

Metamorphosis of Computational Chemistry Driven by Artificial Intelligence and Industry 5.0

Metamorphosis of Computational Chemistry Driven by Artificial Intelligence and Industry 5.0 explores the cutting-edge synergy among Computational Chemistry, Artificial Intelligence (AI), and the emerging paradigm of Industry 5.0. The book offers a comprehensive, introductory overview of how AI-driven techniques are revolutionizing the field of computational chemistry and transforming industries. Readers will explore the convergence of AI algorithms, big data analytics, and advanced computational methods such as Natural language Processing, Image Processing, and Machine Learning in the context of chemical research and industrial processes. The book also discusses how AI is accelerating Computational Chemistry, Materials Science, and Chemical Engineering by automating complex calculations, predicting molecular properties, and optimizing chemical processes. Furthermore, it provides a deep dive into the concept of Industry 5.0, which envisions a new era of manufacturing characterized by human-robot collaboration, intelligent factories, and decentralized production systems. The book illustrates how AI and Computational Chemistry play pivotal roles in realizing the vision of Industry 5.0 by optimizing manufacturing processes, quality control, and sustainability efforts.

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