

**Handbook of Techniques in High-Pressure Research and Engineering.**

By D. S. TSIKLIS, translated from Russian by ALBERT PEABODY. Plenum Press, New York, 1968. XIII + 504 pp. \$35.00.

The Handbook of Techniques in High-Pressure Research and Engineering is a rather complete collection of material covering the subjects implied in the title. The book follows a logical sequence, beginning with a discussion of material for construction and finishing with some commonly used pieces of equipment.

The first chapter discusses the properties of commonly used material in high-pressure research. An important section of this chapter is devoted to potential problems, as hydrogen embrittlement and mercury amalgamation, with emphasis on how these factors affect the design of pressure vessels and influence pressure-transmitting media. The chapter on design and construction discusses the type of stresses which must be considered when designing ultra high-pressure equipment. A very clear presentation emphasizes that it is the material properties and not the thickness of the vessel which governs the maximum pressure obtainable. The discussion then extends to vessel designs necessary to boost the operating pressure to several multiples of that predicted by the material properties.

The book then describes various methods of pressure generation, the most common of which are liquid and solid compression, with and without single and double pressure intensifiers. There is a comprehensive discussion of pressure-measuring devices. Absolute, relative, and differential manometers are presented in this discussion which describes the advantages and disadvantages of each type. Following this are sections on auxiliary parts, flow and temperature measurement techniques, and methods of obtaining proper mixing in high-pressure vessels. The concluding chapters discuss standard laboratory equipment for measurement of several variables as surface tension, wettability, and optical measurements.

The book is well written and very well translated. Throughout the text, the editor makes significant comments on part of the work which may be ambiguous because they are based on Russian standards. The editor also points out areas where there is a divergence of opinion between Russian and U. S. though on specific ideas. Finally, each chapter has an excellent set of references so that if more detail is desired, it may easily be obtained.

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