

analogous to that for the energy functions. Transforms of the entropy are termed Massieu functions which yield relations upon cross differentiation analogous to those of Maxwell.

SUMMARY

The theoretical basis, use, and construction of a mnemonic octahedron for the representation of the energy functions and their derivatives together with the Maxwell equations, has been presented. The device, which is easily constructed to any size—desk top or pocket version, should be valuable to both students and teachers. Although classic thermodynamics requires a minimum of memorization, we hope the THERMODORM will aid the student in understanding and unifying the energy functions together with their variables and prove to be more than an optimal crib-sheet for closedbook exams. □

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ChE book reviews

Processes and Systems in Industrial Chemistry, H. P. Meissner, Prentice-Hall, Englewood Cliffs, N.J. (1971), 386pp., \$14.95.

This book is primarily an introductory discussion of reaction kinetics and associated thermodynamics from an industrial chemical point of view. The author, however, includes chapters on liquid-solid equilibria, material balances and energy balances. There is also a chapter on the frequently neglected topic of electrochemical operations. Roughly one-third of the book is devoted to problems. The book is noteworthy in relating the discussion and the problems to specific chemical processes.

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Ed. Note. The author has classified processes "by (1) types of equilibria, (2) types of energy management problems, (3) types of rate problems (including catalysis), and (4) types of flow sheet patterns and materials handling problems." The book contains eleven chapters titled: Equilibrium in homogeneous systems; Heterogeneous reaction equilibria; Liquid-solid equilibria involving ions; Management of materials; Management of heat energy; Homogeneous reaction rates; Catalytic reactions and reactors; Reactions between gases and solids; Chemical reactors; Reactions having an unfavorable ΔF ; and Industrial electrochemical operations. There are 125 realistic case-type problems for effective illustration of the material.

SANDALL—(Continued from p. 29)

Nomenclature

A_n, B_n	Eigenvalues
C	Molar concentration
d	Drop diameter
D	Diffusion coefficient
k	Individual phase mass transfer coefficient
K	Overall mass transfer coefficient
m	Slope of equilibrium curve
\bar{N}_A	Average mass transfer rate
Re	Reynolds number
Sc	Schmidt number
v	Drop velocity
\bar{x}	Average mole fraction benzoic acid in water phase
x^*	Mole fraction benzoic acid that would be in equilibrium with the bulk toluene phase concentration
θ	Contact time
μ	Absolute viscosity

Subscripts:

T	Toluene phase
w	Water phase

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