

Astrobiology

An Evolutionary Approach

Editor/Affiliation

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This interdisciplinary text presents astrobiology as a dynamic, developing science of the utmost importance for the future of humanity. Featuring contributions from leaders in physics, chemistry, astronomy, biology, molecular biology, ecology, planetary science, geography, and geology, the book discusses the evolution of abiotic matter to biotic matter and emphasizes new discoveries in prebiotic chemistry, such as solid-state (solventless), in/on-water, and multicomponent reactions. It describes the most challenging problems involved in the field of astrobiology and invites the reader to become actively involved in their solution.

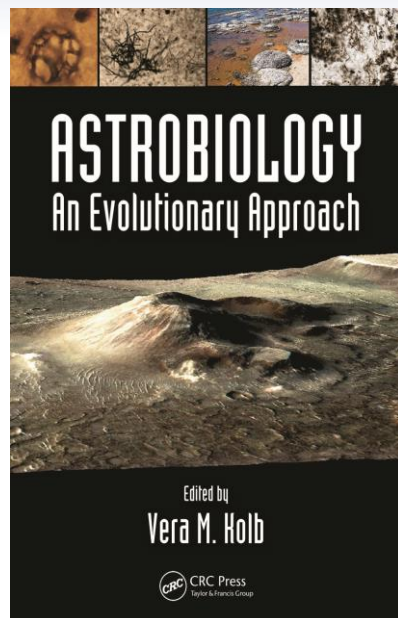
Key Features

- Provides an interdisciplinary approach to astrobiology
- Discusses the evolution of abiotic matter to biotic matter
- Emphasizes new discoveries in prebiotic chemistry
- Contains problem sets to encourage critical thinking
- Invites active involvement in answering the field's most challenging questions

An instructor's guide, solutions manual, and access to an accompanying website are available with qualifying course adoption

Selected Contents

Origin of Elements and Formation of Solar System, Planets, and Exoplanets. Astrobiology Education and Public Outreach. Analysis of Extraterrestrial Organic Matter in Murchison Meteorite: A Progress Report. Prebiotic Synthesis of Biochemical Compounds: An Overview. Biochemical Pathways as Evidence for Prebiotic Syntheses. Roles of Silicon in Life on Earth and Elsewhere. Fossil Records for Early Life on Earth. Prebiotic Chemistry: In Water and in the Solid State. Encapsulation of Organic Materials in Protocells. Role of Phosphorus in Prebiotic Chemistry. Cold and Dry Limits of Life. Microorganisms in Space. Search for Life on Mars: An Astrogeological Approach. Elusive Definition of Life: A Survey of Main Ideas. Language and Communication as Universal Requirements for Life. Transition from Abiotic to Biotic: Is There an Algorithm for It? Extraterrestrial Life: What Are We Looking For? Evolutionary Approach to Viruses in Astrobiology. Violution Can Help Us Understand the Origin of Life. Can Violution Help Us Understand Recent Human Evolution? Index.



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