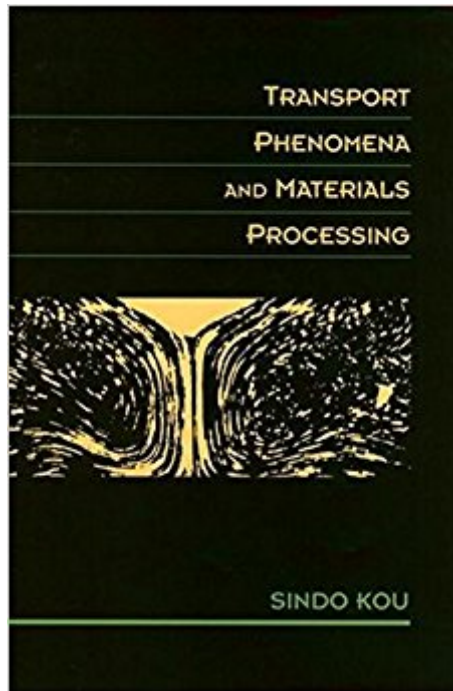




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# Transport Phenomena And Materials Processing



## Synopsis

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.

## Book Information

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## Customer Reviews

Designed for the dual purpose of enabling materials engineering students to understand transport phenomena in materials processing and mechanical engineering students to apply transport phenomena to materials processing. Divided into two parts, the first introduces the fundamentals of fluid flow and heat and mass transfer, along with analytical and numerical solutions. The latter half is devoted to the applications of transport phenomena in materials processing. Contains a copious amount of examples and illustrations. Appendix A includes approximately 23 solutions to simple differential equations presented in the text.

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

I received the book brand new, no complaints. Sindo is the man! We all miss him at UW.. materials science. He was a legend.

Materials programs have long been limited to the Poirer book whose approach is now dated. Kou brings a structured approach that allows a materials student the ability to embrace transport phenomena while going beyond the traditional fluid flow approach endemic to chemical engineering. I recommend including a solidification book or pairing this book with a solidification book over 2 semesters so that phase diagrams and fluid mechanics/heat transfer are integrated.

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