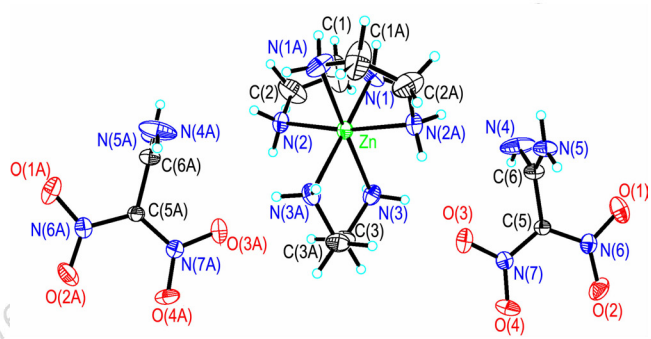
Synthesis, Crystal Structure and Thermal Behavior of [Zn(en)$_3$](FOX-7)$_2$

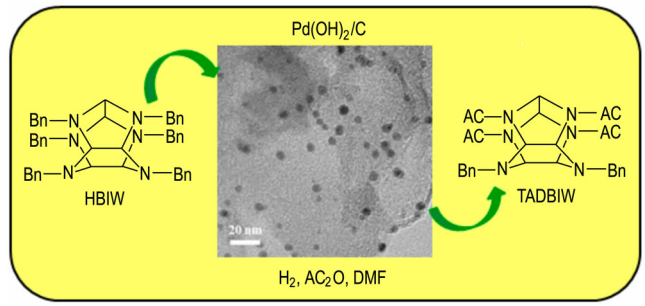


YUAN Zhi-feng, ZHANG Yu, GAO Zhe, XU Kang-zhen, SONG Ji-rong, ZHAO Feng-Qi

Chinese Journal of Energetic Materials, 2014, 22(4): 436–440

[Zn(en)$_3$](FOX-7)$_2$ was firstly synthesized and characterized. Its thermal decomposition behavior was studied by TG-DTG and DSC methods.

Preparation of Pd(OH)$_2$/C Catalyst for Hydrogenolytic Debenzylation of Hexabenzylhexaazaisowurtzitane

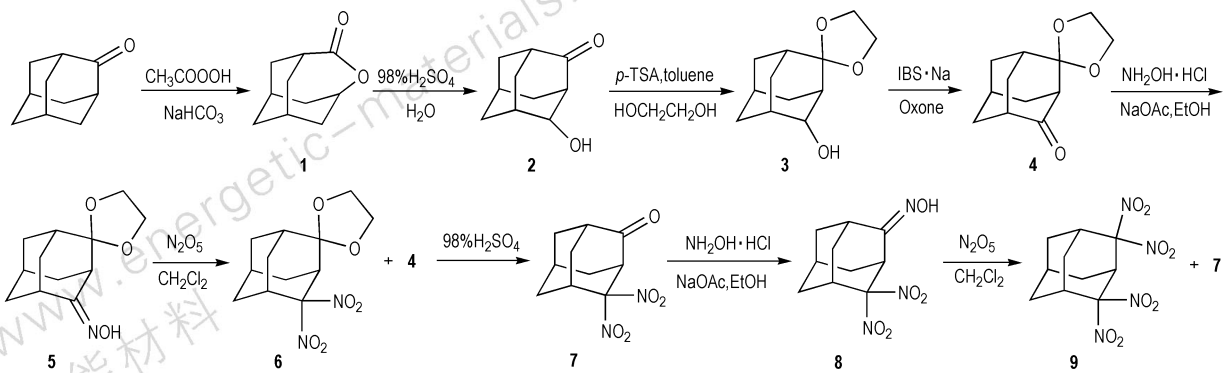


QIU Wen-ge, LIU Hu-bing, DONG Kai, SUN Cheng-hui, PANG Si-ping, BAI Guang-mei, ZI Xue-hong, ZHANG Gui-zhen, HE Hong

Chinese Journal of Energetic Materials, 2014, 22(4): 441–446

A highly active Pd(OH)$_2$/C catalyst for the hydrogenolytic debenzylation of hexabenzylhexaazaisowurtzitane (HBIW) was prepared through soaking-deposition method.

