

Book Review: *New Trends in Reaction Rate Theory*

New Trends in Reaction Rate Theory. P. Talkner and P. Hänggi, eds., Kluwer Academic Publishers, Dordrecht, 1995.

The book is a collection of 11 papers on different aspects of activation rate theory. They present a partial summary of developments in the theory for the period 1990–1993, after the appearance of the comprehensive review in *Rev. Mod. Phys.* **52**:251 (1990). Since the appearance in 1940 of Kramers' seminal paper, his theory of thermal activation over a high potential barrier in one dimension has been extended in many directions to include higher dimensions, various ranges of dissipation, various types of dissipation and noise, nonequilibrium systems, several different formulations of the problem, low barriers, and so on.

The papers include, among others, a review of modern transition-state theory, a theory of activation over a fluctuating barrier, a theory of activation by various noises, activation theory for a jump process, and a path integral approach to activation. The papers explore different mathematical methods for the investigation of activation problems. Applications to physics, chemistry, biology, and other areas of science are mentioned in the references, but not presented.

Since the appearance of this book much additional theoretical work on chemical reactivity has been published and rate theory and its variants have found applications in many areas of physical biological, and engineering sciences.

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