Dynamic Covalent Chemistry: Principles, Reactions, and Applications
Wei Zhang (Editor), Yinhua Jin (Editor)

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DESCRIPTION

The first and only exhaustive review of the theory, thermodynamic fundamentals, mechanisms, and design principles of dynamic covalent systems

Dynamic Covalent Chemistry: Principles, Reactions, and Applications presents a comprehensive review of the theory, thermodynamic fundamentals, mechanisms, and design principles of dynamic covalent systems. It features contributions from a team of international scientists, grouped into three main sections covering the principles of dynamic covalent chemistry, types of dynamic covalent chemical reactions, and the latest applications of dynamic covalent chemistry (DC vC) across an array of fields.

The past decade has seen tremendous progress in (DC vC) research and industrial applications. The great synthetic power and reversible nature of this chemistry has enabled the development of a variety of functional molecular systems and materials for a broad range of applications in organic synthesis, materials development, nanotechnology, drug discovery, and biotechnology. Yet, until now, there have been no authoritative references devoted exclusively to this powerful synthetic tool, its current applications, and the most promising directions for future development. Dynamic Covalent Chemistry: Principles, Reactions, and Applications fills the yawning gap in the world literature with comprehensive coverage of:

- The energy landscape, the importance of reversibility, enthalpy vs. entropy, and reaction kinetics
- Single-type, multi-type, and non-covalent reactions, with a focus on the advantages and disadvantages of each reaction type
- Dynamic covalent assembly of discrete molecular architectures, responsive polymer synthesis, and drug discovery
• Important emerging applications of dynamic covalent chemistry in nanotechnology, including both material- and bio-oriented directions

• Real-world examples describing a wide range of industrial applications for organic synthesis, functional materials development, nanotechnology, drug delivery and more

*Dynamic Covalent Chemistry: Principles, Reactions, and Applications* is must-reading for researchers and chemists working in dynamic covalent chemistry and supramolecular chemistry. It will also be of value to academic researchers and advanced students interested in applying the principles of (DC vC) in organic synthesis, functional materials development, nanotechnology, drug discovery, and chemical biology.

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