Synthesis and Characterization of 2,2,4,4-Tetranitroadamantane

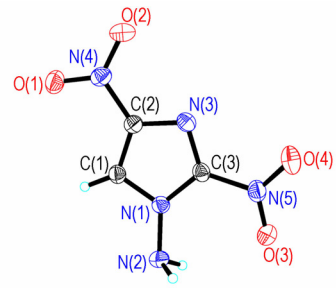


SUN Lu, LING Yi-fei, ZHANG Ping-ping, LUO Jun

Chinese Journal of Energetic Materials, 2014, 22(4): 447–453

2,2,4,4-Tetranitroadamantane was synthesized from adamantan-2-one via a nine-step process including Baeyer-Villiger oxidation, lactone rearrangement, ketalization, oxidation and nitration.

Synthesis, Crystal Structure and Thermal Property of 1-Amino-2, 4-dinitroimidazole

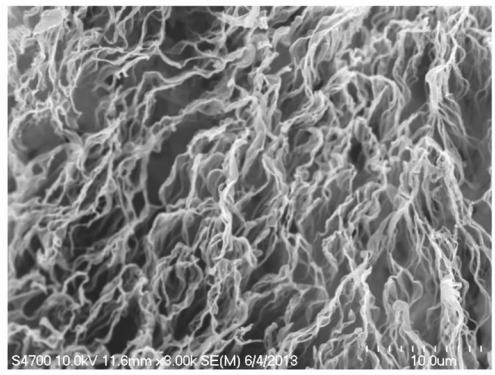


JING Mei, SHU Yuan-jie, WANG Jun, MA Qing, ZHANG Xiao-yu, HUANG Yi-gang

Chinese Journal of Energetic Materials, 2014, 22(4): 454–457

1-Amino-2, 4-dinitroimidazole (ADNI) was synthesized, and its crystal structure and thermal property were characterized by X-ray diffraction and DSC, respectively.

Synthesis, Characterization of 1, 2, 3, 4-Erythrityl Tetranitrate

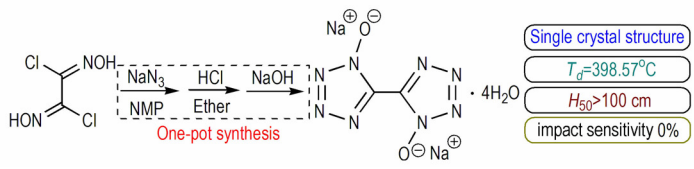


SONG Xiao-lan, WANG Yi, WANG Jing-yu, ZHANG Jing-lin, JIAO Qin-jie

Chinese Journal of Energetic Materials, 2014, 22(4): 458–461

1,2,3,4-Erythrityl tetranitrate (ETN) was prepared by using erythritol as raw material, fuming nitric acid and concentrated sulfuric acid as nitrating agent and catalyst respectively. Its micro morphology, structure, thermal decomposition, detonation performance and sensitivities were studied by optical microscope, scanning electron microscope (SEM), X-ray diffraction (XRD), differential scanning calorimetry (DSC) and sensitivity tests.

Synthesis, Crystal Structure and Properties of Sodium 5,5′-Bistetrazole-1,1′-diolate Tetrahydrate

