

1. Record Nr.	UNINA9910810763203321
Autore	Koch Ernst-Christian
Titolo	Metal-fluorocarbon based energetic materials / / Ernst-Christian Koch
Pubbl/distr/stampa	Weinheim [Germany], : Wiley-VCH, 2012
ISBN	9786613639974 9783527644193 3527644199 9781280663048 1280663049 9783527644186 3527644180 9783527644209 3527644202
Edizione	[2nd ed.]
Descrizione fisica	1 online resource (362 p.)
Disciplina	662.2
Soggetti	Fluorocarbons Combustion Thermodynamics Explosives 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 index.
Nota di contenuto	Metal-Fluorocarbon Based Energetic Materials; Contents; Foreword; Preface; Acknowledgment; 1 Introduction to Pyrolants; References; 2 History; 2.1 Organometallic Beginning; 2.2 Explosive & Obscurant Properties; 2.3 Rise of Fluorocarbons; 2.4 Rockets Fired Against Aircraft; 2.5 Metal/Fluorocarbon Pyrolants; References; Further Reading; 3 Properties of Fluorocarbons; 3.1 Polytetrafluoroethylene (PTFE); 3.2 Polychlorotrifluoroethylene (PCTFE); 3.3 Polyvinylidene Fluoride (PVDF); 3.4 Polycarbon Monofluoride (PMF); 3.5 Vinylidene Fluoride-Hexafluoropropene Copolymer; 3.5.1 LFC-1 3.6 Vinylidene Fluoride-Chlorotrifluoroethylene Copolymer3.7 Copolymer of TFE and VDF; 3.8 Terpolymers of TFE, HFP and VDF; 3.9

Summary of chemical and physical properties of common fluoropolymers; References; 4 Thermochemical and Physical Properties of Metals and their Fluorides; References; 5 Reactivity and Thermochemistry of Selected Metal/Fluorocarbon Systems; 5.1 Lithium; 5.2 Magnesium; 5.3 Titanium; 5.4 Zirconium; 5.5 Hafnium; 5.6 Niob; 5.7 Tantalum; 5.8 Zinc; 5.9 Cadmium; 5.10 Boron; 5.11 Aluminium; 5.12 Silicon; 5.13 Calcium Silicide; 5.14 Tin; References 6 Ignition and Combustion Mechanism of MTV6.1 Ignition and Pre-Ignition of Metal/Fluorocarbon Pyrolants; 6.2 Magnesium-Grignard Hypothesis; References; 7 Ignition of MTV; References; 8 Combustion; 8.1 Magnesium/Teflon/Viton; 8.1.1 Pressure Effects on the Burn Rate; 8.1.2 Particle Size Distribution and Surface Area Effects on the Burn Rate; 8.2 Porosity; 8.3 Burn Rate Description; 8.4 Combustion of Metal-Fluorocarbon Pyrolants with Fuels Other than Magnesium; 8.4.1 Magnesium Hydride; 8.4.2 Alkali and Alkaline Earth Metal; 8.4.2.1 Lithium; 8.4.2.2 Magnesium-Aluminium Alloy; 8.4.3 Titan 8.4.4 Zirconium8.4.5 Zinc; 8.4.6 Boron; 8.4.7 Magnesium Boride, MgB₂; 8.4.8 Aluminium; 8.4.9 Silicon; 8.4.10 Silicides; 8.4.10.1 Dimagnesium Silicide, Mg₂Si; 8.4.10.2 Calcium Disilicide; 8.4.10.3 Zirconium Disilicide; 8.4.11 Tungsten-Zirconium Alloy; 8.5 Underwater Combustion; References; 9 Spectroscopy; 9.1 Introduction; 9.2 UV-VIS Spectra; 9.2.1 Polytetrafluoroethylene Combustion; 9.2.2 Magnesium/Fluorocarbon Pyrolants; 9.2.3 MgH₂, MgB₂, Mg₃N₂, Mg₂Si/Mg₃Al₂/Fluorocarbon Based pyrolants; 9.2.4 Silicon/PTFE Based Pyrolants; 9.2.5 Boron/PTFE/Viton Based Pyrolants; 9.3 MWIR Spectra 9.3.1 Polytetrafluoroethylene Combustion9.3.2 Magnesium/Fluorocarbon Combustion; 9.3.3 MgH₂, MgB₂, Mg₃N₂, Mg₂Si/Fluorocarbon Based Pyrolants; 9.3.4 Si/Fluorocarbon Based Pyrolants; 9.3.5 Boron/PTFE/Viton Based Pyrolants; 9.4 Temperature Determination; 9.4.1 Condensed-Phase Temperature; 9.4.2 Gas-Phase Temperature; References; 10 Infrared Emitters; 10.1 Decoy Flares; 10.2 Nonexpendable Flares; 10.2.1 Target Augmentation; 10.2.2 Missile Tracking Flares; 10.3 Metal-Fluorocarbon Flare Combustion Flames as Sources of Radiation; 10.3.1 Flame Structure and Morphology; 10.3.2 Radiation of MTV 10.4 Infrared Compositions

Sommario/riassunto

This exciting 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 radioactive properties. The next section explores the multiple facets of their military and civilian applications, as well as indu
