燃烧学教材*

目录

* 2020 年度北京大学本科教学改革项目。本文件列出了部分燃烧学教材的内容。主要调查了英文教材，对中文教材只是调查了非常少的一部分。受限于调查编写人员的知识范围和调研时间，难免遗漏很多相关教材。目录中，英文教材按照标题字母排序，中文教材按照标题拼音排序。北京大学黄成扬博士输入了绝大部分英文教材包含的内容。

Aerothermochemistry, Gregorio Millan Barbany

出版信息： Escuela Tecnica Superior de Ingenieros Aeronáuticos, Madrid, España, 1958 年原版 50 周年纪念版, 2009 年

说明：部分章节是基于冯卡门 1951-1952 年在法国巴黎的燃烧空气动力学课程。冯卡门在该书前言提到：“I have great pleasure in introducing the report of Prof. Gregorio Millan on Aerothermochemistry. This word refers to problems whose solution necessitates the application of fundamental principles of Thermodynamics and Chemistry especially chemical kinetics. In other words they are flow problems with exchange of heat and production of heat by means of chemical reaction”。

目录：

An Introduction to Combustion: Concepts and Applications, Stephen R. Turns

出版信息：McGraw-Hill, 3rd Edition, 2012 年
说明：本科生燃烧课经典教材。有中文翻译版（姚强、李水清及王宇翻译，清华大学出版社出版）。该书前言提到："The third edition retains the same primary objectives as previous editions: first, to present basic combustion concepts using relatively simple and easy-to-understand analyses; and second, to introduce a wide variety of practical applications that motivator relate to the various theoretical concepts. The overarching goal is to provide a textbook that is useful for both formal undergraduate and introductory graduate study in mechanical engineering and related fields, and informal study by practicing engineers"。

目录：

An Introduction to Fire Dynamics, Dougal Drysdale

出版信息：John Wiley & Sons, Ltd, 2nd Edition, 1999 年
说明：

目录：

An Introduction to Turbulent Reacting Flows, R.S. Cant, E. Mastorakos

出版信息： Cambridge University Press, 1st Edition, 2008 年

说明：作者根据其在剑桥大学工程系的湍流燃烧课程讲义编写而成。

目录：

Analysis of Kinetic Reaction Mechanisms, Tamas Turanyi, Alison S. Tomlin

出版信息：Springer, 1st Edition, 2014 年

来自该书的介绍：“This book is a monograph for researchers and engineers dealing with detailed kinetic reaction mechanisms and also a textbook for graduate students of related courses in chemistry, mechanical engineering, environmental science and biology”。

目录：

Applications of Turbulent and Multiphase Combustion, Kenneth Kuan-yun Kuo, Ragini Acharya

出版信息：John Wiley & Sons, Inc., 1st Edition, 2012 年

来自该书前言：“Due to these ongoing developments and advancements, theoretical modeling and numerical simulation hold great potential for future solutions of problems. In these two new books, we have attempted to integrate the fundamental theories of turbulence, combustion, and multiphase phenomena as well as experimental techniques, so that readers can acquire a firm background in both contemporary and classical approaches. The first book volume is called *Fundamentals of Turbulent and Multiphase Combustion*; the second is called *Applications of Turbulent and Multiphase Combustion*. The first volume can serve as a graduate-level textbook that covers the area of turbulent combustion and multiphase reacting flows as well as material that builds on these fundamentals. This volume also can be useful for research purpose. It is oriented toward the theories of combustion, turbulence, multiphase flows, and turbulent jets. Whenever appropriate, experimental setups and results are provided. …Volume 2 focus on the application aspect of fundamental concepts and can form the framework for an advanced graduate-level course in combustion of condensed-phase materials. …Although several chapters address solid propellant combustion, this volume is not a textbook for solid propellant combustion; many topics in this area are not included due to space limitations”。

目录：

Chemical Kinetics, Keith J. Laidler

出版信息：Pearson Education Inc., 3rd Edition, 1987 年

说明：

目录：

Chemical Kinetics and Reaction Dynamics, Paul L. Houston

出版信息：Dover Publications, Inc., 1st Edition, 2001 年

说明：

目录：

Chemically Reacting Flow: Theory, Modeling, and Simulation, Robert J. Kee, Michael E. Coltrin, Peter Glarborg, and Huayang Zhu