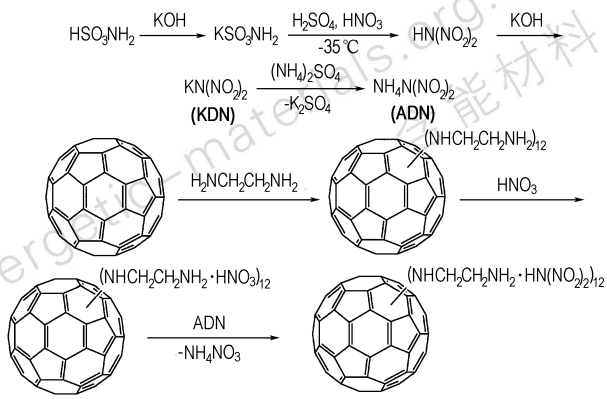


HUANG Hai-feng, YANG Jun, YANG Pu, LI Xiao-qiang, LI Hui, YU Yan

Chinese Journal of Energetic Materials, 2014, 22(4): 462–466

Sodium 5,5′-bistetrazole-1,1′-diolate tetrahydrate (SBTD · $4H_2O$) was synthesized by one-pot using dichloroglyoxime as starting material, and was characterized by infrared spectrum (IR), elemental analysis (EA), single crystal X-ray diffraction, differential scanning calorimetry (DSC)-thermogravimetric (TG) analysis and scanning electron microscopy (SEM).

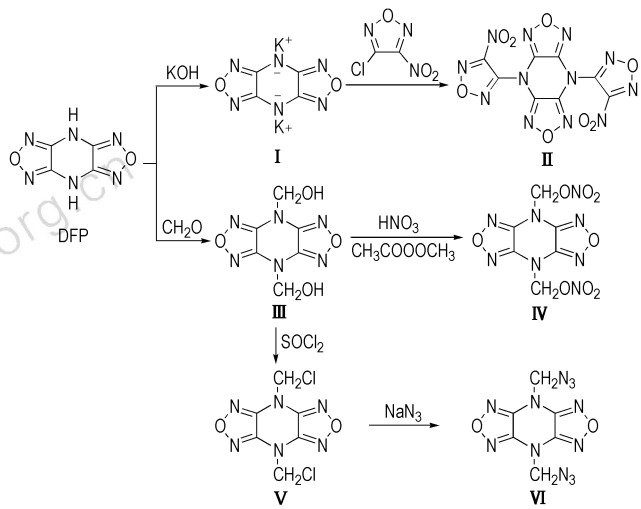
Synthesis, Characterization and Thermal Decomposition of Fullerene-ethylenediamine Dinitramide



Fullerene ethylenediamine dinitramide was synthesized via reaction of fullerene ethylenediamine nitrate and ammonium dinitramide (ADN). Its structure was characterized by UV-vis, FT-IR, elemental analysis and XPS. Its thermal decomposition characteristics were investigated by TG-DTG, DSC and DTA.

CHEN Bai-li, JIN Bo, PENG Ru-fang, ZHAO Feng-qi,
YI Jian-hua, GUAN Hui-juan, BU Xing-bing, CHU Shi-jin
Chinese Journal of Energetic Materials, **2014**, **22**(**4**): **467–472**

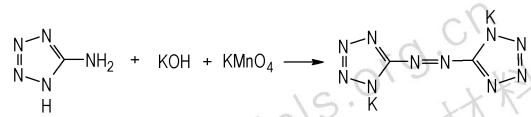
Synthesis, Characterization and Performance of Difurazanopyrazine Derivatives



Several difurazanopyrazine derivatives were synthesized using 4*H*,8*H*-difurazano[3,4-*b*;3′,4′-*e*]pyrazine (DFP) as starting material and their structures were characterized by IR, NMR, and elemental analysis. The thermal properties and calculated detonation performance were also studied.

LIU Ning, LIAN Peng, LAI Wei-peng, LI Hui, WANG Bo-zhou
Chinese Journal of Energetic Materials, **2014**, **22**(**4**): **473–477**

Synthesis and Characterization of Potassium 5, 5′-Azotetrazolate and its Effect on Reducing Muzzle Flame and Smoke

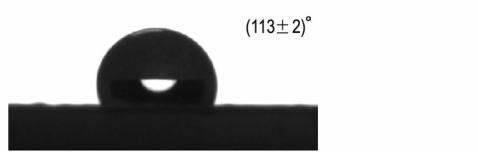


CHEN Bin, WANG Qiong-lin, JI Yue-ping, WANG Ying-lei, WEI Lun, LIU Bo, LIU Wei-xiao

Chinese Journal of Energetic Materials, 2014, 22(4): 478–481

A potassium 5, 5′-azotetrazolate (PZT) was synthesized via alkaline oxidation reaction using 5-aminotetrazole as a starting materials. The high-nitrogen flame inhibitor PZT has better effect on reducing muzzle flame and smoke than the common flame inhibitor K_2SO_4.

