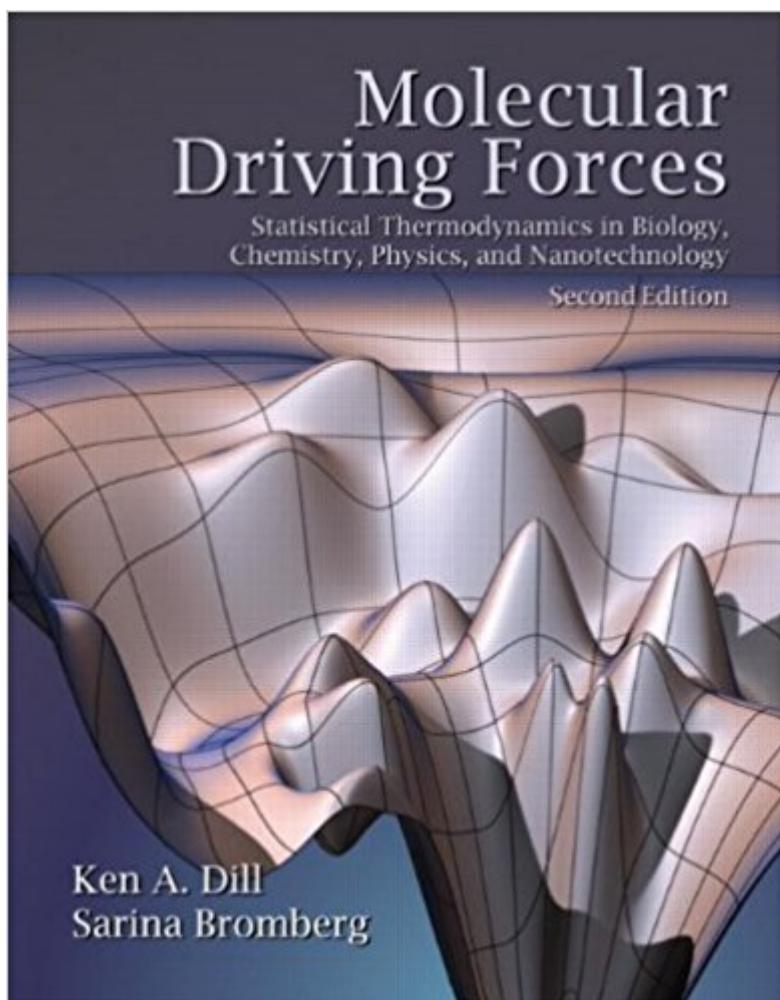


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Molecular Driving Forces: Statistical Thermodynamics In Biology, Chemistry, Physics, And Nanoscience, 2nd Edition



Synopsis

Molecular Driving Forces, Second Edition is an introductory statistical thermodynamics text that describes the principles and forces that drive chemical and biological processes. It demonstrates how the complex behaviors of molecules can result from a few simple physical processes, and how simple models provide surprisingly accurate insights into the workings of the molecular world. Widely adopted in its First Edition, Molecular Driving Forces is regarded by teachers and students as an accessible textbook that illuminates underlying principles and concepts. The Second Edition includes two brand new chapters: (1) "Microscopic Dynamics" introduces single molecule experiments; and (2) "Molecular Machines" considers how nanoscale machines and engines work. "The Logic of Thermodynamics" has been expanded to its own chapter and now covers heat, work, processes, pathways, and cycles. New practical applications, examples, and end-of-chapter questions are integrated throughout the revised and updated text, exploring topics in biology, environmental and energy science, and nanotechnology. Written in a clear and reader-friendly style, the book provides an excellent introduction to the subject for novices while remaining a valuable resource for experts.

Book Information

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Customer Reviews

Ken A. Dill is Professor of Pharmaceutical Chemistry and Biophysics at the University of California, San Francisco. He received his undergraduate training at MIT, his PhD from the University of California, San Diego, and did postdoctoral work at Stanford. A leading researcher in biopolymer statistical mechanics and protein folding, he has been the President of the Biophysical Society and

received the Hans Neurath Award from the Protein Society in 1998. Sarina Bromberg received her BFA at the Cooper Union for the Advancement of Science and Art, her PhD in molecular biophysics from Wesleyan University, and her postdoctoral training at the University of California, San Francisco. She writes, edits and illustrates scientific textbooks.

This is a fine introductory text covering the basics of molecular statistical mechanics and thermodynamics, as well as their applications to a number of systems that are likely to be of interest to those studying the biosciences or other areas that depend on the concepts covered in this book. It is not a book for "experts" or an advanced graduate level text. One nice feature of the book, especially for bioscience students whose math may be rusty, are the chapters devoted to mathematical tools in the context of the book's subject matter. If you want a more in-depth text at an advanced level, look elsewhere. If you want a solid down-to-earth introduction to these subjects, this is a good place to start, especially if your math background is not particularly strong.

Dill and Bromberg's effort is extraordinary. I don't think there are other text books out there that explain complex matters in such a rigorous but accessible way. I would recommend this book to anyone who's taking an undergrad or grad course in thermodynamics, statistical thermodynamics or anything remotely similar, as this book will really enlighten you. It may happen because of the main text, the examples or the exercises, but it will happen. I've had the chance to read both the first and second edition. Information has been reorganized a little bit and the new chapters are great. Go get this book.

this is not a manual for new automobile drivers, but maybe it should be!

The author does a great job in explaining complicated topics in a simple straight-forward manner.

The book illustrated important concepts very well without having to go through lengthy mathematical derivations. I say this coming from a life science background with minimal exposure to mathematics beyond calculus. I recommend this book for anyone in the sciences (and engineering) due to the broad applicability of the topics covered in the text. Great read and goes well with Israelachvili's *Intermolecular and Surface Forces*.

Clearly written, brings you through statistics to molecular mechanics.

Very good product

This book is very easy to understand and has plenty of examples imbedded within the text. Perfect for upper division physical chemistry classes. I bought this specifically for a class but found that I enjoyed reading it. Dill (the author) lays out the facts of physical chemistry almost like a story that is fascinating to read.

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