DESCRIPTION

An extremely useful guide to the theory and applications of transport phenomena in materials processing

This book defines the unique role that transport phenomena play in materials processing and offers a graphic, comprehensive treatment unlike any other book on the subject. The two parts of the text are, in fact, two useful books. Part I is a very readable introduction to fluid flow, heat transfer, and mass transfer for materials engineers and anyone not yet thoroughly familiar with the subject. It includes governing equations and boundary conditions particularly useful for studying materials processing. For mechanical and chemical engineers, and anyone already familiar with transport phenomena, Part II covers the many specific applications to materials processing, including a brief description of various materials processing technologies.

Readable and unencumbered by mathematical manipulations (most of which are allocated to the appendixes), this book is also a useful text for upper-level undergraduate and graduate-level courses in materials, mechanical, and chemical engineering. It includes hundreds of photographs of materials processing in action, single and composite figures of computer simulation, handy charts for problem solving, and more. *Transport Phenomena and Materials Processing*:

- Describes eight key materials processing technologies, including crystal growth, casting, welding, powder and fiber processing, bulk and surface heat treating, and semiconductor device fabrication

- Covers the latest advances in the field, including recent results of computer simulation and flow visualization

- Presents special boundary conditions for transport phenomena in materials processing
• Includes charts that summarize commonly encountered boundary conditions and step-by-step procedures for problem solving

• Offers a unique derivation of governing equations that leads to both overall and differential balance equations

• Provides a list of publicly available computer programs and publications relevant to transport phenomena in materials processing

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**ABOUT THE AUTHOR**

Sindo Kou is Professor of Materials Science and Engineering at the University of Wisconsin. He formerly held the positions of associate professor at Carnegie-Mellon University and senior researcher at the General Motors Research Lab. Dr. Kou has won several awards in his field and is the author of Welding Metallurgy (Wiley).

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