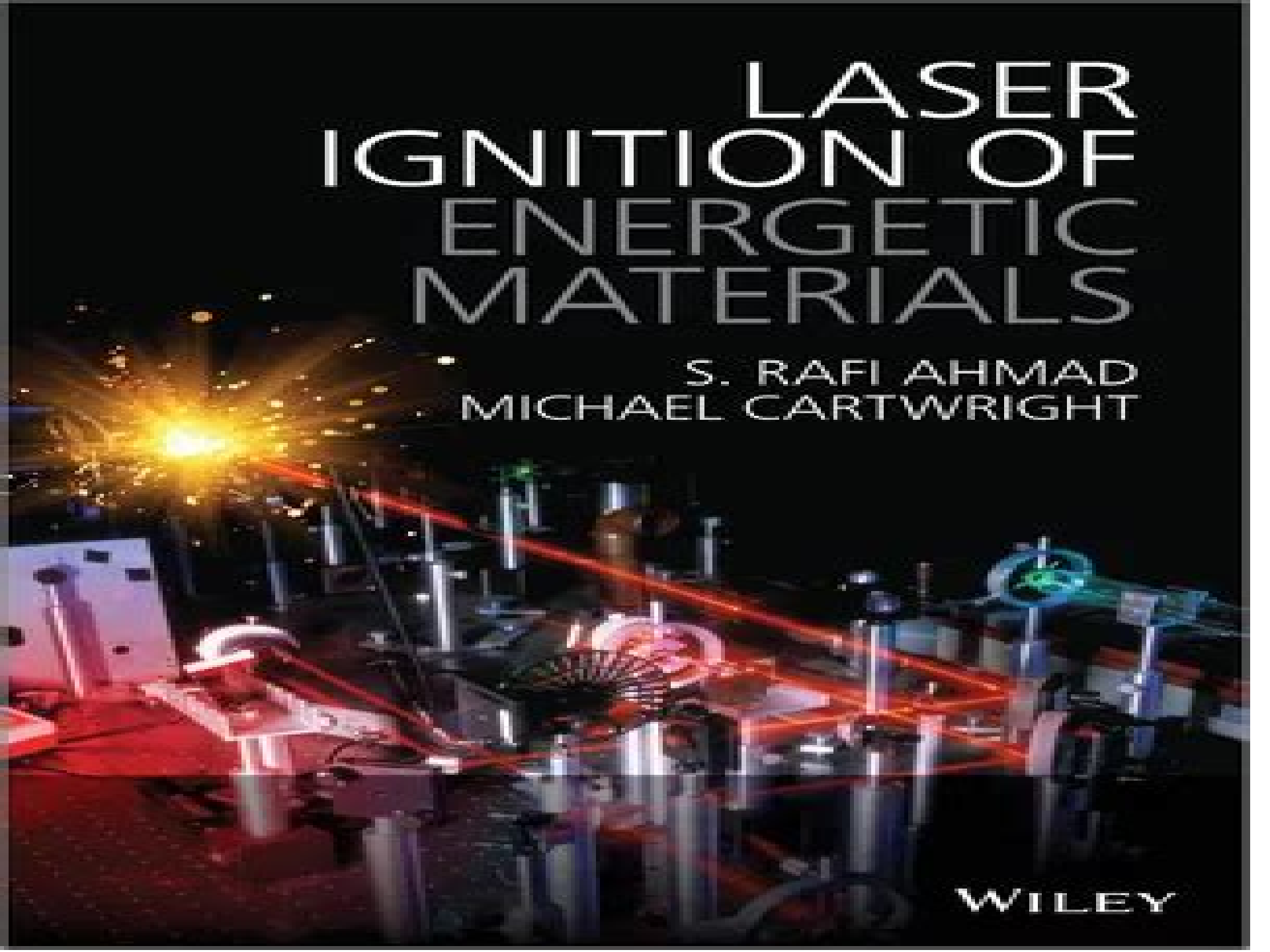


LASER IGNITION OF ENERGETIC MATERIALS

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Laser Ignition Of Energetic Materials

