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Turbulent Reacting Flows and Turbulent Flames; F. Stirred Reactor Theory; G. Flame Stabilization in High-Velocity Streams; Problems; References; Chapter 5. Detonation; A. Introduction; B. Detonation Phenomena; C. Hugoniot Relations and the Hydrodynamic Theory of Detonations; D. Comparison of Detonation Velocity Calculations with Experimental Results; E. The ZND Structure of Detonation Waves; F. The Structure of the Cellular Detonation Front and Other Detonation Phenomena Parameters; G. Detonations in Nongaseous Media ProblemsReferences; Chapter 6. Diffusion Flames; A. Introduction; B. Gaseous Fuel Jets; C. Burning of Condensed Phases; D. Burning of Droplet Clouds; E. Burning in Convective Atmospheres; Problems; References; Chapter 7. Ignition; A. Concepts; B. Chain Spontaneous Ignition; C. Thermal Spontaneous Ignition; D. Forced Ignition; Problems; References; Chapter 8. Environmental Combustion Considerations; A. Introduction; B. The Nature of Photochemical Smog; C. Formation and Reduction of Nitrogen Oxides; D. SO_x Emissions; E. Particulate Formation; F. Stratospheric Ozone; Problems; References Chapter 9. Combustion of Nonvolatile FuelsA. Carbon Char, Soot, and Metal Combustion; B. Metal Combustion Thermodynamics; C. Diffusional Kinetics; D. Diffusion-Controlled Burning Rate; E. The Burning of Porous Chars; F. The Burning Rate of Ash-Forming Coal; Problems; References; Appendixes; A. Thermochemical Data and Conversion Factors; B. Specific Reaction Rate Constants; C. Bond Dissociation Energies of Hydrocarbons; D. Laminar Flame Speeds; E. Flammability Limits in Air; F. Spontaneous Ignition Temperature Data; G. Minimum Spark Ignition Energies and Quenching Distances H. Programs for Combustion Kinetics

Sommario/riassunto

This Third Edition of Glassman's classic text clearly defines the role of chemistry, physics, and fluid mechanics as applied to the complex topic of combustion. Glassman's insightful introductory text emphasizes underlying physical and chemical principles, and encompasses engine technology, fire safety, materials synthesis, detonation phenomena, hydrocarbon fuel oxidation mechanisms, and environmental considerations. Combustion has been rewritten to integrate the text, figures, and appendixes, detailing available combustion codes, making it not only an excellent introductory text but al
