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## Abstract

The book is intended for students of the Department of Chemistry of the University of Athens and covers the material of the course in Chemical Oceanography. It can also be used by students from other departments and universities who are taking a similar course, as well as by postgraduate students of Oceanography. It is also useful for scientists who wish to learn about chemical processes in the marine environment. The book is divided into three parts: The first part consists of four chapters dealing with introductory concepts of Oceanography with an emphasis on Marine Chemistry. There is a brief description of the oceans and their evolution into their present form, with reference to the main physical and chemical characteristics of seawater. The hydrological cycle, the stability of the chemical composition of the oceans, marine circulation, and the shape of the sea floor and marine sediments are described, as well as life in the marine environment and its classification. A brief historical

review of the development of oceanographic science is also provided. The second part consists of four chapters dealing with the form and chemical behavior of elements and compounds in the marine environment, describing the most important biogeochemical cycles (nitrogen, phosphorus, silicon, sulfur) and examines basic chemical processes such as complexation, redox, precipitation, and solubilization. Furthermore, the processes at the interfaces between the atmosphere and the sea, the sea and the seabed, and fresh and salt water are described. Finally, the sources, impacts, and extent of chemical marine pollution are discussed. The third part consists of two chapters. The first describes the methodology for designing and organizing an oceanographic survey and presents the instruments used for collecting and processing samples. The second consists of nine laboratory exercises for determining the most important chemical oceanographic parameters using classical and modern instrumental methods.



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