Thomas M. Klapötke



Laser Ignition Of Energetic Materials:

Laser Ignition of Energetic Materials S Rafi Ahmad, Michael Cartwright, 2014-11-10 The book gives an introduction to energetic materials and lasers properties of such materials and the current methods for initiating energetic materials The following chapters and sections highlight the properties of lasers and safety aspects of their application It covers the properties of in service energetic materials and also materials with prospects of being used as insensitive ammunitions in future weapon or missiles systems or as detonators in civilian mining applications Because of the diversity of the topics some sections will naturally separate into different levels of expertise and knowledge *The Laser Ignition of Energetic Materials*

Stephen George Goveas, 1997 *Laser Ignition of Energetic Materials* S Rafi Ahmad, Michael Cartwright, 2014-08-27 The book gives an introduction to energetic materials and lasers properties of such materials and the current methods for initiating energetic materials The following chapters and sections highlight the properties of lasers and safety aspects of their application It covers the properties of in service energetic materials and also materials with prospects of being used as insensitive ammunitions in future weapon or missiles systems or as detonators in civilian mining applications Because of the diversity of the topics some sections will naturally separate into different levels of expertise and knowledge **Thermal**

and Radiative Transfer Analysis of Laser Ignition of Energetic Materials, 2010 Chemistry of High-Energy Materials Thomas M. Klapötke, 2015-11-13 Chemistry of High Energy Materials continues in this new and revised 3rd edition to provide fundamental scientific insights into primary and secondary explosives propellants rocket fuel and pyrotechnics The contents of the previous edition were meticulously updated and recent research developments added to this graduate level textbook Applications in military and civil fields are discussed Especially environmental issues caused by lead based primary explosives perchlorates in pyrotechnic formulations and modern signal flare compositions are discussed and current research presented Further additions include the understanding of the mechanism and continuing development of laser ignition methods techniques for the characterization of detonators and their output as well as principles and effects of underwater explosions New in the 3rd Edition Revised and updated content new study problems and questions Extended examination of the application of ionic liquids in the field and hydrodynamics Intended for advanced students in chemistry materials science and engineering as well as to all those working in defense technology This book makes a nice addition to the shelf of everyone involved with energetic materials As such it is recommended as a very useful reference for both students and experienced readers Ernst Christian Koch on the 2nd Edition in Propellants Explosive Pyrotechnics 16 2011 Upcoming titles by Thomas M Klap tke Energetic Materials Encyclopedia January 2018 Thomas M Klap tke CSci CChem FRSC was from 1995 until 1997 Ramsay Professor of Chemistry at the University of Glasgow in Scotland Since 1997 he has held the Chair of Inorganic Chemistry at LMU Munich **Innovative Energetic Materials: Properties, Combustion Performance and Application** WeiQiang Pang, Luigi T. DeLuca, Alexander A. Gromov, Adam S. Cumming, 2020-07-04 This book focuses on the

combustion performance and application of innovative energetic materials for solid and hybrid space rocket propulsion It provides a comprehensive overview of advanced technologies in the field of innovative energetic materials and combustion performance introduces methods of modeling and diagnosing the aggregation agglomeration of active energetic metal materials in solid propellants and investigates the potential applications of innovative energetic materials in solid and hybrid propulsion In addition it also provides step by step solutions for sample problems to help readers gain a good understanding of combustion performance and potential applications of innovative energetic materials in space propulsion This book serves as an excellent resource for researchers and engineers in the field of propellants explosives and pyrotechnics

