

**ENGINEERING CALCULATIONS IN
RADIATIVE HEAT TRANSFER**

by W. A. Gray and R. Muller
Pergamon Press, 1974.

Reviewed by Frank Kreith, University of Colorado

The authors of this work attempt to summarize engineering methods for calculating heat transfer by radiation and techniques for measuring radiation and temperature in a book of less than 150 pages. In view of the complexity of the field and the many recent advances in calculation methods, the authors selected topics and then attempted to integrate them into a book suitable for engineers with a general background in heat transfer and thermodynamics, but lacking detailed knowledge in radiation heat transfer. The topics selected are of general interest and would, therefore, make this book suitable as a supplementary text in some conventional courses, e.g. Unit Operations, as currently taught in many chemical engineering programs or Physical Climatology. Unfortunately, the authors have relied heavily for the material in their book on other texts in heat transfer, rather than on original sources. In their list of 47 references, 27 are to other textbooks and only 20 are to articles

in the literature. Among the latter group, some, such as R. V. Dunkel's and A. K. Oppenheim's classical papers, are not referenced correctly, and only two articles published within the past five years are cited. Thus, the book cannot be considered an up-to-date reference text, but rather a compilation of well-known techniques, illustrated by a few examples. However, only two papers are devoted to the Monte Carlo Method which is capable of handling many complex problems in radiation and no worked out example is presented. Moreover, no mention is made of other numerical techniques suitable for computer processing. This appears a serious shortcoming in a book dealing with engineering calculations for technical people expecting to practice in the 1970's or 1980's.

On the positive side, the summary of measurements of radiation and temperature will be useful and the treatment of atmospheric radiation is well put together. However, also in these topics the material presented in this book does not contain recent findings and the bibliography will not help the reader to update his knowledge in the field.

In summary, the book will be useful for an engineer who lacks background in radiation heat transfer and wants to brush up without spending too much time doing so, but for an up-to-date treatment of engineering calculations in radiative heat transfer the reader will find the current literature a better source.

ACKNOWLEDGMENTS

*The following companies donated funds for the
support of*

**CHEMICAL ENGINEERING EDUCATION
DURING 1976:**

**MONSANTO COMPANY
3M COMPANY**

We also thank the 134 Chemical Engineering Departments who contributed to the support of CEE in 1976!