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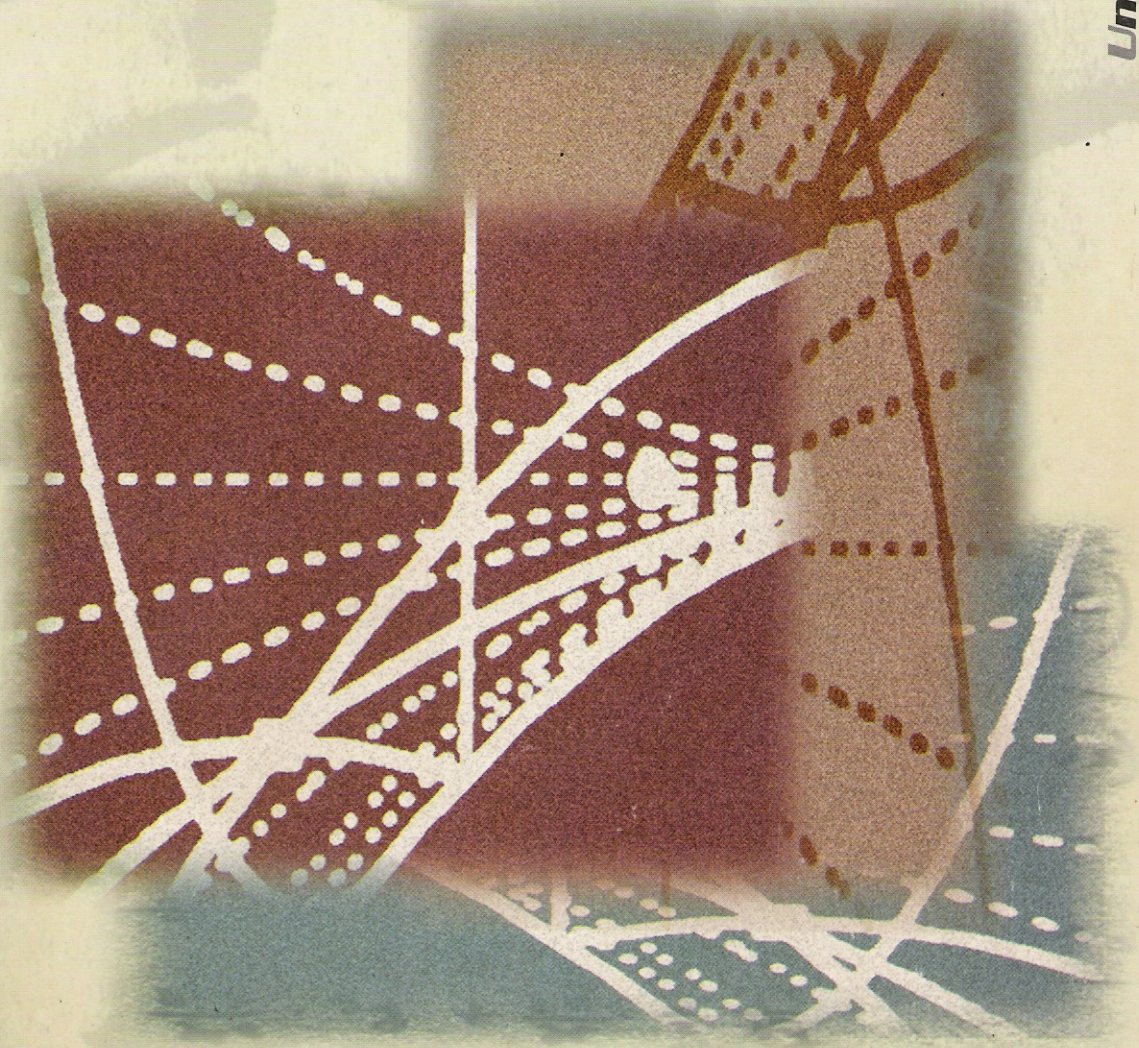

ECUAȚII DE STARE

Aplicații la echilibre de faze

Editura Tehnică

EQUATIONS OF STATE. APPLICATIONS TO PHASE EQUILIBRIA

By Dan Geană and Viorel Feroiu

The equations of state are analytical expressions that relate the pressure, the temperature, and the volumetric properties of a fluid. An equation of state describes completely the equilibrium properties of pure compounds or mixtures of them in liquid, vapor or solid phases. The main advantage of using the equations of state is that predictions for phase behavior, together with their density and enthalpy, can be made with a single model over large ranges of temperature and pressure with few adjustable parameters. The traditional field of equations of state, over one-hundred-years old, is now a modern subject of research, determined by industrial needs for process design and process simulators as well as by the great advances in computers and computational techniques. This book combines basic principles of development of equations of state with their applications in correlating and predicting multicomponent vapor-liquid, liquid-liquid and vapor-liquid-liquid equilibria over a wide range of pressure, temperature and molecular variety. The book fills a gap between general reviews and research papers, and contains much information and applications based on authors' teaching experience and their original scientific results. Among many equations of state proposed for predicting the phase behavior of polar and nonpolar systems, cubic equations of state have been mainly used because of their simplicity and accuracy. This book, therefore, will focus on these equations of state. The description of mixture properties based on various mixing rules is widely presented. Special methods for calculation of systems with molecular association, of continuous systems and of the critical points of mixtures are included. Numerous original examples illustrate applications of the methods.

Contents. Introduction; Fundamentals; Parametrizations; Applications to pure fluids; Applications to mixtures; Equations of state for systems with association; Equations of state for continuous systems; Stability and calculation of critical points for mixtures.

Readership. This book is aimed primarily at the student in chemistry and chemical engineering, for both undergraduate and post graduate courses, but it will also be useful for those engaged in research in applied chemistry, mathematics, physics and for chemical and process engineering professionals.