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Combustion of Solid Propellants Double-base propellants are used in small and medium sized rockets and thus exposed to varying ambient temperatures. The sensitivity of the motor operation to temperature depends upon the propellant burning rate sensitivity to both the temperature and the pressure.

Combustion of Solid Propellants - Stanford University

Buy Solid Propellant Chemistry, Combustion, and Motor Interior Ballistics (Progress in Astronautics & Aeronautics) by Yang, Vigor, Brill, T.B., Ren, W.Z. (ISBN: 9781563474422) from Amazon's Book Store. Everyday low prices and free delivery on eligible orders.

Solid Propellant Chemistry, Combustion, and Motor Interior ...

This volume brings together the world's most highly regarded scientists in the field of solid rocket propulsion. Thirty-nine papers present in-depth coverage on a wide range of topics including: advanced materials and nontraditional formulations; the chemical aspects of organic and inorganic components in relation to decomposition mechanisms, kinetics, combustion, and modeling; safety issues ...

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Solid Propellant Chemistry, Combustion, and Motor Interior ...

The authors are among the most highly regarded scientists in the field of solid rocket propuls; ion, and come from the countries of Australia, Canada, China, France, Japan, Russia, and the United States. The volume embraces three subject areas: 1) solid propellant chemistry, synthesis, and formulation, 2) combustion of solid energetic materials, and 3) motor interior ballistics.

Solid Propellant Chemistry, Combustion, and Motor Interior ...

Solid Propellant Chemistry, Combustion, and Motor Interior Ballistics - Progress in Astronautics and Aeronautics, Volume 185 This book brings together the world’s most highly regarded scientists in the field of solid rocket propulsion and provides in-depth coverage on a wide range of topics including:

Solid Propellant Chemistry, Combustion, and Motor Interior ...

Combustion in solid propellant motors involves exceedingly complex reactions taking place in the solid, liquid, and gas phases of heterogeneous mixtures. Not only are the physical and chemical processes occurring during solid propellant combustion not fully understood, but analytical combustion models have remained oversimplified and unreliable.

Solid Propellant Combustion and Its Stability

Solid Propellant Chemistry, Combustion, And Motor Interior Ballistics. Topics rockets, missile, chemistry, HMX, RDX, GAP, propellants Collection opensource Language English. From a technical point of view, a wide range of topics is covered in some depth. Most of the papers deal with advanced materials and nontraditional formulations.

Solid Propellant Chemistry, Combustion, And Motor Interior ...

Combustion of Solid Propellants Double-base propellants are used in small and medium sized rockets and thus exposed to varying ambient temperatures. The sensitivity of the motor operation to temperature depends upon the propellant burning rate sensitivity to both the temperature and the pressure.

Combustion of Solid Propellants

The combustion of a solid propellant is characterized by the way its surface regresses once it begins to burn. The burning rate is the distance traveled by the flame front per unit of time, measured normally to the burning surface. The burning rate is obtained by the strand useful length and the duration of the firing.

Solid Propellants - an overview | ScienceDirect Topics

Solid Propellant Chemistry Combustion and Motor Interior Ballistics 1999 (Progress in Astronautics & Aeronautics) [Yang, Professor Vigor, Brill, Thomas B, Ren, Wu-Zhen, Zarchan, Paul] on Amazon.com. *FREE* shipping on qualifying offers. Solid Propellant Chemistry Combustion and Motor Interior Ballistics 1999 (Progress in Astronautics & Aeronautics)

Solid Propellant Chemistry Combustion and Motor Interior ...

Solid Propellant Chemistry, Combustion, and Motor Interior Ballistics, Volume 185. Vigor Yang, Thomas B. Brill, Wu-Zhen Ren, Paul Zarchanm, 2000,. p. 288 ff. Double-base propellants (DB) give minimal smoke with medium-high performance, Isp ~ 235 s. Adding aluminum gives Isp ~ 250 s with visible smoke.

physical chemistry - Reaction involved in Combustion of ...

