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Autore	Wang Zhen-Guo
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Nota di contenuto	Title Page ; Copyright Page ; Contents; Preface; Chapter 1 Introduction ; 1.1 Basic Configuration of Liquid Rocket Engines; 1.1.1 Propellant Feed System; 1.1.2 Thrust Chamber; 1.2 Internal Combustion Processes of Liquid Rocket Engines; 1.2.1 Start and Shutdown; 1.2.2 Combustion Process; 1.2.3 Performance Parameters in Working Process; 1.3 Characteristics and Development History of Numerical Simulation of the Combustion Process in Liquid Rocket Engines; 1.3.1 Benefits of Numerical Simulation of the Combustion Process in Liquid Rocket Engines 1.3.2 Main Contents of Numerical Simulations of Liquid Rocket Engine Operating Process 1.3.3 Development of Numerical Simulations of Combustion Process in Liquid Rocket Engines; 1.4 Governing Equations of Chemical Fluid Dynamics; 1.5 Outline of this Book; References; Chapter 2 Physical Mechanism and Numerical Modeling of Liquid Propellant Atomization ; 2.1 Types and Functions of Injectors in a Liquid Rocket Engine; 2.2 Atomization Mechanism of Liquid Propellant; 2.2.1 Formation of Static Liquid Droplet; 2.2.2 Breakup of Cylindrical Liquid Jet; 2.2.3 Liquid Sheet Breakup

2.2.4 Droplet Secondary Breakup  
2.3 Characteristics of Atomization in Liquid Rocket Engines; 2.3.1 Distribution Function of the Droplet Size; 2.3.2 Mean Diameter and Characteristic Diameter; 2.3.3 Measurement of Spray Size Distribution; 2.4 Atomization Modeling for Liquid Rocket Engine Atomizers; 2.4.1 Straight-flow Injector; 2.4.2 Centrifugal Injector; 2.4.3 Impinging-stream Injectors; 2.4.4 Coaxial Shear Injector; 2.4.5 Coaxial Centrifugal Injectors; 2.5 Numerical Simulation of Liquid Propellant Atomization; 2.5.1 Theoretical Models of Liquid Propellant Atomization; 2.5.2 Quasi-fluid Models  
2.5.3 Particle Trajectory Models  
2.5.4 Simulation of Liquid Jet Atomization Using Interface Tracking Method; 2.5.5 Liquid Jet Structure - Varying Flow Conditions; References; Chapter 3 Modeling of Droplet Evaporation and Combustion ; 3.1 Theory for Quasi-Steady Evaporation and Combustion of a Single Droplet at Atmospheric Pressure; 3.1.1 Quasi-Steady Evaporation Theory for Single Droplet in the Static Gas without Combustion; 3.1.2 Quasi-Steady Evaporation Theory for Droplet in a Static Gas with Combustion; 3.1.3 Non-Combustion Evaporation Theory for a Droplet in a Convective Flow  
3.1.4 Evaporation Theory for a Droplet in a Convective Medium with Combustion  
3.2 Evaporation Model for a Single Droplet under High Pressure; 3.2.1 ZKS Droplet High Pressure Evaporation Theory; 3.2.2 Application of the Liquid Activity Coefficient to Calculate the Gas-Liquid Equilibrium at a High Pressure; 3.3 Subcritical Evaporation Response Characteristics of Propellant Droplet in Oscillatory Environments; 3.3.1 Physical Model; 3.3.2 Examples and the Analysis of Results; 3.4 Multicomponent Fuel Droplet Evaporation Model; 3.4.1 Simple Multicomponent Droplet Evaporation Model  
3.4.2 Continuous Thermodynamics Model of Complex Multicomponent Mixture Droplet Evaporation

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