Introduction to Supercritical Fluids, Vol 4. Supercritical Fluid Science and Technology

Description: This text provides an introduction to supercritical fluids with easy-to-use Excel spreadsheets suitable for both specialized-discipline (chemistry or chemical engineering student) and mixed-discipline (engineering/economic student) classes. Each chapter contains worked examples, tip boxes and end-of-the-chapter problems and projects.

Part I covers web-based chemical information resources, applications and simplified theory presented in a way that allows students of all disciplines to delve into the properties of supercritical fluids and to design energy, extraction and materials formation systems for real-world processes that use supercritical water or supercritical carbon dioxide.

Part II takes a practical approach and addresses the thermodynamic framework, equations of state, fluid phase equilibria, heat and mass transfer, chemical equilibria and reaction kinetics of supercritical fluids. Spreadsheets are arranged as Visual Basic for Applications (VBA) functions and macros that are completely (source code) accessible for students who have interest in developing their own programs. Programming is not required to solve problems or to complete projects in the text.

- Property worksheets/spreadsheets that are easy to use in learning environments
- Worked examples with Excel VBA Worksheet functions allow users to design their own processes
- Fluid phase equilibria and chemical equilibria worksheets allow users to change conditions, study new solutes, co-solvents, chemical systems or reactions

Contents:

Preface
Part I for Multi-disciplinary instruction
Chapter 1. Chemical Vocabulary and Essentials
Chapter 2. Systems, Devices and Processes
Chapter 3. Chemical information and Know-How
Chapter 4. Historical background and Applications
Part II for Specialized discipline instruction
Chapter 5. Underlying thermodynamics and fundamentals
Chapter 6. Equations of state and formulations
Chapter 7. Phase equilibria and Mass transfer
Chapter 8. Heat transfer and Finite-difference methods
Chapter 9. Chemical equilibria and Kinetics
Appendices

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