



Advanced Transport Phenomena: Analysis, Modeling, and Computations

By P. A. Ramachandran

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An integrated, modern approach to transport phenomena for graduate students, featuring traditional and contemporary examples to demonstrate the diverse practical applications of the theory. Written in an easy to follow style, the basic principles of transport phenomena, and model building are recapped in Chapters 1 and 2 before progressing logically through more advanced topics including physicochemical principles behind transport models. Treatments of numerical, analytical, and computational solutions are presented side by side, often with sample code in MATLAB, to aid students' understanding and develop their confidence in using computational skills to solve real-world problems. Learning objectives and mathematical prerequisites at the beginning of chapters orient students to what is required in the chapter, and summaries and over 400 end-of-chapter problems help them retain the key points and check their understanding. Online supplementary material including solutions to problems for instructors, supplementary reading material, sample computer codes, and case studies complete the package.

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Editorial Review

Review

"Anyone who teaches transport phenomena will treasure this book because it provides an integrated approach to help students better understand the core theories through both traditional and contemporary examples of transport phenomena problems, along with side-by-side presentations of both analytical and numerical methods and sample MATLAB codes - the long-awaited, all-in-one solution."

Roger Lo, California State University

About the Author

P. A. Ramachandran is a Professor in the Department of Energy, Environment and Chemical Engineering at Washington University, St Louis. He has extensive teaching experience, mainly in transport phenomena, mathematical methods and chemical reaction engineering, and he has also held many visiting appointments at various international institutions. He has written or co-written two previous books, as well as over 200 journal articles in which he has pioneered many new concepts and computational tools for modelling of chemical reactors. He is the recipient of the Moulton Medal from the Institution of Chemical Engineers, UK, the NASA certificate of recognition, USA, and the NEERI award from the Institution of Chemical Engineers, India.

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