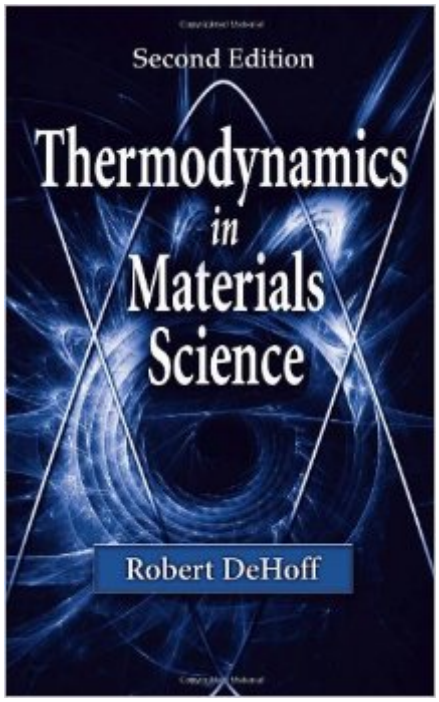
Thermodynamics In Materials Science, Second Edition



Synopsis

Thermodynamics in Materials Science, Second Edition is a clear presentation of how thermodynamic data is used to predict the behavior of a wide range of materials, a crucial component in the decision-making process for many materials science and engineering applications. This primary textbook accentuates the integration of principles, strategies, and thermochemical data to generate accurate â œmapsâ • of equilibrium states, such as phase diagrams, predominance diagrams, and Pourbaix corrosion diagrams. It also recommends which maps are best suited for specific real-world scenarios and thermodynamic problems. The second edition yet. Each chapter presents its subject matter consistently, based on the classification of thermodynamic systems, properties, and derivations that illustrate important relationships among variables for finding the conditions for equilibrium. Each chapter also contains a summary of important concepts and relationships as well as examples and sample problems that apply appropriate strategies for solving real-world problems. The up-to-date and complete coverage ofthermodynamic data, laws, definitions, strategies, and tools in Thermodynamics in Materials Science, Second Edition provides students and practicing engineers a valuable guide for producing and applying maps of equilibrium states to everyday applications in materials sciences.

Book Information

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Customer Reviews

While this book does have a lot of advance topics in thermodynamics relating to material science it is teeming with little errors. The course I used this for started with Kittel’s Thermal Physics and

switched to DeHoff when we started doing mixtures. The notation is complex (perhaps necessarily). This would be OK except for the fact that Dehoff often makes small mistakes going from one line to the next. These typos will often lead to important equations that are wrong. If you are diligent, you can often spot the errors between lines in a derivation and correct them, but beware--these are so prevalent that I've seen as many as four on one page. Once you've proof-read and edited your book it should make a good reference and you will likely know the material pretty well from scrutinizing every derivation. The content here is good it just should have been edited better.

I like the way thermo is put together, piece by piece, adding complication in a straightforward fashion. It's easy to teach out of this book. However, the other reviews are correct - the number of errors in the equations and graphs (I'm up to 76 after 6 times through the book) is unbelievable. I've passed them along to DeHoff with no reply.

This is in reference to the 1st edition.What a great book.This is the way thermo should be taught!! Don't you hate how thermo is boring and doesn't make any sense? I took a thermo class as an undergrad using a different textbook, and it didn't make any sense. I was constantly lost, trying to catch up by learning things backwards. Most thermo books try to teach you thermo by either one of two horrible methods:1. reverse-engineer the phase diagram, or some other example.2. memorize the equations and apply them.Instead, this book walks you through the derivation of the equations that people use in thermo. It even spells out the mathematics you need to work through the concepts. You don't have to memorize anything. The gradual buildup of knowledge and principles, as ordered in this book, is the only way people like me can learn thermodynamics. I used this textbook in grad school and thermodynamics finally made sense.YOU MUST endure through the first few chapters before you begin to appreciate the book. If you stop midway, it will be a total waste of your time.My only grip is that there were numerous typos in the 1st edition, and each reprint had different typos in different places. My version had a typo in one of the state functions which really messed me up. I hope the 2nd edition does not have any of those problems.Since it is primarily focused on teaching you thermodynamics, I don't think it is very useful as a "quick" reference material. In other words, it teaches you how to fish, but doesn't give you the fish. If you want a reference, I believe there are books with more depth and breadth out there.I don't think it is worth buying unless you intend to sit down and read through the first ten chapters. The latter chapters are all optional and add some breadth. But really, you are not going to buy this book for its treatment of electrochemistry.

I used this textbook, taught by the author, as an undergraduate, and again for clarification in graduate school. Not only is Dr. DeHoff's book clear and logical, it dovetails nicely with the more advanced materials thermodynamics textbook by Dr. Claude Lupis. Now that Dr. DeHoff is retired, I hope that he writes an additional version of this book.Dr. DeHoff should fix some errors in the problem sets, and extend a few topics:-More solution models, which are useful in metallurgy;-More on fugacity, non-ideal gasses, virial equations, and the like-More meat on statistical thermodynamicsDeHoff and Lupis make a great combination for materials thermodynamics. DeHoff for clarity and Lupis for thoroughness and rigor.Edit: He has now done that by writing a second edition, which I have not yet had the opportunity to read through.

This is the worst textbook I have ever been forced to buy. Prepare for 600 pages of derivations of equations you will never use, no examples, a plethora of typos and errors, and the worst section layout I have ever seen. If your class requires this book I feel sorry for you, I really do. Better hope your prof is good.

I have to give this book a bad review, mainly for the errors. We are only halfway through our thermodynamics class and we have found over 30 errors so far. A lot of errors are in equations and solutions to example problems. This is very confusing for students who are just learning the subject, as it can make the student believe he is wrong and missing some underlying concept when the equation he derives does not agree with the book. This book can only be used if you carefully derive every equation on your own or use it in a class where an errata is given.As the book progresses, the errors become increasingly frequent and the examples become more vague.This is the 2nd edition, maybe the 3rd will correct the errors.

This is a wonderful, well-written text in thermodynamics for undergraduates and graduate students as well. The unique feature of this book is the logical approach utilized for handling equilibrium in systems of varying complexity, which I believe is superior to many of the conventional approaches. Also unique is the procedure developed by the author for deriving relations between state variables. The problem sets are quite useful and should be very helpful in understanding the subject. A solution manual I believe is also available to instructors. What this book lacks for an advanced graduate student in this field, is a comprehensive treatment of solution models and more practical applications using many of the excellent thermodynamic software and databases currently

available. I would hope with enough encouragement by readers (and publisher) that these topics will be included in a future, perhaps thicker edition. Many of the non-traditional topics in thermodynamics such as defect chemistry, capillarity, electrochemistry or external fields are also introduced in the text and can be quite useful too. I had the privilege of attending this course (and others) taught by the author and would strongly recommend getting hold of the taped lectures for this course if available.