Nitrogen-Rich Energetic Materials Michael Gozin, Leonid L. Fershtat, 2022-12-12 Nitrogen Rich Energetic Materials Provides in depth and comprehensive knowledge on both the chemistry and practical applications of nitrogen rich energetic materials Energetic materials a class of material with high amounts of stored chemical energy include explosives pyrotechnics and propellants Initially used for military applications nitrogen rich energetic materials have become important in the civil engineering and aerospace sectors they are increasingly used in commercial mining and construction as well as in rocket propulsion Making these nitrogen rich energetic materials safer more powerful and more cost effective requires a thorough understanding of their chemistry physics synthesis properties and applications Nitrogen Rich Energetic Materials presents a detailed summary of the development of nitrogen rich energetic materials over the past decade and provides up to date knowledge on their applications in various areas of advanced engineering Edited by a panel of international experts in the field this book examines the chemistry of pentazoles fused ring and laser ignitable nitrogen rich compounds polynitrogen and tetrazole based energetic compounds and more The text also introduces applications of nitrogen rich energetic materials in energetic polymers and metal organic frameworks as pyrotechnics materials for light and smoke and in oxadiazoles from precursor molecules This authoritative volume Presents in depth chapters written by leading experts in each sub field covered Offers a systematic introduction to new and emerging applications of nitrogen rich energetic materials such as in computational chemistry Discusses recent advances in nitrate ester chemistry with focus on propellant applications Discusses green and eco friendly approaches to nitrogen rich compounds Nitrogen Rich Energetic Materials is an important resource for researchers academics and industry professionals across fields including explosives specialists pyrotechnicians materials scientists polymer chemists laser specialists physical chemists environmental chemists chemical engineers and safety officers

Metal-Fluorocarbon Based Energetic Materials Ernst-Christian Koch, 2012-03-26 Metal Fluorocarbon Based Energetic Materials This exciting new book details all aspects of a major class of pyrolants and elucidates the progress that has been made in the field covering both the chemistry and applications of these compounds Written by a pre eminent authority on the subject from the NATO Munitions Safety Information Analysis Center MSIAC it begins with a historical overview of the development of these materials followed by a thorough discussion of their ignition combustion and radiative

properties The next section explores the multiple facets of their military and civilian applications as well as industrial synthetic techniques The critical importance of the associated hazards namely sensitivity stability and aging are discussed in detail and the book is rounded off by an examination of the future of this vital and expanding field The result is a complete guide to the chemistry manufacture applications and required safety precautions of pyrolants for both the military and chemical industries From the preface This book fills a void in the collection of pyrotechnic literature it will make an excellent reference book that all researchers of pyrolants and energetics must have Dr Bernard E Douda Dr Sara Pliskin NAVSEA Crane IN USA

Energetic Materials Veera Boddu, Paul Redner, 2010-12-07 Due to safety reasons energetic materials are rarely studied at research facilities Therefore theoretical and empirical models are needed for studying the behavior of these materials This book provides insight into the depth and breadth of theoretical and empirical models and experimental techniques being developed for energetic materials It presents the latest research by US Department of Defense engineers and scientists along with their academic and industrial research partners Some of the topics and simulations discussed can be applied to other classes of chemical compounds such as those used in the pharmaceutical industry

High Explosives, Propellants, Pyrotechnics Ernst-Christian Koch, 2021-01-18 This dictionary contains 739 entries with about 1400 references to the primary literature Details on the composition performance sensitivity and other pertinent properties of Energetic Materials such as High Explosives Propellants Pyrotechnics as well as important ingredients such as Oxidizers Fuels Binders and Modifiers are given and presented partly in over 180 tables with more than 240 structural formulas In detail the dictionary gives elaborate descriptions of 460 Chemical Substances 170 Pyrotechnic Compositions 360 High Explosive and Propellant Formulations In addition the basic physical and thermochemical properties of 435 pure substances elements compounds typically occurring as ingredients or reaction products are given too 150 Figures schemes and diagrams explain Applications Test methods Scientific facilities and finally Individuals closely tied with the development and investigation of Energetic Materials The book is intended for readers with a technical or scientific background active in governmental agencies research institutes trade and industry concerned with the procurement development manufacture investigation and use of Energetic Materials such as High Explosives Propellants Pyrotechnics Fireworks and Ammunition The book serves both as a daily reference for the experienced as well as an introduction for the newcomer to the field

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