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Sommario/riassunto	We are living in a critical time, both for humanity and the planet, which has led us to look for more sustainable formulas to interact with the environment. One of the important changes in the design and operation of chemical processes is the search for environmentally friendly technologies. Supercritical carbon dioxide has been revealed as a promising environmentally friendly solvent that is energy efficient, selective and capable of reducing waste, making it a promising alternative to conventional organic solvents. However, reliable and versatile mathematical models of phase equilibrium thermodynamics are needed for the use of supercritical carbon dioxide in process design and viability studies. This book reviews experimental procedures for obtaining high-pressure phase equilibria data and describes the phase diagrams of binary mixtures and some thermodynamic models capable of determining the conditions of phase equilibria at high pressures. These concepts are applied to the components of the transesterification

reaction of rac-2-pentanol with a vinyl ester, which is important in the pharmaceutical industry because (S)-2-pentanol can be obtained as a reaction product. This product is a key intermediate in the synthesis of drugs against Alzheimer's disease.
