

Thermal Conductivity: Edited by R. P. TYE. Academic Press, London and New York. Volume 1, XXII + 422 pp. Volume 2, XXII + 353pp. 130s. or \$19.0.

THE EDITOR attempts to cover in these two volumes the whole field of thermal conductivity at the state of the art in the year 1967. The overabundance of data has already for some years necessitated a critical evaluation of the literature and a basic understanding of the conduction processes. All workers in this and related problems will be grateful to the authors.

The book contains little data on materials except where results are necessary to illustrate a particular method or subject under discussion. The continental reader in particular will appreciate that all data on thermal conductivities are converted into the units $W\ cm^{-1}\ K^{-1}$.

For reading the first chapter on theory of the thermal conductivity of solids (P. G. Klemens) a certain knowledge of quantum mechanics and perturbation theory is needed. G. K. White gives in his contribution on measurements at low temperatures some useful advice for the measurement of temperature and design of cryostats. Sources of errors are extensively discussed in the chapter written by M. J. Laubitz on measurement of the thermal conductivity of solids at high temperatures by using steady-state linear heat flow; this is followed by a contribution of D. L. McElroy and

J. P. Moore dealing with radial flow. The methods where the sample is heated directly by passage of an electric current is treated by D. R. Flynn and those for isolators and other materials with low conductivity by A. W. Pratt.

The second volume begins with a summary on the theory of conductivity of fluids by McLaughlin. Whereas for dilute gases a well established theory exists, for dense gases and especially liquids, there are only some crude approximations to a theory. H. Ziebland treats the measurements on fluids including steady and non-steady methods. Special non-steady methods are described by G. C. Danielson and P. H. Sidles. The book closes with three chapters dealing with more special problems: semi-conductors (E. F. Steigmeier), transfer at contacts (E. Fried) and an extensive discussion on the thermal comparator (R. W. Powell).

The editor has succeeded in uniting the many contributions into a unit. On the whole there is only small overlapping of the different chapters, each of which gives enough sources for further study. In some parts a more detailed listing of symbols would have been appreciated.

The book will be a useful guide for all concerned with the many problems of heat transfer.

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