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Solid Propellant Chemistry, Combustion, and Motor Interior ...

The two main classes of solid propellant, namely double base and composite are then discussed. The relationships between burning rate and chemical composition for both classes are considered, and the effects of operating pressure, temperature, and erosion on propellant burning are reviewed.

The Chemistry of Propellants | ScienceDirect

the dynamical behavior observed in solid propellant rocket motors. Here we are concerned with the theoretical framework in which chamber dynamics are investigated; and certain aspects of combustion dynamics represented by the response function which is ultimately the macroscopic realization of the propellant chemistry and combustion.

AIAA-98-3704 Influences of Combustion Dynamics on Linear ...

Unsteady combustion phenomena are of great interest to the solid propellant community and have been studied for many years. One area of particular interest is the relation between fluctuating pressure and propellant combustion. Pressure fluctuations, such as acoustics, naturally occur inside solid rocket combustion chambers during motor firing.

Modeling the unsteady combustion of solid propellants with ...

Solid Propellant Chemistry, Combustion, and Motor Interior BallisticsYang et al Progress in Astronautics and Aeronautics series Vol 185. American Institute of Aeronautics and Astronautics, 1801 Alexander Bell Drive, Reston, VA 20191, USA. 2000. 988pp.

The book is a treatise on solid propellants in nine chapters, covering the history, chemistry, energetics, processing and characterization aspects of composite solid propellants, internal ballistics, advanced solid propellants, safety, quality and reliability and homogenous or double base propellants. The book also traces the evolution of solid propellant technology in ISRO for launch vehicles and sounding rockets. There is a detailed table of contents, expanded index, glossary, exhaustive references and questions in each chapter. It can be used as a textbook for science and engineering students, as a reference book for researchers and as a companion to scientists and engineers working in the research, development and production areas of solid propellants.

This book, a translation of the French title Technologie des Propergols Solides, offers otherwise unavailable information on the subject of solid propellants and their use in rocket propulsion. The fundamentals of rocket propulsion are developed in chapter one and detailed descriptions of concepts are covered in the following chapters. Specific design methods and the theoretical physics underlying them are presented, and finally the industrial production of the propellant itself is explained. The material used in the book has been collected from different countries, as the development of this field has occurred separately due to the classified nature of the subject. Thus the reader not only has an overall picture of solid rocket propulsion technology but a comprehensive view of its different developmental permutations worldwide.

The Chemistry of Propellants is a collection of papers and comments presented at the meeting on “The Chemistry of Propellants , held in Paris, France on June 8-12, 1959, organized by the AGARD Combustion and Propulsion Panel. This book is organized into six parts encompassing 25 chapters that serve as an introduction to the broad and important subject of propellant chemistry and propulsion applications. The first part deals with the sources, availability, and comparative costing of propulsion system. The second and third parts discuss the theoretical, thermodynamic, and experimental aspects of liquid and solid propellants. The fourth part examines the main problems concerning preparation, storage, and use of propellants for ramjet, while the fifth part looks into the factors leading to deposits in jet engines and some of the consequences of their existence. The sixth part covers the advantages of the high energy chemical propellants, including fluorine and hydrogen. Combustion and propulsion scientists and researchers will find this book beneficial.

Mechanics and Chemistry of Solid Propellants is a collection of papers presented at the Fourth Symposium on Naval Structural Mechanics, held in Purdue University, Lafayette, Indiana on April 19-21, 1965 under the joint sponsorship of the Office of Naval Research and Purdue University. The contributors consider the development and utilization of solid propellants. This book is composed of 22 chapters that cover the many branches of studies that touch upon the science and technology of solid propellants. Some chapters present the mathematical and physical theories underlying the behavior of solid propellants, such as nonlinear and linear theories of viscoelasticity. Other chapters are devoted to advances in solid propellant binder chemistry; combustion and its effects on the structural integrity of the solid propellant grain; and design and other engineering problems. This book will be of value to scientists, engineers, and researchers who are interested in the diverse applications of solid propellants.

Solid Propellant Rocket Research