

the field and those to be initiated into it. The authors have done a tremendous task in achieving the objectives of the book.

The book has many illustrations which have been taken from various references. Their proper source should have been indicated in all the photographs

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**Recent Developments in Biofouling Control.** Mary-Frances Thompson, R. Nagabhushanam, R. Sarojini and M. Fingerma, eds. Oxford & IBH Publishing Co., 66, Janpath, New Delhi 110 001. 1994. 443 pp.

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This volume consists of papers contributed by various authors in the Indo-US meeting on Recent Developments in Biofouling Control held in Bangalore during July 1992. Five topics dealing with microfouling, macrofouling, nontoxic antifouling agents and new inhibitors, performance of low-energy and controlled release of antifouling coatings and antifouling agents, coatings, treatments and testing are dealt with through 45 technical papers.

Deterioration and failure of metals and materials brought about by microorganisms have only been recognized since about two decades and increased awareness towards this problem has

become evident only in the recent years. This publication is thus timely and will help in bringing into focus the role of microorganisms in the corrosion, deterioration and fouling of a number of structural materials used in modern technology.

Biofouling, especially in sea waters, is a topic of universal interest and comparatively very little is known about the microbiology and mechanisms involved in it. For a country like India, this problem has assumed gigantic proportions in our modern technological innovations. Typical cases in point are coastal-based nuclear power reactors, on-shore and off-shore oil drilling, civil and naval sea-going vessels as well as many marine structures. Proceedings of this Indo-US meeting deal with current research efforts in understanding and minimising biofouling.

Majority of the papers deal with biofouling in marine waters. The Indian coastal waters studied include the east coast waters around Kalpakkam, Madras, and Vizagapatnam and the west coast waters around Cochin, Goa and Bombay. Scientists from USA have portrayed studies carried out in marine water off Pearl Harbour (Hawaii) and the Gulf of Mexico. Biology of organisms such as diatoms, barnacles, aerobic and anaerobic bacteria, serpulid worms and crustaceans has been discussed with respect to endocrine systems, chemosensory system, metamorphosis and other related physiological activities. Very few papers relate to freshwater macroorganisms. The above studies, however, have relevance to development of control technologies from biofouling point of view.

Little emphasis has been placed on mechanisms involved in biofouling processes with reference to materials and process circuits. A couple of presentations relate to slime formation and biofilm development and their evaluation.

Biofouling control has been brought out in detail. The uses of toxic and nontoxic antifouling compounds are discussed. Other control strategies enumerated include the use of neuropharmacological agents, natural antifoulants and their analogues, bacteriostatic compounds extracted from marine animals and plants, use of fouling-resistant paints and coatings as well as chemical methods, including chlorination, copper treatment and heat treatment. Development of environmentally benign antifouling agents holds the key to combat the menace of biofouling and, in this regard, the information provided through research work will have significant practical value.

Though this publication fails to bring out a comprehensive survey of all biological, chemical and engineering aspects concerning biofouling, the attempt in itself provides very useful data for scientists working in this vast interdisciplinary field. In this regard, this conference proceedings is definitely a valuable addition. Further, the subject matter covered is quite new, pertaining to a frontier area of applied science.

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