出版信息：John Wiley & Sons, Inc., 2nd Edition, 2018 年
说明：有基于该书第一版的中文翻译版（由史翊翔、蔡宁生及王雨晴翻译，清华大学出版社出版），该书前言提到：“This book is written to assist engineers and scientists who are working to design, improve, or optimize chemically reacting flow processes. Although the general subject of chemically reacting flow is quite broad, the intent here is rather more narrowly focused. The content is particularly concerned with laminar, internal flows, often with heterogeneous chemistry at the reactor surfaces. The emphasis is motivated by applications such as thin-film processing and combustion. Nevertheless, since the theoretical and computational development in the book is grounded in fundamental principles, the reader should be well prepared to extend the concepts into new applications. The writing is intended to be in a form that can be used either as reference material or in an educational setting”。
目录：

Cleaner Combustion: Developing Detailed Chemical Kinetic Models,

Frédérique Battin-Leclerc, John M. Simmie, and Edward Blurock

出版信息：Springer-Verlag, 1st Edition, 2013 年
说明：
目录：
1 Introduction
2 Modeling Combustion with Detailed Kinetic Mechanisms
3 Automatic Generation of Detailed Mechanisms
4 Specificities Related to Detailed Kinetic Models for the Combustion of Oxygenated Fuels Components
5 Multistep Kinetic Model of Biomass Pyrolysis
6 Speciation in Shock Tubes
7 Rapid Compression Machines
8 Jet-Stirred Reactors
9 Tubular Flow Reactors
10 Flame Studies of Oxygenates
11 Formation and Characterization of Polyaromatic Hydrocarbons
12 Laser Diagnostics for Selective and Quantitative Measurement of PAHs and Soot
13 Characterization of Soot
14 An Advanced Multi-Sectional Method for Particulate Matter Modeling in Flames.
15 Modelling Soot Formation: Model of Particle Formation
16 Investigation and Improvement of Reaction Mechanisms Using Sensitivity Analysis and Optimization
17 Mechanism Reduction to Skeletal Form and Species Lumping
18 Time-Scale Splitting-Based Mechanism Reduction
19 Storage of Chemical Kinetic Information
20 Calculation of Molecular Thermochemical Data and Their Availability in Databases
21 Statistical Rate Theory in Combustion: An Operational Approach
22 Primary Products and Branching Ratios for Combustion Multi-Channel Bimolecular Reactions from Crossed Molecular Beam Studies
23 Kinetic Studies of Elementary Chemical Steps with Relevance in Combustion and Environmental Chemistry
24 Shock Tube Studies of Combustion Relevant Elementary Chemical Reactions and Submechanisms

Coal Combustion and Gasification, L. Douglas Smoot, Philip J. Smith

出版信息：Springer, 1st Edition, 1985 年

说明：

目录：

Combustion, Irvin Glassman, Richard A. Yetter, and Nick G. Glumac

出版信息：Elsevier, 5th Edition, 2015 年
说明：燃烧经典教科书。该书前言提及：“For the fifth edition of Combustion, the approach taken of providing students and practicing professionals with the fundamental physical and chemical principles of combustion has not changed from the previous editions of the book. The emphasis remains on clarity of concepts and on elaborating upon the physical insights essential to understanding”。

目录：

Combustion and Mass Transfer, D Brian Spalding

出版信息：Pergamon Press, 1st Edition, 1979 年

说明：

目录：

Combustion Chemistry, W. C. Gardiner, Jr.

出版信息：Springer-Verlag, 1st Edition, 1984 年
说明：
目录：

Combustion, Flames and Explosions of Gases, Bernard Lewis, Guenther von Elbe

出版信息：Harcourt Brace Jovanovich, Academic Press, 3rd Edition, 1987 年
说明：燃烧经典著作。有中文翻译版（由王方翻译，中国建筑工业出版社出版）。该书前言提到："…the basic purpose... (is) to provide the chemist, physicist, and engineer with the scientific basis for understanding
combustion phenomena."。

目录：

Combustion: From Basics to Applications, Maximilian Lackner, Árpád B. Palotás, and Franz Winter

