INFORMATION RETRIEVAL

(Continued from page 621)

Investigation of the turbulent shear flow of dilute aqueous CMC solutions, Ernst, William D., **A.I.Ch.E. Journal, 12,** No. 3, p. 581 (May, 1966).

Key Words: A. Fluid Flow-8, Turbulent-0, Measuring-8, Correlating-8, Velocity Profiles-9, 8, 7, 1, Velocity-9, 8, 7, 1, Viscosity-9, 8, 1, Flow Rate-9, Pressure Drop-9, Fluids-9, Non-Newtonian-0, Power Law-0, Viscoelastic-0, Carboxymethylcellulose-9, Water-5, Calculating-8, Skin Friction-2, 7, Friction Factor-2, 7, Tube Diameter-6, Radial Position-6, Reynolds Number-6.

Abstract: Experimental measurements of the fully developed turbulent flow field of dilute CMC solutions in straight tubes are presented. Solutions with a power law exponent of 0.93 to 0.95 are used to eliminate most of the effects attributed to power law fluids. Both pressure drop and velocity profile measurements were made over a wide range of Reynolds numbers. The velocity data were taken in both the linear sublayer and the turbulent core and are presented in terms of the universal velocity parameters modified by use of a viscosity defined at the tube wall.

Local thermodynamic consistency of vapor-liquid equilibrium data for binary and multicomponent systems, Stevenson, F. D., and V. E. Sater, **A.I.Ch.E. Journal, 12,** No. 3, p. 586 (May, 1966).

Key Words: A. Testing-8, Consistency-9, Local-0, Thermodynamic-0, Equilibrium-9, Data-9, Vapor-Liquid System-9, Lead-Silver-9, Isopropanol-Ethylbenzene-9, Nitric Acid-Water-9, Gibbs-Duhem Equation-10, 8.

Abstract: The Gibbs-Duhem equation, integrated over specific concentration ranges, is used to determine local thermodynamic consistency of vapor-liquid equilibrium data. Applications of the test are given for the following binary systems: isopropanol-ethylbenzene, nitric acid-water, and lead-silver. The test is particularly useful for evaluating the consistency of incomplete data.

Particle migration in shear fields, Denson, C. D., E. B. Christiansen, and D. L. Salt, **A.I.Ch.E. Journal, 12,** No. 3, p. 589 (May, 1966).

Key Words: A. Migration-8, 9, Motion-8, 9, Trajectory-8, 9, 2, 7, Sphere-9, Rigid-0, Particle-9, Glycerine-Water-5, Solution-5, Tube-9, Shear Field-9, Poiseuille Flow Field-9, Calculating-8, Rate-2, 7, Transverse Force-2, 7, Rubinow-Keller Expression-10, Analog Computer-10, Velocity-6, Reynolds Number-6, Tube Diameter-6, Observing-8, Photography-10.

Abstract: The motion of a single rigid sphere entrained in a glycerine-water solution flowing downward through a cylindrical tube has been investigated throughout a range of particle Reynolds numbers of 208 to 890 and particle-to-tube diameter ratios of 0.120 to 0.190. Trajectories of the sphere, calculated for various particle Reynolds numbers with the Rubinow-Keller expression for the transverse force, were found to agree satisfactorily with experimentally determined trajectories when the particle Reynolds number was below 40.0.

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Introduction to Chemical Process Control, John Wiley and Sons, New York (1965). xii plus 204 pages, $6.95.

Here is a book that admirably accomplishes its objective of introducing control theory to the chemical engineer. Recognizing that some of the topics emphasized in the traditional control courses are less appropriate for the chemical engineer, Professor Perlmutter has touched only lightly on such points as the root-locus method and the problem of compensation, and so has given himself space to introduce some consideration of nonlinear systems. The importance of this can scarcely be overemphasized, for nowhere is linearization less appropriate than in the heart of the chemical process, where the temperature dependence of the reaction rate rejoices in that most ineluctible of nonlinearities, $A \exp - E/RT$.

The book is distinguished for the clarity of its exposition and justifies the word *Introduction* in its title by so successfully leading the reader into the subject. The topics discussed are those which every undergraduate chemical engineer must learn, and it is good to have a book which can be recommended to him as both sound and lucid.

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