

T	temperature of gases around droplet at distance r
T_{bp}	normal boiling point of liquid fuel
T_o	temperature of oil droplet's surface
T_∞	temperature of surrounding air well away from droplet
T_f	temperature of gases in flame front
t	time
x	distance in one-dimensional situation
y_A, y_{O_2}	mole fractions of A and O_2
y_∞	mole fraction of O_2 in air = 0.21
α	dimensionless group = $D_{O_2} P(nc_p - sc_{O_2}) / RTk_o(n-s)$
ΔH°	heat of combustion per mole fuel at $0^\circ C$
λ	latent heat of vaporisation per mole fuel
ρ_{gas}	density of gas adjacent to droplet (mol/m^3)
ρ_{liq}	density of liquid fuel (mol/m^3) <input type="checkbox"/>

ChE book reviews

COAL SCIENCE: AN INTRODUCTION TO CHEMISTRY, TECHNOLOGY, AND UTILIZATION

by Rita K. Hessley, John W. Reasoner, and John T. Riley
John Wiley & Sons, New York, 1986. \$35.00

Reviewed by
T. D. Wheelock
Iowa State University

This concise and easily read book provides a useful and basic introduction to the field of coal science and technology. The introductory chapter provides an overview of the coal mining/utilization industry and coal resources of the United States. Subsequent chapters deal with a series of varied and important topics. A description of the complex processes which form peat and convert peat into coal provides a basis for the physical and petrographic characterization of coal. A picture of the organic structure and chemical reactions of coal is built up through a review of coal treatments involving pyrolysis, solvent extraction, hydrogenation, and oxidation, and through a review of coal characterization by instrumental analysis. The book treats the chemistry and technology of a number of methods which have been proposed and sometimes used for converting coal into liquid and gaseous fuels. The final chapter is devoted to a review of standard methods (mainly ASTM) for determining the chemical and physical properties of coal. By seeing how such

properties are measured, the reader is left with a greater appreciation for a number of empirical properties such as the proximate analysis, free-swelling index, and grindability. This appreciation justifies the greater coverage given to methods of analysis than to any other topic.

The book should serve as a useful reference for those seeking a broad rather than a penetrating introduction to coal science and technology. However, it could also serve those with more specialized interests by providing an entry into the technical literature. Frequent references are made to the literature throughout the text, and each chapter is furnished with a lengthy list of references.

The book has been used as a college text for coal chemistry courses taught by the authors. Students and others using this book would benefit from a prior knowledge of general chemistry and organic chemistry.

ChE letters

THE "AYES" OF TEXAS . . .

Editor:

I want to express my appreciation and that of my colleagues for the very generous editorial entitled, "A Department That Serves," that appeared in the Spring 1987 issue of *Chemical Engineering Education*. It is most gratifying to us that you have so eloquently expressed our actual motives for developing the study on "Chemical Engineering for the Future" and disseminating its findings.

Howard F. Rase
The University of Texas, Austin

ChE books received

Adsorption Technology: A Step-By-Step Approach to Process Evaluation and Application, edited by Frank L. Slejko; Marcel Dekker, 270 Madison Ave., New York 10016; 240 pages, \$55 (1985).

Heat Transfer and Fluid Flow in Rotating Machinery, Wen-Jei Yang. Hemisphere Publishing, New York, NY 10016 (1987). 553 pages, \$95.00.

Computational Heat Transfer, Yogesh Jaluria and Kenneth E. Torrance. Hemisphere Publishing, New York, NY 10016 (1986). 366 pages, \$49.00.

Aerothermodynamics of Low Pressure Steam Turbines and Condensers, M. J. Moore and C. H. Sieverding. Hemisphere Publishing, New York, NY 10016 (1987). 290 pages, \$59.95.

Basic Cost Engineering, Second Edition, Revised and Expanded, Kenneth K. Humphreys and Paul Wellman. Marcel Dekker, New York, NY 10016 (1987). 368 pages, \$34.75