

Book review

Kinetics Applied to Organic Reactions (Studies in Organic Chemistry Series, Volume 9), by WIENDELDT DRENTH AND HAROLD KWART, Marcel Dekker, New York, 1980, 207 pages, illustrated, \$19.75, SFr. 41.00.

This eight-chapter textbook is intended for use by students in a tutorial setting, or by scholars or research workers pursuing a self-taught review of the applications of kinetic tools and models to organic reactions. Within the scope of these objectives, the authors have executed their task in an exemplary manner.

The purview of the book is broad, and the style of writing is palpable and direct. The treatment of kinetic equations in Chapter 2 is detailed. The summaries of the experimental approaches in Chapter 3 and of the techniques for examining fast reactions in Chapter 6, and the elaboration of the rotating-sector method for studying chain reactions in Chapter 8 are concise and clear. It is very convenient to have all of these methods condensed in a single source with ample references.

The treatments of isotope effects and quantum mechanical tunneling applied to organic reactions are particularly lucid. The emphasis on delineating the pitfalls abounding, and on the precautions required, in attributing relative values of hydrogen–deuterium rate-constants to secondary isotope-effects or to tunneling, is a unique highlight of Chapter 5.

The theory presented in Chapter 4 is quite adequate for the intended user. It is noteworthy that, in a book containing some 300 mathematical equations, all are correct (given the assumptions invoked) except one, namely, equation (8.8). The error here is trivial, but does alter the generality imputed to several, subsequent equations.

In Chapter 7, specific and general acid–base catalysis are discussed. The Brönsted law, the Hammett acidity function, and the Zuker–Hammett criterion are also dealt with.

The printing format of the body of the book is at zero phase with the binding. At first reading, this seems a trifle awkward, but, after a brief adjustment period, the book can be handled quite comfortably. The formal discussion occupies two-thirds of a page. The right-hand third of the page is used for references, diagrams, structures, and “mini”-derivations placed opposite the topic at hand. This unusual feature is most convenient, and is a valuable adjunct in a text designated to meet the objectives of this one.

The inclusion of the topics of enzyme reactions and side-reactions in Chapter 2 might have been highlighted somewhat, or, at least, cited in the Index. There are a few typographical errors, the most serious being the placement of the bar above the wrong ν on p. 129, and the absence of braces in the denominator of equation (8.9).

Most students, or practitioners, of kinetics applied to organic reactions will find merit in this book, although it is relatively expensive for a paperback. It would also be appropriate for classroom use, were it supplemented with a problem set.

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