and Kassel first proposed their statistical RRK theory of unimolecular decay.

For whom is interested in study the unimolecular reaction dynamics in very detail, this is a nice book. Classical dynamics, quantum chemistry, and some physics, computational knowledge are required.

Series (Sep.Title P) Ace General Chemistry I and II (The EASY Guide to Ace General Chemistry I and II): General Chemistry Study Guide, General Chemistry Review Experiments in General Chemistry: Featuring MeasureNet (Brooks/Cole Laboratory Series for General Chemistry) Theory of Nonequilibrium Superconductivity (International Series of Monographs on Physics) Elements of Chemical Reaction Engineering (5th Edition) (Prentice Hall International Series in the Physical and Chemical Engineering Sciences) Essentials of Chemical Reaction Engineering (Prentice Hall International Series in Physical and Chemical Engineering)