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5.9 Heat of Reaction For Processes With Biomass Production5.10 Energy-Balance Equation For Cell Culture; 5.11 Fermentation Energy-Balance Worked Examples; 5.12 Summary of Chapter 5; Problems; References; Suggestions For Further Reading; Chapter 6. Unsteady-State Material and Energy Balances; 6.1 Unsteady-State Material-Balance Equations; 6.2 Unsteady-State Energy-Balance Equations; 6.3 Solving Differential Equations; 6.4 Solving Unsteady-State Mass Balances; 6.5 Solving Unsteady-State Energy Balances; 6.6 Summary of Chapter 6; Problems; References; Suggestions For Further Reading
Part 3: Physical ProcessesChapter 7. Fluid Flow and Mixing; 7.1 Classification of Fluids; 7.2 Fluids in Motion; 7.3 Viscosity; 7.4 Momentum Transfer; 7.5 Non-Newtonian Fluids; 7.6 Viscosity Measurement; 7.7 Rheological Properties of Fermentation Broths; 7.8 Factors Affecting Broth Viscosity; 7.9 Mixing; 7.10 Power Requirements for Mixing; 7.11 Scale-Up of Mixing Systems; 7.12 Improving Mixing in Fermenters; 7.13 Effect of Rheological Properties on Mixing; 7.14 Role of Shear in Stirred Fermenters; 7.15 Summary of Chapter 7; Problems; References; Suggestions For Further Reading
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Sommario/riassunto

The emergence and refinement of techniques in molecular biology has changed our perceptions of medicine, agriculture and environmental management. Scientific breakthroughs in gene expression, protein engineering and cell fusion are being translated by a strengthening biotechnology industry into revolutionary new products and services. Many a student has been enticed by the promise of biotechnology and the excitement of being near the cutting edge of scientific advancement. However, graduates trained in molecular biology and cell manipulation soon realise that these techniques are only part of
