



Marine Geochemistry

By Roy Chester



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The past two or three decades have seen many important advances in our knowledge of the chemistry, physics, geology and biology of the oceans. It has also become apparent that in order to understand the manner in which the oceans work as a 'chemical system', it is necessary to use a framework which takes account of these interdisciplinary advances. Marine geochemistry has been written in response to the need for a single state-of-the-art text that addresses the subject of treating the sea water, sediment and rock reservoirs as a unified system. In taking this approach, a process-orientated framework has been adopted in which the emphasis is placed on identifying key processes operating within the 'unified ocean'. In doing this, particular attention has been paid to making the text accessible to students from all disciplines in such a way that future advances can readily be understood. I would like to express my thanks to those people who have helped with the writing of this volume. In particular, I wish to put on record my sincere appreciation of extremely helpful suggestions made by Professor John Edmond, FRS. In addition, I thank Dr S. Rowlatt for his comments on the sections covering the geochemistry of oceanic sediments, and Dr G. Wolff for his invaluable advice on the organic geochemistry of biota, water and sediments. It is a great pleasure to acknowledge the help of Dr K. J. T.



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Editorial Review

Review

'To answer the question 'How do the oceans work as a chemical system?' Chester looks at where the ocean's elements come from, where they end up and what happens to them in between. But this is no mere in/out accounting catalogue; he selects tracer elements to illustrate the different oceanic cycles. To use jargon, it is 'process-orientated', which at once makes for a better narrative and provides a framework within which to assimilate future discoveries. The book is clearly recognisable as a standard text for years to come.'

New Scientist

From the Back Cover

The first edition of *Marine Geochemistry* received strong critical acclaim, and the reviews included the comments that it 'provides a benchmark in the field' and 'is clearly recognisable as a standard text for years to come'.

Marine Geochemistry offers a fully comprehensive and integrated treatment of the chemistry of the oceans, their sediments and biota. It addresses the fundamental question 'How do the oceans work as a chemical system?' by capitalizing on the significant advances in understanding oceanic processes made over the past three decades. Advances, which have been facilitated by improved sampling and analytical techniques, a better understanding of theoretical concepts and the instigation of large-sized international oceanographic programmes.

Designed for use as a text, the book treats the oceans as a 'unified system' in which material stored in the sea water, the sediment and the rock reservoirs interacts to control the composition of sea water itself. Part I covers the transport of material to the oceans via rivers, the atmosphere and hydrothermal systems, and discusses their relative flux magnitudes. Part II considers the oceans as a reservoir, introducing water-column parameters before discussing water-column fluxes and the benthic boundary layer. Part III is devoted to the sediment reservoir. The topics covered include diagenesis, the major components of the sediments, and the processes controlling the geochemistry of oceanic deposit, which are discussed in terms of sediment-forming signals. Part IV offers an overview and synthesis of the integrated marine geochemical system.

Since the publication of the first edition, there have been further significant advances in several areas of the subject. The revised text of this edition accommodates these advances, whilst still retaining the emphasis on identifying key processes operating within a 'unified ocean'. Special attention has been paid to fundamental conceptual changes, such as those related to trace metal speciation in sea water, hydrothermal activity, carbon dioxide and the importance of the oceans in world climate change, the transport of particulate material to the interior of the ocean, primary production and iron limitation, colloids, and the preservation/destruction of organic matter in marine sediments.

Intermediate and advanced students with interests in chemical oceanography, marine geochemistry, marine biology and environmental chemistry will welcome with revised comprehensive text. Other students in the broader field of earth sciences will find it to be an essential reference source dealing with the interaction

between the atmosphere, the ocean and the solid earth.

About the Author

Roy Chester is Professor of Oceanography in the Department of Earth Sciences at the University of Liverpool.

Users Review

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Charlene Rodriquez:

The book Marine Geochemistry give you a sense of feeling enjoy for your spare time. You may use to make your capable a lot more increase. Book can being your best friend when you getting anxiety or having big problem with your subject. If you can make studying a book Marine Geochemistry to be your habit, you can get more advantages, like add your capable, increase your knowledge about several or all subjects. It is possible to know everything if you like open and read a book Marine Geochemistry. Kinds of book are several. It means that, science guide or encyclopedia or some others. So , how do you think about this guide?

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Paul Green:

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Wilma Hogan:

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