

Jeffrey, S.W., Mantoura, R.F.C., Wright, S.W. (ed.): **Phytoplankton Pigments in Oceanography: Guidelines to Modern Methods.** - UNESCO Publishing, Paris 1997. ISBN 92-3-103275-5. 661 pp., F 320.00; USD 64.00.

Books describing and discussing methods of photosynthesis research are welcome in every laboratory, and also all university libraries should keep a copy to serve students and lecturers. The reviewed book is a very useful manual for everybody who is interested in exact analysis of photosynthetic pigments, not only in algae, but also in higher plants (some recommendations are universally valid).

The book consists of five parts written by 17 authors (Australia 5, the U.K. 4, the U.S.A. 2, Canada, Chile, France, Germany, Norway, and Switzerland 1 each). The first part (chapters 1 to 5) deals with literature background of modern pigment oceanography. Two of the volume editors are co-authors of some chapters (S.W. Jeffrey of four, R.F.C. Mantoura of two). The development of pigment methods for oceanography is described as well as general information on algae morphology, pigments in individual classes of marine phytoplankton, on biosynthesis, metabolism, and functions of chlorophylls (Chls), carotenoids (Cars), and biliproteins. Further on, application of pigment methods for determining photosynthetic production in oceans is described. A selection of papers dealing with chemotaxonomy, biomass budgets, sedimentation processes, and contrasting seas (in well-arranged tables) is also presented.

Part II (9 chapters) is on the experimental results of workshops of the SCOR (Scientific Committee on Oceanic Research) Working Group 78. The chapter showing how to grow reference cultures of microalgae (isolation, composition of media, cultivation vessels, culture mode, aeration, temperature, irradiance, protocols, *etc.*) is accompanied with instructive colour photographs. Preparation of Chl and Car standards of spectroscopic and chromatographic purity, evaluation of methods and solvents for pigment extraction, extract filtration, and pigment sample storage are also given. Special chapters deal with qualitative and quantitative high pressure liquid chromatography (HPLC) methods for analysis of Chls, Cars, and their degradation products. In chapter 14, spectrophotometric, fluorometric, and HPLC methods for analysing Chls are compared.

Part III (3 chapters) contains guidelines for selecting and setting up a HPLC system, its calibration (with external and internal standards), and for collecting and analysing field samples. This part is in a style of cookery book, with all details and practical recommendations.

Part IV contains Chl and Car data and graphics sheets. For each of 47 key phytoplankton pigments, two pages are reserved. They always contain standard spectrum in reference solvent, molecular structure, diode array spectra, HPLC retention graph, pigment names and abbreviations, occurrence, colour, molecular formula, molecular mass, specific and molecular extinction coefficients, basic values of UV-VIS and fluorescence spectra, alteration products, and basic references.

Thirteen appendices (Part V) give recommended pigment abbreviations, structure relationships between algal Chls and Cars and their derivatives and the respective spectral characteristics, and the recommended spectrophotometric and fluorometric equations, evaluation of HPLC chromatograms, and lists of suppliers of pigment standards, reference algal cultures, *etc.* A detailed subject index is supplemented.

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