

For more than fifty years scientists have been concerned with the interrelationships of Earth and life. Over the past decade, however, geobiology – the name given to this interdisciplinary endeavour – has emerged as an exciting and rapidly expanding field, fuelled by advances in molecular phylogeny, a new microbial ecology made possible by the molecular revolution, increasingly sophisticated new techniques for imaging and determining chemical compositions of solids on nanometer scales, the development of non-traditional stable isotope analyses, Earth systems science and Earth system history, and accelerating exploration of other planets within and beyond our solar system.

Geobiology has many faces: there is the microbial weathering of minerals, bacterial and skeletal biomineralization, the roles of autotrophic and heterotrophic metabolisms in elemental cycling, the redox history in the oceans and its relationship to evolution and the origin of life itself.

This book is the first to set out a coherent set of principles that underpins geobiology, and will act as a foundational text that will speed the dissemination of those principles. The chapters have been carefully chosen to provide intellectually rich but concise summaries of key topics, and each has been written by one or more of the leading scientists in that field.

Fundamentals of Geobiology is aimed at advanced undergraduates and graduates in the Earth and biological sciences, and to the growing number of scientists worldwide who have an interest in this burgeoning new discipline.

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Cover image: Stromatolites at Shark Bay, Western Australia, reflect the physical and chemical influence of microbial communities on carbonate sedimentation, epitomizing the close relationship between physical and biological processes in shaping the Earth's surface. Photograph by A.H. Knoll.

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Companion Website

This book has a companion website www.wiley.com/go/knoll/geobiology with Figures and Tables from the book for downloading.



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