出版信息：Wiley-VCH, 1st Edition, 2013 年

说明：

目录：

Combustion Instability, M. S. Natanzon, F. E. C. Culick

出版信息：American Institute of Aeronautics and Astronautics, Inc., 1st Edition, 1986 年
说明：
目录：

Combustion Phenomena: Selected Mechanisms of Flame Formation, Propagation, and Extinction, Jozef Jarosinski, Bernard Veyssiere

出版信息：Taylor & Francis Group, LLC., 1st Edition, 2009 年

该书前言提及：“This book is a supplementary source of knowledge on combustion, to facilitate the understanding of fundamental processes occurring in flames during their formation, propagation, and extinction. The characteristic feature of the book lies in the presentation of selected types of flame behavior under different initial and boundary conditions”。

目录：

Combustion: Physical and Chemical Fundamentals, Modeling and Simulation, Experiments, Pollutant Formation, J. Warnatz, U. Maas, and R.W. Dibble

出版信息：Springer, 3rd Edition, 2006 年

该书前言提及：“The book has evolved from a lecture series (of J. Warnatz) on combustion at Stuttgart University. The lectures were intended to provide first-year graduate students (and advanced undergraduates) with a basic background in combustion. Such a course was needed since students of combustion arrive with a wide variety of backgrounds, including physics, aerodynamics, and atmospheric science”。

目录：

Combustion Physics, Chung K. Law

出版信息：Cambridge University Press, 1st Edition, 2006 年

说明：包含普林斯顿大学研究生燃烧课两学期课程内容。前八章部分内容可用于本科生课程。

目录：

Combustion Theory: The Fundamental Theory of Chemically Reacting Flow Systems, Forman A Williams

出版信息：The Benjamin/Cummings Publishing Company, Inc., 2nd Edition, 1985 年
说明：燃烧经典著作。有中文翻译版（其中之一由庄逢辰和杨本濂翻译，科学出版社出版）。

目录：

Combustion Waves and Fronts in Flows, Paul Clavin

出版信息：Cambridge University Press, 1st Edition, 2016 年

说明：由应用数学家写的燃烧理论专著。该书前言提及：“Combustion is a fascinating phenomenon coupling complex chemistry to transport mechanisms and nonlinear fluid dynamics. This book provides an up-to-date and comprehensive presentation of the nonlinear dynamics of combustion waves and other non-equilibriumenergetic systems. The major advances in this field have resulted from analytical studies of simplified models performed in close relation with carefully controlled laboratory experiments. The key to understanding the complex phenomena is a systematic reduction of the complexity of the basic equations”。

目录：

Computational Models for Turbulent Reacting Flows, Rodney O. Fox

出版信息：Cambridge University Press, 1st Edition, 2003 年

该书前言提到：“In setting out to write this book, my main objective was to provide a reasonably complete introduction to computational models for turbulent reacting flows for students, researchers, and industrial end-users new to the field. The focus of the book is thus on the formulation of models as opposed to the numerical issues arising from their solution”。

目录：

Detonation: Theory and Experiment, Wildon Fickett, William C. Davis

出版信息：Dover Publications, Inc., 1st Edition, 1979 年
说明：爆轰经典专著，有中文翻译版（由薛鸿陆等译，原子能出版社出版）。

目录：

Dust Explosion Dynamics, Russell A. Ogle

出版信息：Butterworth-Heinemann of Elsevier, 1st Edition, 2016 年

说明：

目录：

Dust Explosions in the Process Industries, Rolf K. Eckhoff

出版信息：Gulf Professional Publishing of Elsevier, 3rd Edition, 2003 年

说明：

目录：

Dynamics of Combustion Systems, A. K. Oppenheim

出版信息：Springer, 2nd Edition, 2008 年

说明：

目录：

Fifteen Lectures on Laminar and Turbulent Combustion, N. Peters

出版信息：ERCOFTAC Summer School, Aachen, Germany, Draft version, 1992 年
该书前言提及：“This text is a revised version of the material prepared for a lecture series at the ERCOFTAC-summer school at Aachen 1992. It was intended as an introduction to the fundamentals of combustion science with the aim to supply the basic notions and equations for more detailed numerical exercises in calculating combustion phenomena.”。

