

REVIEWS

Geochemistry of Marine Sediments. By David J. Burdige. Princeton, NJ: Princeton University Press, 2006. 609 pages, 110 line figures, 33 tables. \$85.00 cloth.

This excellent and comprehensive volume on the geochemistry of marine sediments synthesizes a large body of recent research as well as the author's own extensive work in the field since 1983. The breadth and depth of the subject matter is supported by approximately 1,000 literature references on 71 pages, and the text is divided into 18 chapters of varying length. The first six chapters provide a background for the more detailed treatment of the geochemical processes in marine sediments. These include chapters on the global distribution of the different types of ocean-floor sediments and their mineral composition and physical properties, a brief discussion of isotopes, the principles of physical and chemical transport in sediments, and an introduction to diagenetic models. In the latter, readers interested in modeling will note that only one-dimensional steady-state models receive considerable attention. The next five chapters (7–11) are the core strength of this book, and they present the connections of the organic matter and its individual components to the sediment diagenesis. From chapter 12 to the end, the text deals with processes in oceanic domains, such as the pelagic or deep-sea sediments and biogeochemical processes in the continental margin, and with sets of specific processes, such as the sediment-water interface, nonsteady-state processes, and preservation of organic carbon in oceanic sediments. Broader relationships of the processes in sediments to the global biogeochemical cycles are discussed in chapters 16–18 for carbon, nitrogen, phosphorus, sulfur, methane, trace metals, and silica. The book is printed in a large font size, making the reading easy. Its target audience is variable and extensive. As a reference text, it thoroughly

discusses the role of organic matter in marine sediments. As a textbook, although it may be difficult to use the entire 600-page text in a course lasting one academic quarter, its different parts are very usable in upper-level undergraduate and graduate courses of more narrowly defined scope, where the use of the book may be greatly aided by its extensive bibliography. One may question whether the book would not have gained from a more compact arrangement of the material in fewer chapters, but this does not detract from its quality and usefulness at diverse professional levels.

ABRAHAM LERMAN

Department of Earth and Planetary Sciences

Northwestern University

Evanston, Illinois

DOI: 10.1086/533614