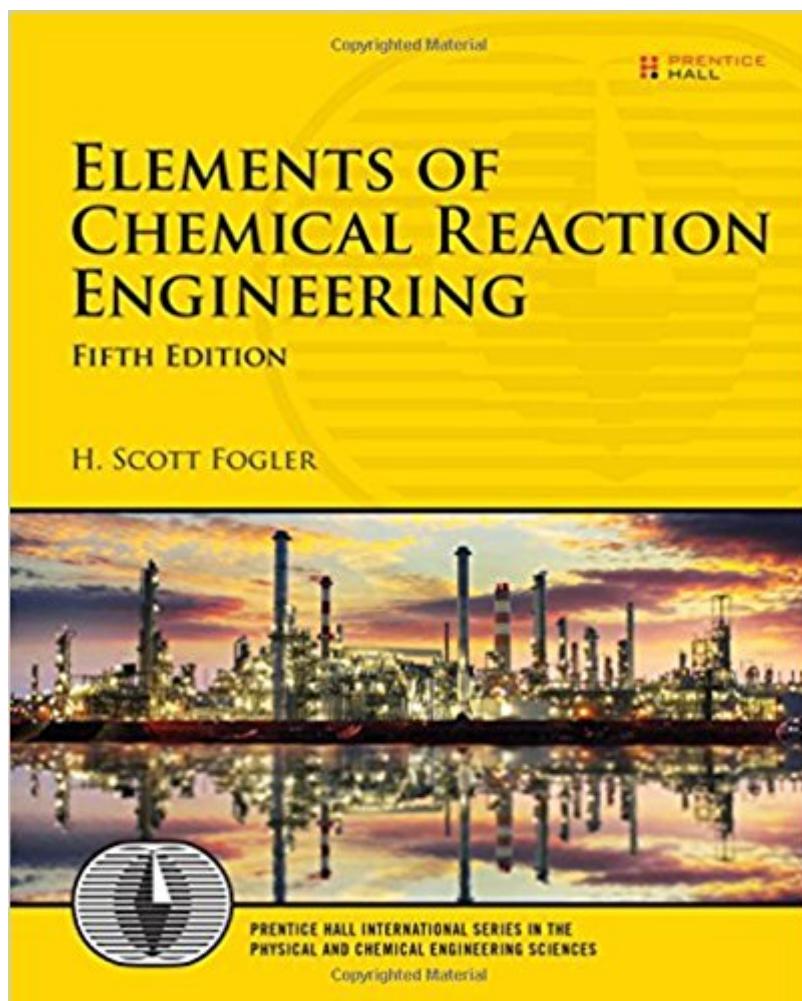


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# **Elements Of Chemical Reaction Engineering (5th Edition) (Prentice Hall International Series In The Physical And Chemical Engineering Sciences)**





## Synopsis

The Definitive, Fully Updated Guide to Solving Real-World Chemical Reaction Engineering Problems

For decades, H. Scott Fogler's *Elements of Chemical Reaction Engineering* has been the world's dominant text for courses in chemical reaction engineering. Now, Fogler has created a new, completely updated fifth edition of his internationally respected book. The result is a refined book that contains new examples and problems, as well as an updated companion Web site. More than ever, Fogler has successfully integrated text, visuals, and computer simulations to help both undergraduate and graduate students master all of the field's fundamentals. As always, he links theory to practice through many relevant examples, ranging from standard isothermal and non-isothermal reactor design to applications, such as solar energy, blood clotting, and drug delivery, and computer chip manufacturing.

To promote the transfer of key skills to real-life settings, Fogler presents the following three styles of problems:

- Straightforward problems that reinforce the principles of chemical reaction engineering
- Living Example Problems (LEPs) that allow students to rapidly explore the issues and look for optimal solutions
- Open-ended problems that encourage students to practice creative problem-solving skills

About the Web Site

The companion Web site offers extensive enrichment opportunities and additional content, including Complete PowerPoint slides for lecture notes for chemical reaction engineering classes. Links to additional software, including POLYMATH®, Matlab®, Wolfram Mathematica®, AspenTech®, and COMSOL®. Interactive learning resources linked to each chapter, including Learning Objectives, Summary Notes, Web Modules, Interactive Computer Games, Solved Problems, FAQs, additional homework problems, and links to Learncheme. Living Example Problems that provide more than eighty interactive simulations, allowing students to explore the examples and ask "what-if" questions. The LEPs are unique to this book. Professional Reference Shelf, which includes advanced content on reactors, weighted least squares, experimental planning, laboratory reactors, pharmacokinetics, wire gauze reactors, trickle bed reactors, fluidized bed reactors, CVD boat reactors, detailed explanations of key derivations, and more. Problem-solving strategies and insights on creative and critical thinking.

## Book Information

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## Customer Reviews

H. Scott Fogler is the Ame and Catherine Vennema Professor of Chemical Engineering and the Arthur F. Thurnau Professor at the University of Michigan. He has been research advisor to forty-five Ph.D. students, and has more than two hundred thirty-five refereed publications. He was 2009 President of the American Institute of Chemical Engineers. Fogler has chaired ASEEâ™s Chemical Engineering Division, served as director of the American Institute of Chemical Engineers, and earned the Warren K. Lewis Award from AIChE for contributions to chemical engineering education. He has received the Chemical Manufacturers Associationâ™s National Catalyst Award and the 2010 Malcom E. Pruitt Award from the Council for Chemical Research.

