

New!

Prevent, control, and monitor contaminants

The Science and Technology of Industrial Water Treatment

Edited by

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Lubrizol Advanced Materials Inc., Brecksville, Ohio, USA

Fundamental and Applied Aspects of Water Treatment

Mineral scale deposits, corrosion, suspended matter, and microbiological growth are factors that must be controlled in industrial water systems. Research on understanding the mechanisms of these problems has attracted considerable attention in the past three decades as has progress concerning water treatment additives to ameliorate these concerns. **The Science and Technology of Industrial Water Treatment** provides a comprehensive discussion on the topic from specialists in industry and academia.

The book begins with an overview of water chemistry and covers the characteristics of commonly encountered mineral scales. It addresses the formation and control of different scales in various systems and examines new developments in membrane-based separation processes. Next, it provides a detailed account on the operational challenges of reverse osmosis systems and scale control in thermal distillation processes. The text explores corrosion control in cooling, boiler, geothermal, and desalination systems and it discusses the interactions of polyelectrolytes with suspended matter.

Includes coverage of a range of bacterial species, including Legionella

The book examines bacterial species commonly encountered in water supplies, the mechanisms of biofouling, approaches to control it, and criteria for selecting biocides for water treatment applications. An entire chapter is devoted to *Legionella* in water systems. Contributors describe various analytical techniques for identifying mineral scales and deposits. They also examine applications of polymers for treating industrial and wastewater systems and give an account of analytical approaches for monitoring various operational parameters and chemicals used to treat industrial water systems.

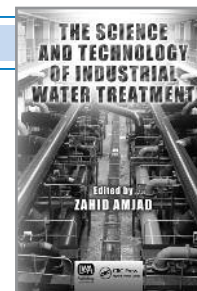
A valuable addition to the library of academic researchers, this volume will also prove useful to those working not only in the water treatment industry, but also to those in petroleum, textiles, pharmaceuticals, and other areas where purity processes are a significant concern.

Features

- Presents critical information relevant to a broad range of professionals in diverse fields
- Includes contributions from experts in academia and industry
- Covers both fundamental (science) and applied (technology) aspects of water treatment
- Describes strategies for controlling scale formation
- Examines the effects of biofouling on water systems
- Identifies new methods for treating industrial and waste water systems

Contents

- Mineral Scales and Deposits: An Overview; *Z. Amjad and P.G. Koutsoukos*
Crystal Growth Inhibition of Calcium Sulfate and Calcium Oxalates in Aqueous Systems; *M. Oner*
Calcium Carbonate Scale Control in Industrial Water Systems; *P.G. Koutsoukos*
Calcium Carbonate: Polymorph Stabilization in the Presence of Inhibitors; *P.G. Koutsoukos and T. Chen*
Scale and Deposit Control Polymers for Industrial Water Treatment; *R.W. Zuhl and Z. Amjad*
New Models for Calcium Phosphate Scale Formation and Dissolution; *L. Wang, P.P. Emmerling, Z.J. Henneman, and G.H. Nancollas*
Design and Applications of Cooling Water Treatment Programs; *L.A. Perez, G.E. Geiger, and C.R. Ascolese*
Latest Developments in Scale Control in Oilfield; *M. Yuan*
Control of Silica Scaling in Geothermal Systems Using Silica Inhibitors, Chemical Treatment, and Process Engineering; *D.L. Gallup and P.N. Hirtz*
Recent Developments in Controlling Silica and Magnesium Silicate Foulants in Industrial Water Systems; *K.D. Demadis*
Phosphate Containing Scale Formation in Wastewater; *P.G. Koutsoukos and A.N. Kofina*



See reverse side for continued contents & other titles of interest

CONTENTS continued...

- New Developments in Membrane-Based Processes for Industrial Applications; *P.S. Cartwright*
 Reverse Osmosis Membrane Fouling Control; *J. Kucera*
 Scale Formation and Control in Thermal Desalination Systems; *F. Rahman and Z. Amjad*
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 Deposit Control Polymers: Types, Characterization, and Applications; *Z. Amjad, R.W. Zuhl, and S. Huang*
 Applications of Cationic Polymers in Water Treatment; *L.A. Jackson*
 Recent Development in Water Treatment Chemicals Monitoring; *V. Malkov and P. Kiser*
 Index

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 Anil K. Pabby
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