Preparation and Characterization of Hydrophobic Surface of Ammonium Perchlorate

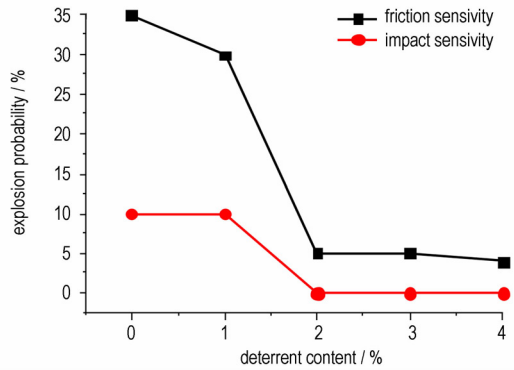


WU Hao, LI Zhao-qian, PEI Chong-hua

Chinese Journal of Energetic Materials, 2014, 22(4): 482–486

AP/PS/FAS composite particles and AP/PS/FAS composite film were prepared via composite of AP and PS and processing of FAS (fluorosilane).

Design and Performance of an Insensitive Cast PBX with High Gurney Energy

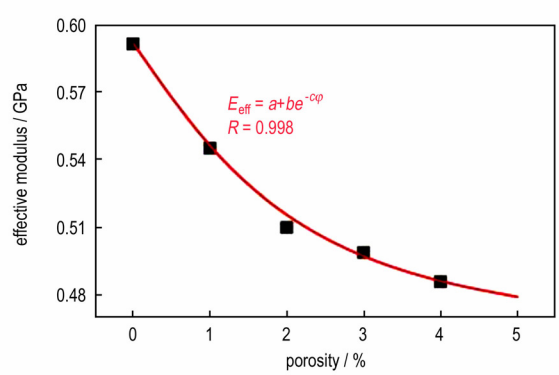


LUO Guan, YIN Ming, ZHENG Bao-hui, TANG Yin, LIU Xu-wang, DAI Xiao-gan, HAN Yong, HUANG Hui, WU Kui-xian

Chinese Journal of Energetic Materials, 2014, 22(4): 487–492

A new HMX based cast polymer bonded explosive (PBX) GO-1 with high solid loading content was designed, and a linear relationship was obtained by fitting the data between detonation velocity and HMX content. Both the influence of HMX particle property and the composite deterrent content on the mechanical sensitivity were investigated.

Influence of Pore Properties on Effective Elastic Modulus of TATB Based Polymer Bonded Explosive



WEI Xing-wen, LI Ming, LI Jing-ming, TU Xiao-zhen, ZHOU Mei-lin

Chinese Journal of Energetic Materials, 2014, 22(4): 493–497

Finite Element Modeling(FEM) model of TATB based polymer bonded explosive(PBX) with microstructure similar to the true one were obtained by a representative volume element(RVE) method. Two-dimension RVE, considering the fraction and distribution of the fillers and pores was established. Effects of pore structure parameters(pore size, pore space distribution and porosity) on the effective elastic modulus of TATB based PBX were analyzed.

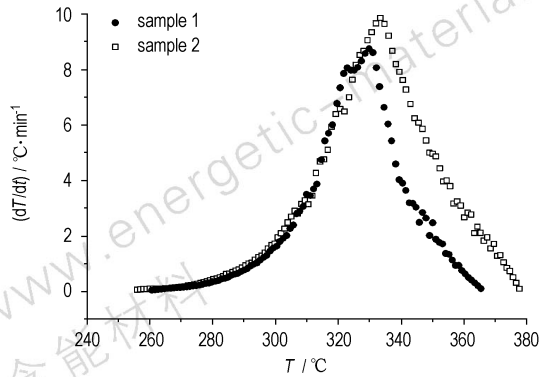
Energy Characteristics and Regression Rate Measurement of Paraffin-based Fuel