目录：

Flame and Combustion, J. F. Griffiths, J. A. Barnard

出版信息：Springer, 3rd Edition, 1995 年

该书前言提及："…the book should be suitable for final year undergraduates and as an introductory book about combustion phenomena for those involved in research and development in a wide range of disciplines"。

目录：

Fluid Dynamics and Transport of Droplets and Sprays, William A. Sirignano

出版信息：Cambridge University Press, 2nd Edition, 2010 年
说明：

目录：

Fundamental Aspects of Combustion, Amable Liñán, Forman A. Williams

出版信息：Oxford University Press, 1st Edition, 1993 年
说明：

目录：

Fundamentals of Combustion, Roger A. Strehlow

出版信息：International text book company, 1st Edition, 1968 年
说明：该书前三章不同于其它教材。

目录：

Fundamentals of Combustion Processes, Sara McAllister, Jyh-Yuan Chen, and A. Carlos Fernandez-Pello

出版信息：Springer, 1st Edition, 2011 年

该书前言提及：“The book is based on lectures given by the authors through the years in a senior elective undergraduate combustion class in the Department of Mechanical Engineering at the University of California, Berkeley”。

目录：

Fundamentals of Fire Phenomena, James G. Quintiere

出版信息：John Wiley & Sons, LTD, 1st Edition, 2006 年
说明：有中文翻译版（由杜建科、王平及高亚萍翻译，化学工业出版社出版）

目录：

Fundamentals of Premixed Turbulent Combustion, Andrei Lipatnikov

出版信息：Taylor & Francis Group, LLC, 1st Edition, 2012 年

说明：

目录：

Fundamentals of Turbulent and Multiphase Combustion, Kenneth Kuan-yun Kuo, Ragini Acharya

出版信息：John Wiley & Sons, Inc., 1st Edition, 2012 年

来自该书前言：“Due to these ongoing developments and advancements, theoretical modeling and numerical simulation hold great potential for future solutions of problems. In these two new books, we have attempted to integrate the fundamental theories of turbulence, combustion, and multiphase phenomena as well as experimental techniques, so that readers can acquire a firm background in both contemporary and classical approaches. The first book volume is called *Fundamentals of Turbulent and Multiphase Combustion*; the second is called *Applications of Turbulent and Multiphase Combustion*. The first volume can serve as a graduate-level textbook that covers the area of turbulent combustion and multiphase reacting flows as well as material that builds on these fundamentals. This volume also can be useful for research purpose. It is oriented toward the theories of combustion, turbulence, multiphase flows, and turbulent jets. Whenever appropriate, experimental setups and results are provided.”。

目录：

Gas-Phase Combustion Chemistry, W. C. Gardiner Jr. (editor)

出版信息：Springer, 2ed Edition, 2000 年

说明：

目录：

Gas Turbine Combustion: Alternative Fuels and Emissions, Arthur H. Lefebvre, Dilip R. Ballal

出版信息：Taylor and Francis Group, LLC, 3rd Edition, 2010 年

该书前言提及：“The book has a clear purpose; it is directed primarily toward those who design, manufacture, and operate gas turbines in applications ranging from aeronautical to power generation. It serves as a graduate-level textbook, design manual, and research reference in the field of gas turbine combustion. The text is essentially self-contained and assumes only a modest prior knowledge of physics and chemistry”。

目录：

Internal Combustion Engine Fundamentals, John B.LHeywood

出版信息：McGraw-Hill, 1st Edition, 1988 年
说明：内燃机燃烧学经典教材。

目录：

Introduction to Physics and Chemistry of Combustion: Explosion, Flame, Detonation, Michael Liberman

出版信息：Springer, 1st Edition, 2008 年
说明：

目录：

Irreversible Phenomena: Ignitions, Combustion and Detonation Waves,

Kunio Terao

出版信息：Springer, 1st Edition, 2007 年
说明：

目录：

Lectures on Mathematical Combustion, J.D. Buckmaster, G.S.S. Ludford

出版信息：The Universities Press (Belfast) Ltd of Northern Ireland, 1st Edition, 1983 年
说明：应用数学家写的燃烧专著。

