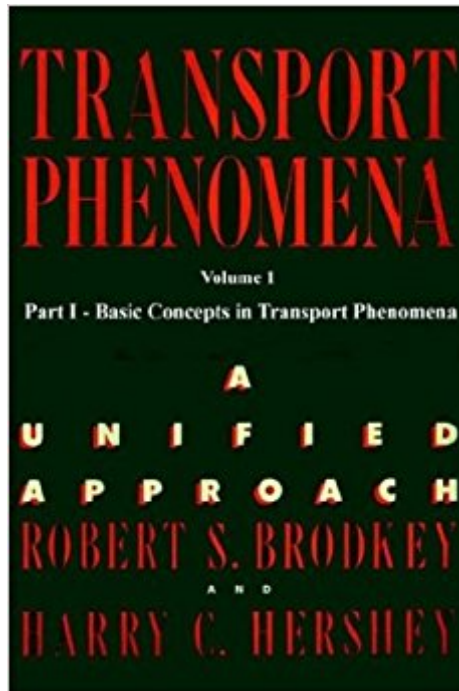




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Transport Phenomena: A Unified Approach Vol. 1



Synopsis

This book teaches the basic equations of transport phenomena in a unified manner and uses the analogy between heat transfer and mass and momentum to explain the more difficult concepts. Part I covers the basic concepts in transport phenomena. Part II covers applications in greater detail. Part III deals with the transport properties. The three transport phenomena-heat, mass, and momentum transfer-are treated in depth through simultaneous (or parallel) developments. Transport properties such as viscosity, thermal conductivity, and mass diffusion coefficient are introduced in a simple manner early on and then applied throughout the rest of the book. Advanced discussion is provided separately. An entire chapter is devoted to the crucial material of non-Newtonian phenomena. This book covers heat transfer as it pertains to transport phenomena, and covers mass transfer as it relates to the analogy with heat and momentum. The book includes a complete treatment of fluid mechanics for Ch. E's. The treatment begins with Newton's law and including laminar flow, turbulent flow, fluid statics, boundary layers, flow past immersed bodies, and basic and advanced design in pipes, heat exchanges, and agitation vessels. This text is the only one to cover modern agitation design and scale-up thoroughly. The chapter on turbulence covers not only traditional approaches but also includes the most contemporary concepts of the transition and of coherent structures in turbulence. The book includes an extensive treatment of fluidization. Computer programs and numerical methods are integrated throughout the text, especially in the example problems.

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Customer Reviews

I purchased this book because I was hoping for a supplemental text to Transport Phenomena by Bird and Lightfoot. Perhaps it was because my teacher structured the class different than how this author felt the class should have been structured the information in this book didn't really apply to my transport 1 class. I will give it another chance while I am in transport 2 but I doubt that this will be the wealth of information that I was hoping it to be. It I suppose is worth a try if you have a teacher who is lacking and you don't immediately understand the Transport phenomena main text.

I was introduced to this text as a supplemental source of information for a Transport Phenomena course with the Bird, et al text as the primary textbook. Although the Bird text is still the forerunner in this subject in my opinion, it can be a difficult text in the undergraduate setting. I found the Brodkey and Hershey text to be packed with valuable explanations and graphs that complement the Bird text. I do believe this text would be very good in the role as a primary undergraduate transport text, but I expect to see the use of the Bird text continue because of its quality and longevity in the field. Personally, I still refer to the Brodkey and Hershey text first, before I delve back into the harder to read Bird text.

There are not many transport phenomena textbooks, and few of them are "undergrad friendly". This is one of them. The textbook was designed to provide an integrated treatment of the three areas of transport: momentum, heat, and mass. Brodkey and Hershey succeed in explaining a very complex topic using a simple language and generalized flux, and property variables that easily unify the transport equations. The idea behind is that same equations have same solutions. Not complex examples found in the textbook. Easy to read and to follow.

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