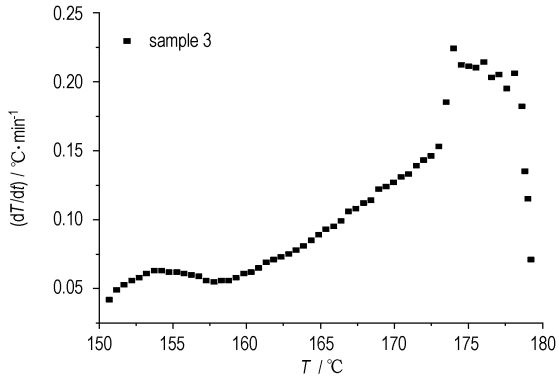
HU Song-qi, WU Guan-jie, LIU Huan, WANG Peng-fei

Chinese Journal of Energetic Materials, 2014, 22(4): 498–502

The energy characteristics of paraffin-based fuel and HTPB fuel were calculated and experiment analysis was done for the rectangle solid-gas hybrid engine.

Effect of Nitric-Sulfuric Mixed Acid on Thermal Stability of Mononitrotoluene



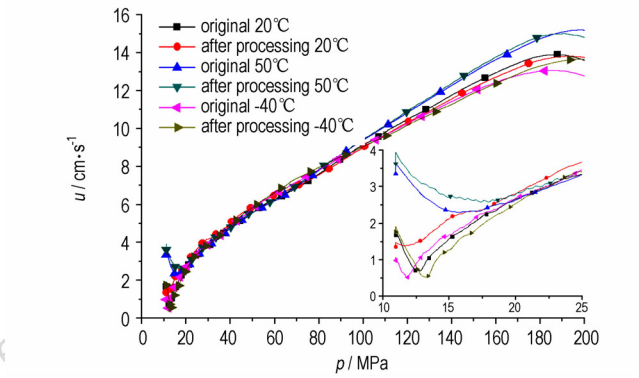


ZHOU Yi-shan, CHEN Li-ping, CHEN Wang-hua, YANG Ting

Chinese Journal of Energetic Materials, 2014, 22(4): 503–508

Thermal decomposition characteristics and thermal safety of mononitrotoluene(MNT) with nitric-sulfuric mixed acid were studied by DSC and ARC.

Performance of Surface Micro-porous Structure Triple base Propellants

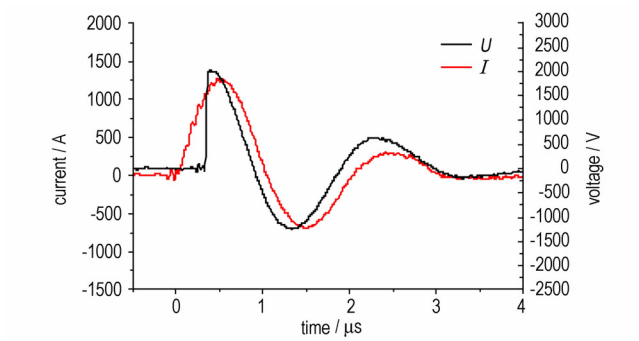


ZHANG Fu-yang, XUE Yao-hui, LIAO Xin, WANG Ze-shan, WANG Bin-bin

Chinese Journal of Energetic Materials, 2014, 22(4): 509–513

The burning rate-pressure time(*u*-*p*) curves of the surface layer micro-porous structure triple base propellant and original triple base propellant samples at different temperature were obtained by closed bomb test, and its mechanic performance was studied.

Preparation and Electrical Performance of Exploding Foil in Slapper Detonator

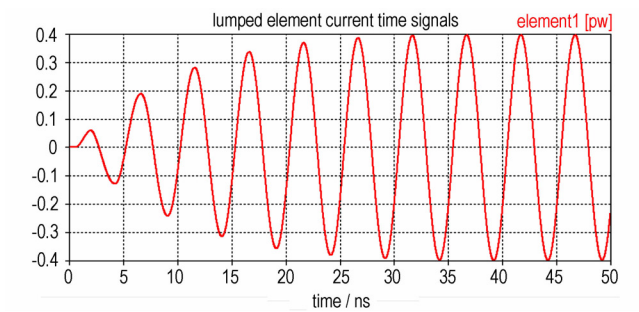


HUANG Na, TANG Hong-pei, HUANG Yin-sheng, HE Yi

Chinese Journal of Energetic Materials, 2014, 22(4): 514–520

The electrical explosion performances in three kinds of exploding foils Cu, Cu/Au and Cu/Al/Ni were studied by designed test circuit.

