sciences and engineering, and other related fields. The absence of a proper LEF theory has led to large discrepancies between the conventional theory of rate processes in condensed matter and experimental observations.

More than 50 years ago, Jacob Frenkel[4] emphasized the need to develop a many-body theory of LEFs of atomic particles in condensed matter; such a theory should include strong interactions between atoms. Frenkel also stressed difficulties in developing such theory and a theory of LEF-induced rate processes. His comments seem applicable to the present situation in standard statistical physics of condensed matter; the field presently lacks the many-body theory of LEFs of small numbers of particles. Consequently, many large discrepancies between the traditional rate theory and experimental data can still be found in the literature.

Attempts to develop such a theory have been undertaken in the stochastic kinetic many-body theory of short-lived (picosecond) large energy fluctuations (SLEFs) in nanometer regions of solids.[5] Encouraging results obtained in the SLEF theory and its applications suggest that these guesses on future trends have a solid basis. The future dynamic statistical physics, which will include the explicit stochastic dynamic treatment of both large and small random fluctuations, is expected to substantially reduce theory–experiment discrepancies and discover novel unusual phenomena.

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YU L. KHAIT
Solid State Institute, Technion–Israel Institute of Technology
Haifa, Israel

Correction

April 2002, page 66—Montfort Wind Farm is located in Iowa County, Wisconsin, not in Eden County as the caption states. ■