



NEW BOOK SERIES

Advances in Astrobiology and Biogeophysics

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This new series aims to report new developments in research and teaching in the interdisciplinary fields of astrobiology and biogeophysics. This encompasses all aspects of research into the origins of life - from the creation of matter to the emergence of complex life forms - and the study of both structure and evolution of planetary ecosystems under a given set of astro- and geophysical parameters. The methods considered can be of theoretical, computational, experimental and observational nature. Preference will be given to proposals where the manuscript puts particular emphasis on the overall readability in view of the broad spectrum of scientific backgrounds involved in astrobiology and biogeophysics. The type of material considered for publication includes:

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P. Ulmschneider, University of Heidelberg, Germany

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1st ed. 2002. Corr. 2nd printing 2004. X, 251 p. 130 illus. 31 in color. (Advances in Astrobiology and Biogeophysics)
Hardcover € 69.95; sFr 123.50; £ 54
ISBN 3-540-43988-9

NEW!

R. Popa, University of Southern California, Los Angeles, CA, USA

Between Necessity and Probability:

Searching for the Definition and Origin of Life

This intriguing monograph investigates the major theories of the origins of life in light of modern research with the aim of distinguishing between the necessary and the optional and between deterministic and random influences in the emergence of what we call 'life'. Life is treated as a cosmic phenomenon whose emergence and driving force should be viewed independently from its Earth-bound natural history. The author synthesizes all the fundamental life-related developments in a comprehensive scenario, and makes the argument that understanding life in its broadest context requires a material-independent perspective that identifies its essential fingerprints.

2004. 272 p. (Advances in Astrobiology and Biogeophysics)
Hardcover € 79.95; sFr 135.50; £ 61.50
ISBN 3-540-20490-3

NEW!

D. Schulze-Makuch, University of Texas at El Paso, TX, USA; L. N. Irwin, University of Texas at El Paso, TX, USA

Life in the Universe

Expectations and Constraints

Energy, chemistry, solvents, and habitats - the basic elements of living systems - define the opportunities and limitations for life on other worlds. This study examines each of these parameters in crucial depth and makes the argument that life forms we would recognize may be more common in our solar system than many assume. Of particular interest are exotic life forms, i.e. those which would not have to rely on carbon as the basic chemical element, solar energy as the main energy source, or water as the primary solvent. Finally the question of detecting bio- and geosignature of such life forms is discussed, ranging from Earth environments to deep space. While speculative considerations in this emerging field of science cannot be avoided, the authors have tried to present their study with the breadth and seriousness that a scientific approach to this issue requires. They seek an operational definition of life and investigate the realm of possibilities that nature offers to realize this very special state of matter and avoid scientific jargon wherever possible to make this intrinsically interdisciplinary subject understandable to a broad range of readers.

2004. Approx. 200 p. (Advances in Astrobiology and Biogeophysics)
Hardcover € 59.95; sFr 106; £ 46
ISBN 3-540-20627-2

Forthcoming

T. Tokano, DLR-Institut für Raumsimulation, Köln, Germany (Ed.)

Water on Mars and Life

Growing evidence, based on observations from orbiters, landers and telescopes, indicates that Mars not only had oceans of liquid water in the remote past but also that it may still have numerous hidden water reservoirs. Moreover, from the point of view of habitability, Mars is a prime target for astrobiologists in search of extant or extinct microbial life because we know that life exists in earth's permafrost regions, such as parts of Siberia and the Antarctic, which are the closest terrestrial analogues to Mars. "Water on Mars and Life" surveys recent advances made in research into water on Mars together with its astrobiological implications. This volume addresses not only scientists working in the field but also nonspecialists and students in search of a high-level but accessible introduction to this exciting field of research.

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