Elements of Chemical Reaction Engineering was the textbook that my university used to teach their ~3rd year student chemical engineering class on chemical reaction engineering. It was in this class that we learned about Batch Reactors, Continuous Stir Tank Reactors (CSTR), Plug Flow Reactors (PFR), and Packed Bed Reactors. Each one of these different reactors has its own unique design equations and mathematics. We also learned about the mass transport principals for catalyst media, reaction rate constants, and how they are adjusted for varying temperatures. All of these topics are well covered in this book. There are 3 or 4 well known textbooks that cover this topic, this one seems to be about the most popular, and it is popularly used for undergraduate coursework. I also used it some to support understanding of more advanced reactor design concepts when I was taking graduate level chemical engineering courses, so the basics (and not so basics) covered in this textbook are useful for supporting more advanced work too. Some of the more advanced chemical reaction engineering textbooks just do not do as good of a job of explaining reactor design equations as this one does. There is a very large amount of material covered in this book, if you use it for an undergraduate course textbook, you won't be able to read and learn about all of it, but this

makes it useful for being a good reference textbook later. The book explains how to do mole balances, reaction rate equations and measurements, reactor sizing and networking, stoichiometry, yields, energy balances for chemical reactors, handling of multiple reactions, biochemical reaction rate equations, the mass transport principals behind use of catalysts (there are a lot of mass transport things going on here), and some things about mixing and non-ideal reactors and use of tracers. These are all important concepts in the field of chemical engineering, and make this a good textbook for coursework, and for reference. I've seen reviews for this textbook claiming that the writing is bad and the figures aren't very good. This is true, and this is why I'm giving this book four stars instead of five. This textbook has a lot of grayscale graphics throughout. Some of them are high quality, while others are grainy and the resolution sucks. Fortunately, the graphics that are most important (the graphs and plots) are of high quality, and the lower quality things are generally less important. The editing of this textbook is also somewhat modest, especially considering that it is a fourth edition, and that the copy that I have isn't the first printing of the fourth edition either. There are grammatical errors occasionally, but fortunately, they don't greatly interfere with the understanding. Probably the worst editing shortfall is that the homework problems aren't always written all that well. Some are randomly super difficult for an undergraduate to solve with normal undergraduate math skills, perhaps because they made a mistake in writing the question. Some of them provide data that you are supposed to come up with a graph and regression with, and they give you so few data that you can hardly do it. There are also questions that are just poorly worded. One asks you to specify the \*weight\* of catalyst required for the reactor, when they really should have been saying mass, since weight is gravity dependent. My classmates and I thought about just skipping the calculations and answering "None, because it's in space!!" This textbook is also quirky. There is a homework problem on it about a Hippopotamus where a veterinarian does surgery on it, and accidentally switches the stomach and intestine, and you have to use CSTR and PRF calculations to see if the Hippo would survive or not. There is also a homework problem about a small swimming organism where they give the journal article where the data came from, and if you look it up, the swimming organism is a sperm cell!! You will find other quirky homework problems, this is just the beginning. This book also comes with a small software program called Polymath. This problem is useful for solving chemical reaction differential equations, and is much easier to use and easier to learn than the heavyweight softwares like Matlab for example. Try it out if you have trouble solving differential equations for chemical reactors. Another nice advantage of this book is that it has nice coverage on graphical solutions for reactor design. While at times this seems archaic because we have so much computing power with computers now that we can always solve analytically or via

a diff equ solver, the graphical solutions provide a second way of trying to grasp the reactor design concepts, and some readers will really do well in using graphical solutions to help them understand the overall design concepts. So...in summary, from a technical standpoint, this is a very good book, but it could be written and edited a little better. Try not to let the editing get on your nerves too much, focus on the equations, and you will probably be ok. I can't think of another reactor design textbook that is necessarily better than this one.

This post is regarding the 5th Ed. (2016). I bought it at the start of the semester because my reactor design professor asked specifically for this new edition, even though he hadn't received his own copy of the book. When we started using it, it turns out that some chapters that were present in the 4th edition were ditched and some, which we consider a bit unnecessary, were added. However, what I believe hurts this new edition the most, is that it has less than half of the exercise problems that previous editions had. The worst part is that it still has those exercises that say things like "Go home and rest"!!! As for content, the book is good, but I would encourage other students to find a copy of the 4th edition if you actually want practice problems for your tests. Best of luck to all ChE students out there.

Better than expected in terms of both quality and content. Book shipped internationally pretty quickly (took total of 5 days). The book itself is one of the best that I have read. The examples shown and the sequence of thought that I had to follow as a student. Definitely worth its price.

Everything ok

Get the US HC edition. The cheap one has horrible transparent paper and it appears the font is either thicker or spaced closer together. The problems are written to cause you to constantly flip back and forth as they "refer to the data in.." or "figure n". I could go on but I'll just say that I'm getting rid of this and I bought Levenspiel and C&R v3.

If you are using this book for a class that the prof. assigns homework problems from, be forewarned that some of them were changed between the 3rd and 4th editions, and that the international edition is different from the US version. Stupid publishers. As other reviews have mentioned, there are a few typos & etc. thrown around too, just for fun. As far as math goes, for some of the problems you'd better have passed differential equations. But the author has a sense of humor and explains the

concepts well. The book is useful and practical. The summaries at the end of the chapters are great, and the progression of material is fairly logical.

The style in which this book is laid out truly works to promote the reader to learn and understand the topic. I wish more books would take the time to convey their messages in the way this text does. That being said, this is a beastly read. I doubt I'll ever use it for much more than a reference, but for that its pretty sweet.

Book arrived earlier than expected. Great price, the version I received was a black cover international. Is exactly the version I'm using in class.

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