

BOOK REVIEW

Selection of books for review is based on the editor's opinions regarding possible reader interest and on the availability of the book to the editor. Occasional selections may include books on topics somewhat peripheral to the subject matter ordinarily considered acceptable.



Thermophysical Properties of Liquids in the Metastable (Superheated) State

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| <i>Authors</i> | V. P. Skripov, E. N. Sinitsyn, P. A. Pavlov, G. V. Ermakov, G. N. Muratov, N. V. Bulanov, and V. G. Baidakov |
| <i>Publisher</i> | Gordon and Breach Science Publishers, New York (1988) |
| <i>Pages</i> | 285 |
| <i>Price</i> | \$195 |
| <i>Reviewer</i> | P. Clark Souers |

This book covers a special corner of the phase diagram—the liquid state heated to a temperature at which it is supposed to vaporize. The farther one moves from the liquid-vapor equilibrium curve, the more likely is the unstable liquid to transform its phase. When bubble nuclei form, an irreversible, possibly explosive, change can start. Topics covered are formation of bubble nuclei—both gentle and explosive—plus the stability and physical properties of the metastable liquid. These properties include equation of state, surface tension, heat capacity, sound velocity, viscosity, and thermal conductivity. The liquid data cover water; organics; and liquid rare gases, oxygen, and chlorine. Not included are the properties

of superheated liquid sodium, well known as a reactor coolant, or explosive boiling in liquid metals.

A merit of the book is that each chapter completely covers a particular topic. Many data tables from the authors' own papers are included. However, the bad news is that no reference after 1979 exists. This text appears to have been translated, to a large extent, from a Russian version, published in 1981, by N. V. Bulanov. The book leans heavily toward Soviet references. In fact, it is really a description of the burst of energy in this field that occurred in the 1970s in Sverdlovsk. The chapters on physical properties are the authors' specialty and may be of special value. Readers may acquire a broader view of nucleation and phase stability from C. T. Avedisian's "The Homogeneous Nucleation Limits of Liquids" [*J. Phys. Chem. Ref. Data*, **14**, 695 (1985)], which references about one-quarter Soviet literature. The \$195 list price could send readers to the copying machines.

This book may appeal to a special audience who appreciates the Soviets' efforts in this field and would like a summary condensed in a single volume.

P. Clark Souers received his BS from Stanford University in 1960 and his PhD from the University of California, Berkeley in 1964, both in chemistry. He joined Lawrence Livermore National Laboratory in 1964 and spent 21 years in the Tritium Facility there, of which he has been the manager since 1984. His research specialties are the properties of cyrogenic deuterium-tritium and lithium/beryllium hydrides.