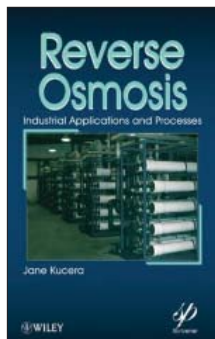


Books

REVERSE OSMOSIS: INDUSTRIAL APPLICATIONS AND PROCESSES

Jane Kucera, Scrivener Publishing, Salem, MA,
393 pages, \$175, April 2010, ISBN: 978-0-470-61843-1



The application of reverse osmosis (RO) systems has been on the rise, driven in part by the expansion of seawater desalination in arid regions like the Middle East, as well as by the need to comply with environmental regulations; RO is integral to most zero-liquid-discharge approaches to wastewater management. Reduced membrane costs, improved RO system reliability, and “greener” approaches to reducing and eliminating the use

of chemicals are among the reasons RO is replacing the ion exchange applications of the past.

As manufacturing plants implement quality improvement measures, the path along the RO learning curve continues to be an uphill climb. Many RO system installations have experienced performance and reliability problems due to both mechanical equipment problems and unexpected water chemistry causes. Contributing to the challenge — with the exception of Wes Byrne’s 1995 book, *Reverse Osmosis: A Practical Guide for Industrial Users* — good reference materials for RO practice have been in short supply; practitioners have often had to rely on equipment suppliers for solutions to operating problems.

Jane Kucera’s new book, *Reverse Osmosis: Industrial Applications and Processes*, provides up-to-date and comprehensive information on RO system design, operation, and troubleshooting. Whereas Byrne’s book had a foundation in his equipment application background, Kucera’s text has its roots in water chemistry, system operating data interpretation, and problem-solving case histories. As such, the two texts are useful companion references to one another.

The new book benefits from advances made in the RO field over the past 15 years, which should move RO practitioners further along the learning curve.

Kucera lays the foundation for understanding with a review of the history, fundamentals, and technologies of reverse osmosis. Subsequent sections delve into practical areas, covering pretreatment, system design, operations, troubleshooting, and system engineering. The final section is devoted to answering frequently asked questions, including operational and equipment issues.

Those interested in the RO process can benefit from the book in a variety of ways. The engineer charged with system design and equipment specification can expect to become

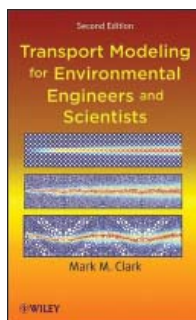
a more informed collaborator with equipment suppliers, as opposed to being simply a sales target. The engineer responsible for supervising system operation will find a source of operator training and coaching information. Equipment suppliers may gain a better appreciation of the instrumentation and data management needs of their customers. Plant maintenance engineers can learn about anticipating, budgeting, and scheduling membrane cleaning or replacement. Chemical engineering graduate students may find ideas for research projects in the future advancements section.

Any engineer involved in water treatment and purification processes will find this book a useful addition to his or her reference library.

— Charles H. Meurer, P.E.
Senior Chemical Engineer
Stanley Consultants, Inc.

TRANSPORT MODELING FOR ENVIRONMENTAL ENGINEERS AND SCIENTISTS, 2ND EDITION

Mark M. Clark, John Wiley & Sons, Hoboken, NJ,
630 pages, \$125, Sept. 2009, ISBN: 978-0-470-26072-2



Since the publication of the first edition of this book in 1996, the field of transport modeling has increasingly incorporated techniques from biotechnology and nanotechnology. This second edition continues the author’s efforts to provide an introduction to the modeling of mass- and momentum-transport processes. It describes how these processes underlie the mechanics common to both pollutant transport and pollution control processes — with an increased focus on the physical chemistry of various biological analyses and nano-scale phenomena.

Readers will learn about the full range of processes that influence how pollutants move through environmental and chemical-separation media. The fundamentals of mass- and momentum-transport processes are emphasized, and aerosol, colloidal, macromolecular, biological, and nanoscale systems are examined. The book’s environmental focus includes discussions of sedimentation, coagulation, partitioning, adsorption, fluid mechanics, diffusion, dispersion, chromatography, osmosis and reverse osmosis, filtration, and porous-media transport.

The updated volume includes recent developments in biotechnology, nanotechnology, indoor air quality, micro-pollutants, and membranes, and new chapters are devoted to chemical kinetics and reactor design.

The book should be a useful resource for environmental, chemical, and civil engineers, as well as teachers and students.