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Levine R D & Bernstein R B. *Molecular reaction dynamics.* New York: Oxford University Press, 1974. 250 p.
[Hebrew University, Jerusalem, Israel and University of Wisconsin, Madison, WI]

This book deals with the molecular-level mechanism of elementary chemical reactions, emphasizing the important role of binary collisions. The goal is an understanding of chemical and physical rate processes from the fundamental, microscopic point of view. Primary attention is devoted to the physical phenomena and their conceptual interpretation rather than to the details of experimental techniques or theories. The subject is developed assuming only an elementary background in physical chemistry, guiding the reader from well-known principles to state-of-the-art research results. Topics discussed in some detail include the dynamics of molecular collisions, potential-energy surfaces, reaction cross sections, molecular and ion beam scattering, "direct" vs. "complex" modes of reaction, photofragmentation, energy partitioning, energy transfer, chemiluminescence, and chemical lasers. [The *SCI*® indicates that this book has been cited in over 525 publications.]

The Elementary Act of Chemical Creation

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Our book had an inauspicious beginning. At the time it was published in 1974, there were so few practitioners in the field that the publisher (not unreasonably) ordered destruction of the plates immediately following the first (and thus the only!) printing. After a long period in which the book was thereby out of print, there is now a complete update[1] of the book with over 500 *review* references alone. The new version is twice as thick as (and half the fun of) the original.

The original book presented somewhat of a problem for the publisher's sales force, since we informed them that it was neither a textbook nor a monograph, designed neither for graduate students nor undergrads; but, rather, it was a *primer* for a then new, amorphous field: the study of chemical change at the molecular level. At this "microscopic level" we are concerned with the elementary process whereby existing chemical bonds break while new ones form. The goal was (and still is) to observe and explain the elementary act of chemical "creation."

To make the subject more palatable we allowed ourselves the luxury of interspersing (mild) jokes through the book, including a now infamous cartoon of a vibrating rotor (with attribution, of course). In the Japanese translation[2] of the book, there was a sincere attempt at a literal rendition of all jokes, but our Japanese colleagues tell us that they fall rather flat in their new manifestation. On the other hand, the Chinese translation[3] (in the spirit of serious scholarship appropriate to the People's Republic of China) deleted nearly all jokes; in this version the book is a straight and narrow, rather proper primer.

In 1973 the page proofs of the (original) book were sent by the publisher, quite reasonably, to both authors for checking. One of us, however, was engaged in a series of battles during a 1973 war in the Middle East and therefore found it desirable to correct the proofs while crouched, during bombardments, under a strong table located in a tent on an unmarked desert track. Surprisingly few misprints were noted!

The book of course was quickly out of print (due partly to the conservatively small initial printing) and so became somewhat more desirable, leading to its frequent citation and ultimately to the more prosaic but available 1987 version[1] (which nevertheless retains most of the sad old jokes of the original).

1. **Levine R D & Bernstein R B.** *Molecular reaction dynamics and chemical reactivity.* New York: Oxford University Press, 1987. 535 p. (Cited 40 times.)
2. ----------. *Molecular reaction dynamics.* (Inouye H. trans.) Tokyo, Japan: Tokyo University, 1976.
3. ----------. *Molecular reaction dynamics.* (Yusheng T. trans.) Beijing, PRC: Press of the Academy of Sciences, 1984.