Journal of Thermal Analysis and Calorimetry, Vol. 61 (2000) 1019

Book review

Fundamental Chemical Kinetics by Margaret Robson Wright
Horwood Publishing, Chichester, 1999, 296pp, ISBN 1-89856-360-8, £25

Textbooks on theoretical chemical kinetics can be daunting to students. Dr. Wright, Teaching Fellow at the University of St. Andrews, Scotland, has succeeded admirably in her intention, stated in the preface, to produce a 'student-friendly' book. In about 300 pages she presents a most readable account of the main areas of modern theoretical chemical kinetics, namely transition state theory, unimolecular theory, calculation and use of potential energy surfaces, collision theory, molecular beams and state-to-state energy transfer. Most physical chemistry textbooks give very little attention to this important part of chemical kinetics which provides so much understanding of exactly how chemical reactions occur. For example, the major text 'Physical Chemistry' (6th Ed.) by P. W. Atkins (Oxford University Press) devotes only about a dozen of its 1000 pages to the subject. This book is a very worthy modern successor to the popular 1969 text 'Theories of Chemical Reaction Rates' by K. J. Laidler (McGraw-Hill).

Dr. Wright's book is a model of clarity in its style, layout and wealth of illustrations in diagrams and tables of reaction schemes. A minor criticism is that some of the diagrams are rather obviously labelled by hand. The treatment starts with a brief historical introduction and then transition state theory and unimolecular theory are each discussed in separate chapters headed 'Basic' and 'Advanced'. One surprising aspect of the book is a total absence of any references to other works of any kind. Although this certainly improves the readability, it is probably not a good example to students. Instead of gathering what can be rather artificial sets of 'number plugging' types of problems at the ends of sections, Dr. Wright has given numerous examples of the types of calculations involved in the text. Comparisons of the results obtained using the different theoretical approaches are particularly valuable. As a teacher, rather than a researcher in this area, I gained many new insights and there is much to absorb, warranting purchasing of a personal copy at its very reasonable cost.

Here is a book that one can safely recommend to advanced students knowing that they will both cope with the material and actually enjoy reading. The reader's attention is held right up to the latest developments.

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1418–2874/2000/ $ 5.00
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