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Nota di contenuto	Chapter 1: Simultaneous Velocity and Temperature Field Measurements of a Jet Flame; Chapter 2: Infrared Absorption Tomography for Active Combustion -- Control; Chapter 3: Deterministic and Probabilistic Approaches for Prediction of Two-Phase Turbulent Flow in Liquid-Fuel Combustors; Chapter 4: Large-Scale Simulations of Turbulent Combustion and Propulsion Systems; Chapter 5: Direct Simulation of Primary Atomization; Chapter 6: Extinction and Relight in Opposed Premixed Flames; Chapter 7: -- In uence of Markstein Number on the Parametric Acoustic Instability; Chapter 8: Prevaporized JP-10 Combustion and the Enhanced Production of Turbulence Using Countercurrent Shear; Chapter 9: -- Mixing Control for Jet Flows; Chapter 10: Characteristics and Control of a Multiswirl Spray Combustor; Chapter 11: Swirling Jet Systems for Combustion Control; Chapter 12: Control of Flame Structure in Spray Combustion; Chapter 13: Porous Media Burners for Clean Engines; Chapter 14: -- Simulations of a Porous Burner for a Gas Turbine; Chapter 15: Characteristics and Control of Combustion Instabilities in a Swirl-Stabilized Spray Combustor; Chapter 16: Combustion and Mixing Control Studies for Advanced Propulsion; Chapter 17: -- Active Pattern

Factor Control on an Advanced Combustor; Chapter 18: System Design Methods for Simultaneous Optimal Control of Combustion Instabilities and EÆciency; Chapter 19: Model-Based Optimal Active Control of Liquid-Fueled Combustion Systems; -- SECTION TWO: HIGH-SPEED JET NOISE 211 -- Chapter 1: Aeroacoustics and Emissions Studies of Swirling Combustor Flows; Chapter 2: Considerations for the Measurement of Very-High-Amplitude Noise Fields; Chapter 3: High-Speed Jet Noise Reduction Using Microjets; Chapter 4: Acoustic Test Flight Results with Prediction for the F/A-18 E/F Aircraft During FCLP Mission; Chapter 5: Computational Fluid Dynamics Simulations of Supersonic Jet-Noise Reduction Concepts; -- SECTION THREE: PULSE DETONATION ENGINES -- Chapter 1: Investigation of Spray Detonation Characteristics Using a Controlled, Homogeneously Seeded Two-Phase Mixture; Chapter 2: Deagration-to-Detonation Studies for Multicycle PDE Applications -- Chapter 3: Initiator Diraction Limits in a Pulse Detonation Engine; Chapter 4: The Role of Geometrical Factors in Deagration-to-Detonation Transition; Chapter 5: Pseudospark-Based Pulse Generator for Corona-Assisted Combustion Experiments; Chapter 6: Breakup of Droplets under Shock Impact; Chapter 7: Impulse Production by Injecting Fuel-Rich Combustion Products in Air; Chapter 8: Thermodynamic Evaluation of the Dual-Fuel PDE Concept; Chapter 9: Thermal Decomposition of JP-10 Studied by Microflow Tube Pyrolysis {Mass Spectrometry; Chapter 10: Laser Diagnostics and Combustion Chemistry for Pulse Detonation Engines; Chapter 11: Computational Studies of Pulse Detonation Engines; Chapter 12: Simulation of Direct Initiation of Detonation Using Realistic Finite-Rate Models; Chapter 13: System Performance and Thrust Chamber Optimization of Air-Breathing Pulse Detonation Engines; Chapter 14: Software Development for Automated Parametric Study -- and Performance Optimization of Pulse Detonation Engines

Sommario/riassunto

Chemical propulsion comprises the science and technology of using chemical reactions of any kind to create thrust and thereby propel a vehicle or object to a desired acceleration and speed. This book focuses on recent advances in the design of very highly efficient, low-pollution-emitting propulsion systems, as well as advances in testing, diagnostics and analysis. It offers unique coverage of Pulse Detonation Engines, which add tremendous power to jet thrust by combining high pressure with ignition of the air/fuel mixture. Readers will learn about the advances in the reduction of jet noise and toxic fuel emissionssomething that is being heavily regulated by relevant government agencies. * Lead editor is one of the world's foremost combustion researchers, with contributions from some of the world's leading researchers in combustion engineering * Covers all major areas of chemical propulsion-from combustion measurement, analysis and simulation, to advanced control of combustion processes, to noise and emission control * Includes important information on advanced technologies for reducing jet engine noise and hazardous fuel combustion emissions