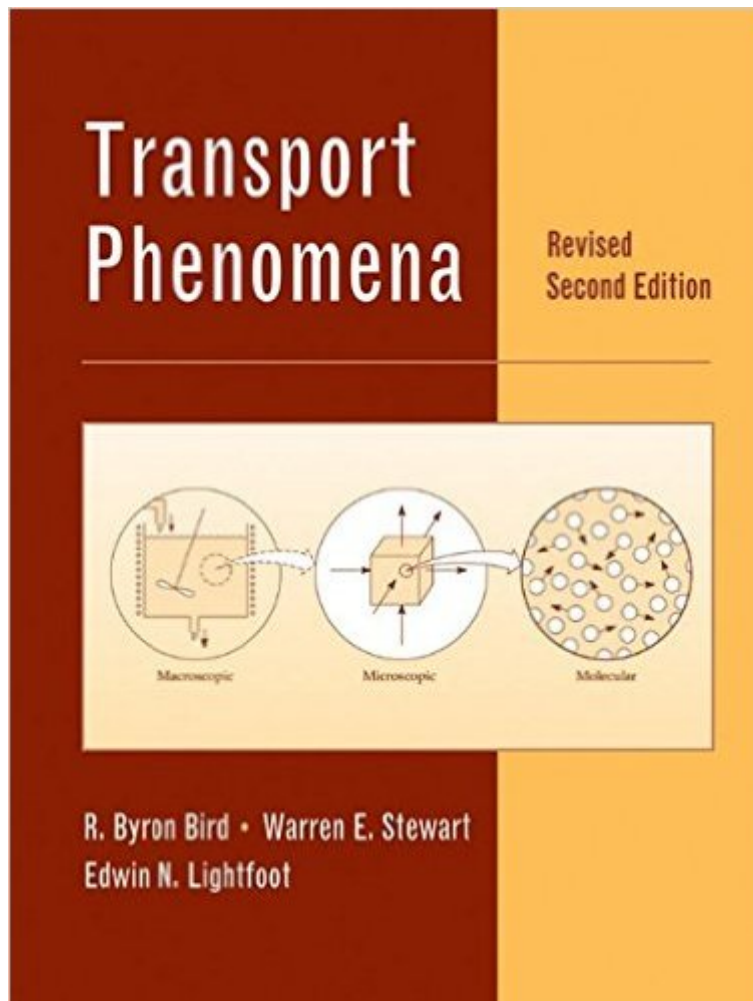


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# Transport Phenomena, Revised 2nd Edition



## Synopsis

Transport Phenomena has been revised to include deeper and more extensive coverage of heat transfer, enlarged discussion of dimensional analysis, a new chapter on flow of polymers, systematic discussions of convective momentum, and energy. Topics also include mass transport, momentum transport and energy transport, which are presented at three different scales: molecular, microscopic and macroscopic. If this is your first look at Transport Phenomena you'll quickly learn that its balanced introduction to the subject of transport phenomena is the foundation of its long-standing success.

## Book Information

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## Customer Reviews

First let me stress, this subject is hard, very hard. This may very well be the toughest subject you take in college. Regarding the book, it has some very strong points, and some very weak points. Pros: 1. There are some good examples 2. Answers to some difficult, multiple part problems are given (under the problems which is quite handy) so that you can complete later parts of a problem if you are not able to solve the early parts. 3. Figures used in text are well defined and labeled very well. 4. Problems are well organized and titled based upon the material they cover. 5. There are few, if any, pictures, figures, or other useless graphics or material that so many textbook writers include, that add virtually nothing to the learning of the subject at hand. This is very nice because it keeps the weight of the textbook relatively low, and does not force you to scan through the 'fluff' to find the pertinent information. Cons: 1. Unit conversion tables are unconventional,

awkward, and are very limited. Some students may have conversions memorized, however, this is not always the case, and for some obscure units, the conversions are not given and must be found elsewhere.<sup>2</sup> Examples are hit or miss. As I said, there are some good examples, however, there are some that are not very useful.<sup>3</sup> Problems can be somewhat cryptic, and not at all straightforward.<sup>4</sup> Sometimes skips key steps in derivations leading to confusing results.<sup>5</sup> Chapter reviews are nonexistent. It would be very nice if there were a list of important equations, definitions, and key concepts at the end of each chapter. I understand that this is a very tough subject, especially if this is the first time seeing the material. When I took this course at the University of Minnesota, I knew it was going to be difficult, and this book did help me learn the material, however, this book really could be better. I would recommend this book only if you have completed a course in multivariable calculus (you must understand multivariable calculus very well), linear algebra, a strong background in physics, experience in physical chemistry including thermodynamics. Some experience or coursework in quantum mechanics would also be very useful.

Transport Phenomenon by Bird, Stewart and Lightfoot is one of the most useful chemical engineering textbook ever written. For nearly five decades now, many chemical engineers have lived by what they learned first through this book. The revised edition makes the book current, though 1960 edition is great introduction to the mass, heat and energy and/or momentum transfer problems. The basis idea of the book is simple: list the equations useful for a system of problems, say in mass transfer; provide set of assumptions used to arrive at those; suggest possible solutions to the differential equations for practical industry conditions; use correlations derived by researchers where real time data is unavailable and lastly, learn how to adapt solutions for different set of conditions. The book attempts to make problem solving into a set of instructions to be followed, and by sticking to the fundamental assumptions and equations allows one to attack a range of problems relevant to fields as diverse as diffusion transport, biochemical processes, condensation problems for atmospheric physics, chemical kinetics, heat conduction, petroleum extraction and flow of fluids relevant to many processing industries. We often hailed it as the Bible of Chemical Engineering. Every now and then, (nearly a decade after we first read it) I still hear people say: this problem, or something like it, was in BSL, (the acronym awarded to the book after its authors). Be it Transport texts by Deen or Middleman typically used for graduate school courses, or Incompressible Flow by Patton, the recourse to understanding problems first hand through BSL is always rewarding. The book comes with a number of solved and unsolved problems. There is no short-cut to becoming a good chemical engineer, except by mastering the art and science of attacking problems. By going

through the book meticulously right in your first course, (for in most cases, this is the first chemical engineering text encountered), you can ensure that you will do well in your whole education as chemical engineer. Recommended reference for all chemical engineers.

If you're buying this, you're a chemical engineering student and this is on your mandatory buy list. It's definitely not going to be a solid conversation piece or one of those books you read on a grassy knoll while contemplating life with that cute coed. No, get your butt back in the library and get to studying, you a chemical engineer. Choice A: Run, go do something else, enjoy college Choice B: Buy this, it's the transport phenomena bible of chemical engineering. Seriously, this is a great book for fluid flow (momentum transfer), mass transfer, heat transfer. Bad book for life transfer

This book was very difficult to understand on first pass through for my classes in Fluid Mechanics. However I have used it several times as a reference and each time I read it I seem to get more and more out of it. Requires a very good understanding of vector calculus, but the examples are very helpful and are general enough that you can apply the principles learned to other situations.

Great book on mass transfer. Saved me many times in the course I took with it. Explains things very well, good examples. This is a little outdated in some of the methods (uses Einstein's relationship for all liquid diffusivity temperature relationships instead of using empirical correlations)

Not very easy to understand. All in all, not very easy to understand the equations or the explanations or anything except for the Appendix, although I wish it had more supplementary data tables. I would not buy this book for my own enjoyment.

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