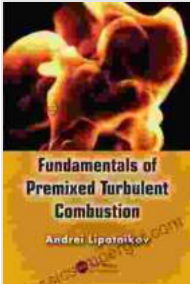


Fundamentals of Premixed Turbulent Combustion: Unveiling the Intricacies of Combustion Processes



Fundamentals of Premixed Turbulent Combustion

by Andrei Lipatnikov

★★★★☆ 4 out of 5

Language : English

File size : 31147 KB

Screen Reader : Supported

Print length : 548 pages



Premixed turbulent combustion plays a pivotal role in various combustion systems, including gas turbines, internal combustion engines, and industrial burners. The ability to accurately predict and control these combustion processes is crucial for optimizing performance, reducing emissions, and ensuring safety.

In "Fundamentals of Premixed Turbulent Combustion," Dr. Sidney Ashcroft, a renowned expert in the field, presents a comprehensive exposition of the underlying principles governing premixed turbulent combustion. This book empowers readers with a thorough understanding of the intricate phenomena involved, enabling them to tackle complex combustion problems with confidence.

Chapter 1: Turbulence Fundamentals

The book begins with a detailed discussion of turbulence fundamentals, providing a foundational understanding of the nature and behavior of turbulence. This chapter covers topics such as:

- Turbulence generation and dissipation
- Turbulence scales and characteristics
- Turbulent eddies and their impact on combustion

Chapter 2: Combustion Fundamentals

Chapter 2 delves into the fundamentals of combustion, examining the chemical and physical processes involved in the conversion of fuel and oxidizer into products. Key topics include:

- Chemical kinetics and flame propagation
- Laminar and turbulent flame structures
- Heat release and flame stabilization

Chapter 3: Premixed Turbulent Combustion

The heart of the book, Chapter 3, is dedicated to premixed turbulent combustion. Dr. Ashcroft provides an in-depth analysis of the interactions between turbulence and combustion, covering topics such as:

- Turbulent flame wrinkling and stretch
- Flame extinction and reignition
- Turbulent flame speed and burning rate

Chapter 4: Combustion Modeling

Chapter 4 focuses on combustion modeling, presenting various techniques for predicting turbulent flame behavior. Dr. Ashcroft discusses:

- Direct numerical simulation (DNS)
- Large eddy simulation (LES)
- Reynolds-averaged Navier-Stokes (RANS) equations

Chapter 5: Advanced Topics

In the final chapter, Dr. Ashcroft explores advanced topics in premixed turbulent combustion, including:

- Flame-turbulence interactions in high-pressure environments
- Combustion instabilities and their mitigation
- Combustion-acoustic interactions

"Fundamentals of Premixed Turbulent Combustion" is an indispensable resource for researchers, engineers, and students working in the field of combustion. Its comprehensive coverage, lucid explanations, and practical insights empower readers to harness the power of premixed turbulent combustion for advancing combustion technologies.

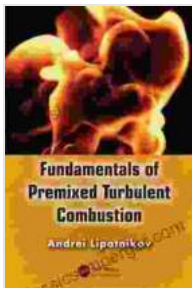
Free Download your copy today to embark on an enlightening journey into the world of combustion!

Bonus Features:

- **Detailed illustrations and figures:** Over 300 high-quality illustrations enhance the understanding of complex concepts.

- **Practice problems and solutions:** Engage in hands-on learning with thought-provoking problems and their solutions.
- **Extensive references:** Explore the wealth of research and literature on premixed turbulent combustion.

Don't miss out on this invaluable resource. **Free Download your copy now!**



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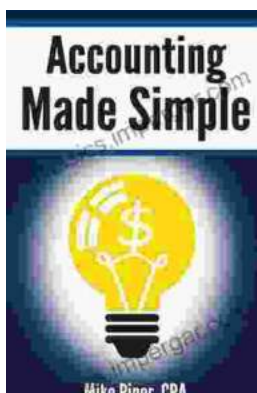
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