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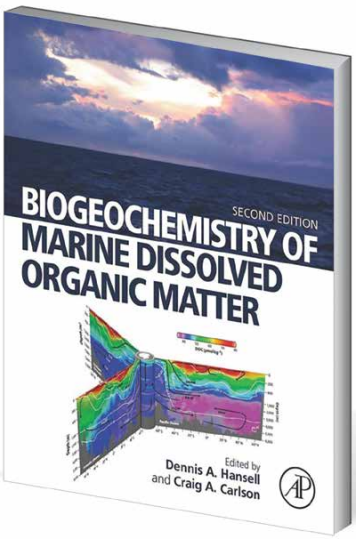

BIOGEOCHEMISTRY OF MARINE DISSOLVED ORGANIC MATTER (Second Edition)

Edited by Dennis A. Hansell and Craig A. Carlson, 2014, Academic Press, 712 pages, ISBN 978-01-240-5940-5, Hardcover: $140 US, e-book: $140 US

Reviewed by Ellery D. Ingall

In the last decade, the study of marine dissolved organic matter has grown enormously. It is a full-time job just keeping up with the myriad developments in extraction techniques, chemical characterizations, isotopic composition, optical properties, and all the implications for marine systems stemming from these studies. Hence, the second edition of *Biogeochemistry of Marine Dissolved Organic Matter*, edited by Dennis Hansell and Craig Carlson, is timely.

One reason to buy this volume serendipitously occurred one day in my office. With two graduate students writing papers involving marine dissolved organic matter (DOM), I was droning on (as advisors do) about the importance of putting their work in context of the current state of knowledge in the field. Even though my graduate students are brilliant and fantastic, I forget they were not following the growth and development of the DOM field while in elementary and high school. The chapters in this book nicely summarize the findings of hundreds (if not thousands) of DOM studies. As such, this book was perfect for bringing them quickly up to speed as they were writing their papers. One student, Luke Chambers, is an engineer and loves to build things. Using a pile of plastic, steel, and uncut membrane rolls, he built an entire electrodialysis system optimized to extract DOM from 2- to 10-liter volumes of seawater. He has performed hundreds of experiments optimizing DOM extraction with his new gizmo and has evaluated extraction efficiencies for different molecules. Thus, the chapters Chemical Characterization and Cycling of DOM and The Carbon Isotopic Composition of Marine DOC (dissolved organic carbon) were especially relevant for his work. The other student, Emily Saad, is investigating DOM, specifically the dissolved organic phosphorus (DOP) produced in bacteria-free cultures of diatoms. DOM in the ocean appears to be the material left around after significant processing by microorganisms. With the DOM from these cultures, we are hoping to get a better idea of the material at the starting point in the marine DOM cycle. For her work, the extensive chapter on DOP, as well as the chapters Chemical Characterization and Cycling of DOM and DOM Sources, Sinks, Reactivity, and Budgets, were especially useful in putting her research in context. The book is so popular in my lab at the moment that I had to borrow it back from my students to complete this review.

New authors contributed many of the chapters in the latest edition, and those written by the same authors as the first edition were clearly updated to include the latest research. Thus, the book comprehensively covers the latest findings in all aspects of DOM study. Some of the topics covered in the first edition were reorganized for the latest edition, which also includes new, separate chapters on the long-term stability of DOM, microgels, and Mediterranean DOM.

Simply put, I was favorably impressed by this latest compendium of pretty much everything you could want to know about marine DOM. The first edition, published in 2002, is one of a few books in my office that I use regularly, but it was getting a bit dated. This latest edition is just as high quality as the first and will undoubtedly be used for years to come by my entire research group.

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Science and Sails

This memoir charts the life and career of Kathy Burns, the first woman graduate of the Massachusetts Institute of Technology/Woods Hole Oceanographic Institution Joint Program.

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