PROGRESS IN HIGH TEMPERATURE PHYSICS AND CHEMISTRY

VOLUME 4

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HIGH TEMPERATURE PHYSICS AND CHEMISTRY

VOLUME 4

Edited by

CARL A. ROUSE
Staff Member
Gulf General Atomic Incorporated
San Diego, California 92112

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PREFACE

VOLUME 4

INTEREST in high temperature phenomena has indeed increased rapidly in recent years. With the advent of the space age, the problems of describing matter and radiation transfer at high temperatures took on an added degree of urgency for solutions in the much more difficult regimes where the simple approximations of a monatomic gas are no longer valid. Furthermore, the failure to detect a predicted high flux of neutrinos from the sun supports the need to describe matter in the sun and other stellar objects of astrophysical interest with more realistic equations of state and opacities. In the past ten years, the problems of controlled fusion have turned out to be much more difficult than anticipated in the early phases of this program. Solutions of the physical-chemical problems for producing a low-cost material that can withstand the high temperatures of gas turbines would be a boon to the transportation industry and to society with the promise of reducing air polution. The past few years have also seen an increased interest in the use of the most potent man-made source of high temperatures—the atomic bomb—for beneficial projects in what is called the Plowshare Program.

The above and other problems that involve matter and radiation at high temperatures indicate that there will be continued interest in the theoretical and experimental aspects of high temperature physics and chemistry—hence in this series, we expect to bring useful articles on high temperature phenomena to students and researchers.

C. A. R.

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San Diego, California.

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HIGH TEMPERATURE RADIATIVE TRANSFER AND HYDRODYNAMICS

G. C. POMRANING*
Science Applications, Inc., La Jolla, Calif.

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* Manuscript prepared while the author was with Gulf General Atomic, Inc.

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