Relationship between Continuous Electromagnetic Wave Frequency and EED Induced Current

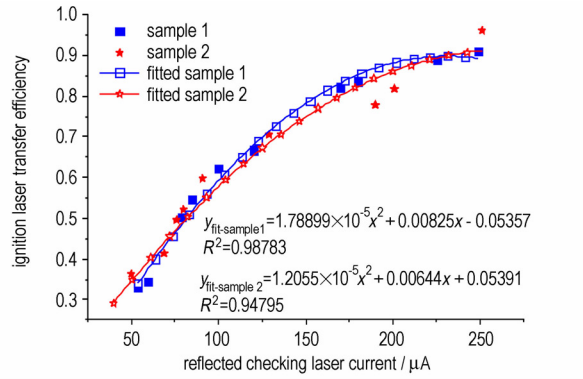


BAI Ying-wei, REN Wei, LIU Ju-peng, ZHONG Jian-wu

Chinese Journal of Energetic Materials, 2014, 22(4): 521–524

To get the response rules and some important parameters affecting the EED response, the relationship between the induced current and frequency in the electromagnetic environment of electro-explosive device was studied by using a continuous electromagnetic wave environment simulation system and an induced current testing device.

Light Path Checking Technology of Laser Ignited Initiators with Single Optical Fiber

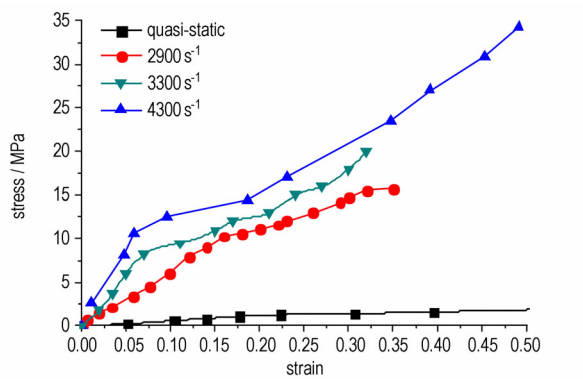


ZHU Ming-shui, XING Zhong-ren, JIANG Ming, JIANG Xiao-hua

Chinese Journal of Energetic Materials, 2014, 22(4): 525-528

A checking system with single optical fiber was established, which was mainly constituted of a light circulator and a optical film to reflect and check laser and to transfer ignition laser between initiators and optical linker.

Numerical Simulation and Mechanical Behavior of Base Bleed Grain at High Strain Rate

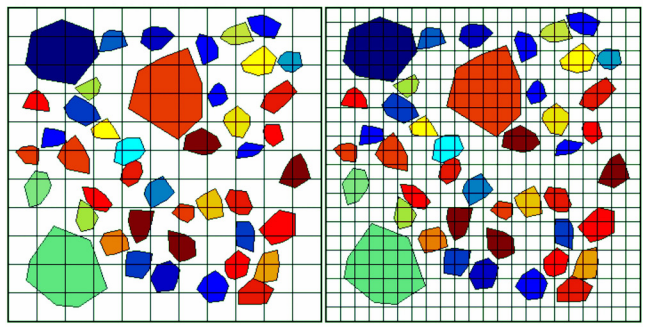


LIU Zhi-lin, WANG Xiao-ming, YAO Wen-jin, LI Wen-bin, CHEN Hao, LIU Xiao-Jun

Chinese Journal of Energetic Materials, 2014, 22(4): 529-534

Aluminum split Hopkinson pressure bar (SHPB) with diameter of 14.5 mm was used to perform the uniaxial compression tests on base bleed grain specimens with diameter of 10 mm at the strain rate of 10^3 s^{-1}.

