

Environmental Process Analysis: Principles and Modeling

By Henry V. Mott

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Environmental Process Analysis: Principles and Modeling By Henry V. Mott

Enables readers to apply core principles of environmental engineering to analyze environmental systems

Environmental Process Analysis takes a unique approach, applying mathematical and numerical process modeling within the context of both natural and engineered environmental systems. Readers master core principles of natural and engineering science such as chemical equilibria, reaction kinetics, ideal and non-ideal reactor theory, and mass accounting by performing practical real-world analyses. As they progress through the text, readers will have the opportunity to analyze a broad range of environmental processes and systems, including water and wastewater treatment, surface mining, agriculture, landfills, subsurface saturated and unsaturated porous media, aqueous and marine sediments, surface waters, and atmospheric moisture.

The text begins with an examination of water, core definitions, and a review of important chemical principles. It then progressively builds upon this base with applications of Henry's law, acid/base equilibria, and reactions in ideal reactors. Finally, the text addresses reactions in non-ideal reactors and advanced applications of acid/base equilibria, complexation and solubility/dissolution equilibria, and oxidation/reduction equilibria.

Several tools are provided to fully engage readers in mastering new concepts and then applying them in practice, including:

- Detailed examples that demonstrate the application of concepts and principles
- Problems at the end of each chapter challenging readers to apply their newfound knowledge to analyze environmental processes and systems
- MathCAD worksheets that provide a powerful platform for constructing process models

Environmental Process Analysis serves as a bridge between introductory environmental engineering textbooks and hands-on environmental engineering practice. By learning how to mathematically and numerically model environmental processes and systems, readers will also come to better understand

the underlying connections among the various models, concepts, and systems.

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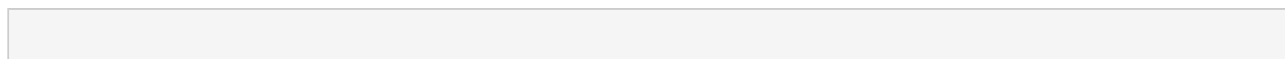
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Editorial Review

About the Author

HENRY V. MOTT, PhD, Professor Emeritus of Civil and Environmental Engineering of the South Dakota School of Mines and Technology, is now a consultant in private practice and part-time instructor for the Civil Engineering Department of the University of Minnesota. Dr. Mott has developed and delivered a broad range of undergraduate and graduate courses, drawing upon his engineering practice experience to develop opportunities for students to apply fundamental principles in problem solving and design. His research has focused on contaminant fate and transport, physical/chemical/microbial processes, and environmental chemistry.

For questions regarding the content of Environmental Process Analysis, direct communications with the author can be initiated via the Author Page at www.hvmott.com.

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