目录：

Nonsteady Flame Propagation, George Markstein

出版信息：Pergamon Press, 1st Edition, 1964 年

说明：

目录：

Numerical Simulation of Reactive Flow, Elaine S. Oran, Jay P. Boris

出版信息：Cambridge University Press, 2nd Edition, 2001 年
说明：燃烧数值模拟方面的专著。

目录：

Principles of Combustion, Kenneth Kuan-yun Kuo

出版信息： John Wiley & Sons, Inc., 2nd Edition, 2005 年

说明：内含非常详细燃烧基本概念介绍以及控制方程推导与总结。有中文翻译版，适合本科生课程。

目录：

Radiative Heat Transfer in Turbulent Combustion Systems: Theory and Applications, Michael F. Modest

出版信息：Springer, 1st Edition, 2016 年
说明：燃烧热辐射方面的专著。

目录：

The Detonation Phenomenon, John H. S. Lee

出版信息：Cambridge University Press, 1st Edition, 2008 年
说明：爆轰方面的专著，有中文翻译版（由林志勇、吴海燕及林伟翻译，国防工业出版社出版）。

目录：

The Gas Dynamics of Explosions, John H. S. Lee

出版信息：Cambridge University Press, 1st Edition, 2016 年
说明：

目录：

The Mathematical Theory of Combustion Explosions, Ya. B. Zel'dovich

出版信息： New York : Consultants Bureau, 1st Edition, 1985 年

说明：燃烧经典专著。

目录：

Theoretical and Numerical Combustion, Thierry Poinsot, Denis Veynante

出版信息：R.T. Edwards, Inc., 2nd Edition, 2012 年
说明：研究生燃烧课教材。

目录：

Theory of Laminar Flames, J.D. Buckmaster, G. S. S. Ludford

出版信息：Cambridge University Press, 1st Edition, 2008 年
说明：由应用数学家写的燃烧专著。

目录：

Transport Processes in Chemically Reacting Flow Systems, Daniel E. Rosner

出版信息：Dover Publications, Inc., 2nd Edition, 2000 年
说明：输运方面的专著。

目录：

Turbulent Combustion, N. Peters

出版信息：Cambridge University Press, 1st Edition, 2000 年
说明：湍流燃烧经典专著。

目录：

Turbulent Combustion Modeling: Advances, New Trends and Perspectives, Tarek Echekki, Epaminondas Mastorakos

出版信息：Springer, 1st Edition, 2011 年

说明：

目录：

Turbulent Reacting Flows, P. A. Libby, F. A. Williams

出版信息：Springer, 1st Edition, 1980 年

说明：

目录：

Unsteady Combustor Physics, Tim C. Lieuwen

出版信息：Cambridge University Press, 1st Edition, 2012 年
说明：有中文翻译版（由孙明波和樊超翻译，国防工业出版社出版）

目录：

高等车用内燃机原理（下册），蒋德明，陈长佑，杨嘉林，杨中极

出版信息：西安交通大学出版社，2006 年

说明：该书前言提到：“上册以提高内燃机性能为中心，重点介绍近期国内外在提高内燃机整体性能方面的先进技术和正在研究的热点问题，比较侧重于实用。…下册重点介绍与内燃机燃烧和有害排放物生成机理有关的基础化学和物理问题及其应用，比较侧重于理论方面的深人探讨”。

目录：

高等燃烧学，岑可法，姚强，骆仲泱，李绚天

出版信息：浙江大学出版社，2002 年

说明：

目录：

极度燃烧，范宝春

出版信息：国防工业出版社，2018 年

说明：该书前言提到：“高马赫数、高雷诺数和高压高温下的燃烧称为极度燃烧(Extreme Combustion)”。

目录：

理论爆轰物理，孙锦山，朱建士

出版信息：国防工业出版社，1995 年

说明：

目录：

燃烧理论和化学流体力学，周力行

出版信息：科学出版社，1986 年
说明：已经不再出版，有电子版

目录：

燃烧理论与燃烧设备 徐旭常，吕俊复，张海

出版信息：科学出版社，2012 年

说明：

目录：

燃烧学，傅维镳

出版信息：高等教育出版社，1989 年
说明：已经不再出版，有电子版

目录：

燃烧学，严传俊，范玮

出版信息：西北工业大学出版社，第 3 版，2016 年

说明：

目录：

湍流气粒两相流动和燃烧的理论与数值模拟，周力行

出版信息：科学出版社，1994 年

说明：

目录：