

pages on self-assembly in chapter 3, and its eight equations, are reproduced nearly verbatim in another section on self-assembly in chapter 5. Overall, however, the choice of topics and the order of their presentation appear to be well thought out.

The early parts of the book attempt rather sweeping summaries of large fields of science relevant to nanoscale engineering. For example, chapter two takes on the Herculean task of summarizing the most important relevant ideas from solution chemistry. While the attempt is admirable, the success is undermined by conceptual

inaccuracies and a number of significant errors. For example, a kinetic rate constant is equated with a thermodynamic equilibrium constant, and the discussion of quantum chemistry gives an incorrect equation (in which the wavefunction for the particle-in-a-box apparently exhibits no dependence on position). Quantum chemistry is treated in some detail, and Rietman does a good job with a number of important concepts. However, frontier orbital theory, which was developed in the 1970s and 1980s by Kenichi Fukui, Roald Hoffman, and R. B. Woodward, and which is one of the more

important concepts in modern organic chemistry, appears to be missing.

The most disappointing part of this book is the presence of a relatively large number of errors and inconsistencies. For example, a chapter on intermolecular interactions gives a good overview of Coulomb interactions and discusses in detail the theories of intermolecular forces. But the discussion is marred by frequent juxtaposition of "forces" and "energies" in a number of places and such errors as an incorrect equation for the van der Waals' equation of state for a liquid. Another surprising aspect of the book is that, although there are numerous graphs, in many cases no units are specified in the figure or the text, even though numerical values are given.

The book's later chapters are more qualitative and generally stronger. The concepts are well presented, although the discussion occasionally appears somewhat dated. This shortcoming is most apparent in the section on molecular electronics, in which most references date from the 1980s, and almost none of the explosive growth since 1997 is mentioned.

Despite its flaws, the book should be useful to those who might need a basic introduction to some of the important issues in nanotechnology and the influence of the chemical and biological sciences on the nanotechnology revolution. Many important references are indicated in the text, making it a potentially useful jumping-off point for further study in the primary literature. Those seeking a qualitative picture of nanoscale systems engineering will find *Molecular Engineering of Nanosystems* a useful reference. But those looking for a book dealing rigorously with the fundamental science underlying nanotechnology will have to wait.

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