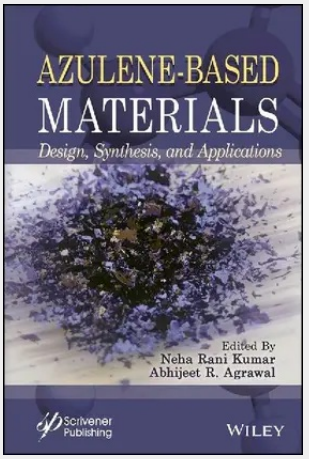
Kumar / Agrawal

Azulene-Based Materials

Design, Synthesis, and Applications



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Master the unique architecture of azulene and unlock its transformative potential across organic semiconductors, molecular switches, and advanced materials with this authoritative, future-focused guide to the next frontier of organic electronics. In the era of digitalization, organic electronics are expected to be pivotal in shaping the future. Azulene, a unique bicyclic hydrocarbon with remarkable structural and electronic properties, has found significant applications in organic electronics, optoelectronics, and materials science. This book provides an in-depth exploration of azulene chemistry, from its discovery and isolation to its cutting-edge applications in fields like organic semiconductors, molecular switches, and sensors. It offers detailed insights into the synthesis methods of azulene and its derivatives, focusing on both classical and modern approaches, and highlights the functionalization of azulene systems for use in advanced materials like nanographenes and porous polymers. It also covers the application of azulene derivatives in fields such as organic photovoltaics, field-effect transistors, and photochromic compounds for molecular switching. With a focus on the multidisciplinary nature of azulene chemistry, the text explores its potential in biological applications, including antimicrobial, anti-inflammatory, and antiviral properties, as well as its role in catalysis and energy storage. Designed as a comprehensive guide, this book serves as an invaluable reference for material chemists, organic chemists, physicists, and students engaged in research on azulene-based systems. By compiling the most significant findings in azulene chemistry, it offers a solid foundation for future research and development, addressing challenges in organic synthesis, optoelectronics, and emerging technologies, with an eye toward the future role of artificial intelligence in advancing the field. The reader will find the volume: - Serves as an authoritatively comprehensive guide to azulene chemistry; - Discusses the synthesis of azulene and its derivatives, as well as the applications of azulene and azulene-based materials across a wide array of fields; - Explores the emerging field of the synthetic chemistry of azulenes and calixazulenes. Audience Researchers in academia, material chemists and physicists, industry and government laboratories as well as advanced undergraduate and graduate students working in organic synthesis, organic electronics, organic semiconducting systems.

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