Journal of Statistical Physics, Vol. 50, Nos. 5/6, 1988

Book Review: *Statistical Thermodynamics of Nonequilibrium Processes*

Statistical Thermodynamics of Nonequilibrium Processes. Joel Keizer, Springer-Verlag, New York, 1987.

This monograph is a useful addition to the spate of recent books on nonequilibrium systems. It is probably too much to expect that any of these volumes, including the present one, can describe the wide gamut of approaches to the description of time-dependent properties of systems.

This volume discusses mesoscopic and macroscopic descriptions of these problems, but omits the molecular description. It contains an extensive presentation, with many applications, of the author's approach to these problems. The author emphasizes the use of physical ensembles containing contracted descriptions of systems rather than the phase space approach of Gibbs. The choice of variables to be kept in the contracted description is based on the results of experiments and on successful descriptions of those experiments.

There is a useful description of stochastic processes, including stochastic differential equations, Fokker–Planck equations, and master equations. The approaches emphasized are based on the work of Onsager and Boltzmann as well as nonequilibrium thermodynamics and hydrodynamics. Several modern topics are treated, including steady states, limit cycles, and chaos.

The book is recommended to all practitioners of nonequilibrium statistical mechanics and thermodynamics. It is written in a way that is understandable to students and could serve as a text in an advanced graduate course.

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0022-4715/88/0300-1281$06.00/0