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Abiogenesis: The Quantum Mechanics of the Absorption of Light by Biomolecules -- Chapter 11. The Physics of Water -- Chapter 12. Prebiotic Evolution: The Self Assembly of Primordial Biomolecules.

Sommario/riassunto

This textbook serves to teach readers about the origins of life, the probabilistic process of self-assembly underpinning all living systems, from a biophysics perspective. The author cohesively summarizes the various organizing principles that led to the development of an ordered physical basis on which the evolution of life operates. This book answers critical questions, such as why life depends on the properties of inanimate objects and how the laws of physics, chemistry, and biology convolved to spontaneously produce the periodic table and, of course, life itself. Readers are provided with an introduction to probability distributions as well as detailed descriptions of important concepts in thermodynamics, statistical mechanics, and quantum mechanics. As the book progresses, an understanding for the inevitability of life is developed through topics such as stellar nucleosynthesis and prebiotic evolution. Each chapter also includes problems for readers to gain a better understanding of the material. This textbook is accessible to students and researchers of all levels and serves as a comprehensive guide on the physics behind abiogenesis.