

1. Record Nr.	UNINA9910961562703321
Titolo	Liquid rocket thrust chambers : aspects of modeling, analysis, and design // edited by Vigor Yang ... [et al.]
Pubbl/distr/stampa	Reston, Va., : American Institute of Aeronautics and Astronautics, Inc., c2004
ISBN	1-60086-676-X 1-60086-457-0 1-61583-080-4
Edizione	[1st ed.]
Descrizione fisica	1 online resource (760 p.)
Collana	Progress in astronautics and aeronautics ; ; v. 200
Altri autori (Persone)	YangVigor
Disciplina	662.6/66
Soggetti	Liquid propellants
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and indexes.
Nota di contenuto	<p>           ""Cover""; ""Title""; ""Copyright""; ""Table of Contents""; ""Preface"";           ""Acknowledgments""; ""Chapter 1 Propellant Injection Systems and Processes"";           ""Introduction""; ""Rocket Application Design Requirements""; ""Thrust Level and Operating Pressure"";           ""Propellant Type""; ""Engine Cycle or Feed System""; ""Common Combustion Device Development Risks"";           ""Combustion Instability""; ""Combustion Chamber Overheating and Burnout"";           ""Injector Face Erosion""; ""Low Thrust Chamber Assembly Performance"";           ""Unsafe Transients""; ""Injection System Design Considerations""         </p> <p>           ""Engine Pressure Schedule""""Nozzle Expansion Ratio""; ""Contraction Ratio"";           ""Chamber Length""; ""Injection Element and Pattern""; ""Critical Combustion Processes"";           ""Injector Manifold Distribution""; ""Injector Spray Atomization"";           ""Propellant Droplet Vaporization""; ""Bipropellant Mixing"";           ""Candidate Injectors for Liquid Rocket Applications"";           ""Coaxial Jet Injectors""; ""Impinging Jet Injectors"";           ""Parallel Jet (Showerhead) Injectors""; ""Injector Design Synthesis"";           ""Conclusions and Recommendations""; ""References""; ""Chapter 2 Design and Dynamics of Jet and Swirl Injectors""         </p> <p>           ""Nomenclature""""Introduction""; ""Classification of Injectors and Methods of Mixture Formation"";           ""Liquid Injectors""; ""Gas-Liquid Injectors""; ""Intensification of Propellant Atomization and Mixing in         </p>

Liquid Injectors"; "Intensification of Propellant Atomization and Mixing in Gas-Liquid Injectors"; "Theory and Design of Liquid Monopropellant Jet Injectors"; "Flow Characteristics"; "Effect of Injector Configuration"; "Flow Coefficient"; "Design Procedure"; "Theory and Design of Gaseous Monopropellant Jet Injectors"; "Flow Characteristics"; "Design Procedure"  
"Theory and Design of Gas-Liquid Jet Injectors""Theory and Design of Liquid Monopropellant Swirl Injectors"; "Flow Characteristics of Ideal Swirl Injector"; "Flow Characteristics of Real Swirl Injectors"; "Effect of Viscosity on Injector Operation"; "Design Procedure"; "Theory and Design of Liquid Bipropellant Swirl Injectors"; "Injectors with External Mixing"; "Injectors with Internal Mixing"; "Modulation of Liquid Spray Characteristics of Swirl Injectors"; "Design of Gas Swirl Injectors"; "Design Procedure"; "Selection of Geometric Dimensions and Flow Parameters"  
"Dynamics of Liquid Rocket Injectors""Linear Dynamics of Jet Injectors"; "Linear Dynamics of Swirl Injectors"; "Acknowledgments"; "References"; "Chapter 3 Atomization in Coaxial-Jet Injectors"; "Nomenclature"; "Introduction"; "Phenomenological Description and Literature Review"; "General Scheme of Jet Disintegration and Drop Formation"; "Studies of Elementary Processes"; "Numerical Simulations of the Atomization Process"; "Derivation of Droplet Size Distribution Functions"; "Investigations of Atomization in Shear Coaxial Injectors"  
"Experimental and Theoretical Investigation at Atmospheric Pressure with Simulants"

---

Sommario/riassunto

This is the first major publication on liquid-rocket combustion devices since 1960. A total of 26 chapters prepared by world-renowned experts in their subject areas are included. Each chapter focuses on a specific aspect of liquid-propellant combustion and thrust chamber dynamics, and is incorporated into the volume in a well-organized, cohesive manner. There are contributions from nine different countries--China, France, Germany, Italy, Japan, The Netherlands, Russia, Sweden, and the United States.

---