Prediction Model for Thermal Conductivity of PBX Based on Fractal Approach

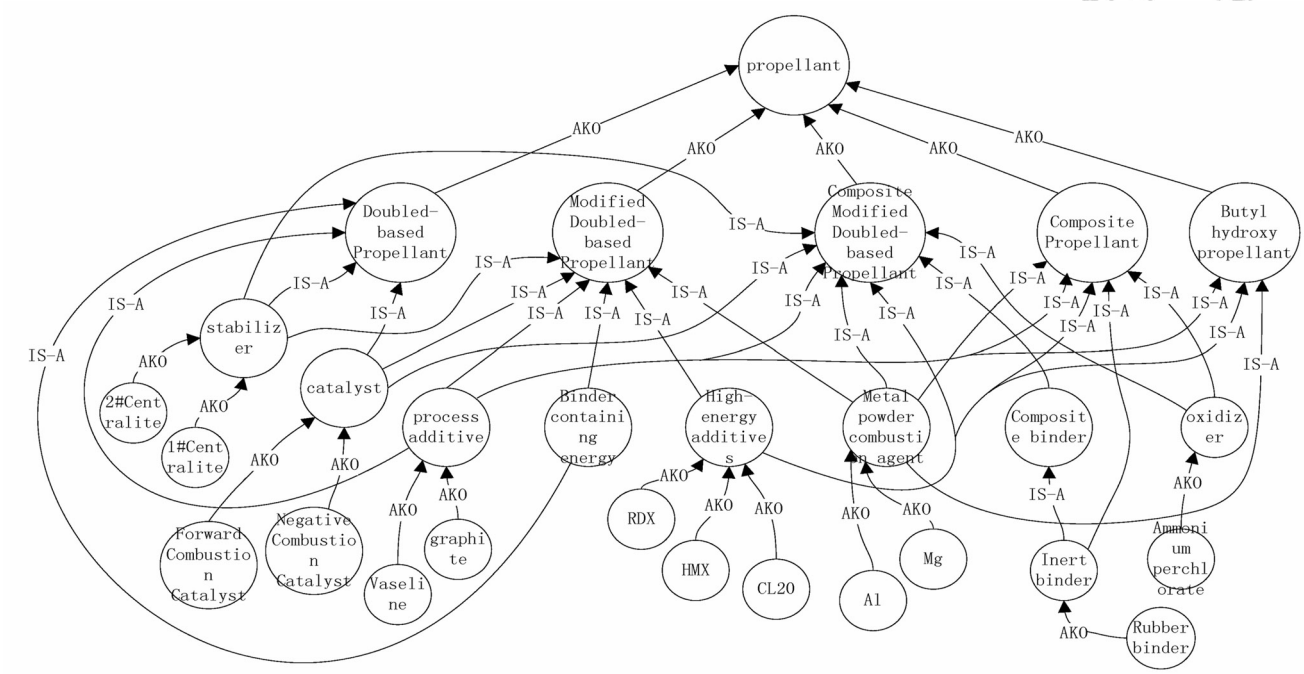


ZHOU Xiao-yu, WANG Xi, WEI Xing-wen, HUANG Zhong, ZHOU Mei-ling

Chinese Journal of Energetic Materials, 2014, 22(4): 535-541

A fractal model of thermal conductivity was established based on the fractal theory and random distribution mass fraction of polymer bonded explosive (PBX) particles. The thermal conductivity of TATB based PBX with different mass fraction was calculated.

Knowledge Representation of Propellant Formula Design Based on Semantic Network



LI Zhi-qin, ZHAO Hong-an, ZHAO Feng-qi, LEI Yuan-yuan, GUAN Bo-tong, XU Si-yu, NIU Xiao-xia, LI Guan-lin, GAO Hong-xu, LI Shang-wen

Chinese Journal of Energetic Materials **,2014,22(4): 542-547**

Semantic network knowledge representation method was used to set up a semantic network system for propellant formula knowledge and to study the structure of this system stored in the database.

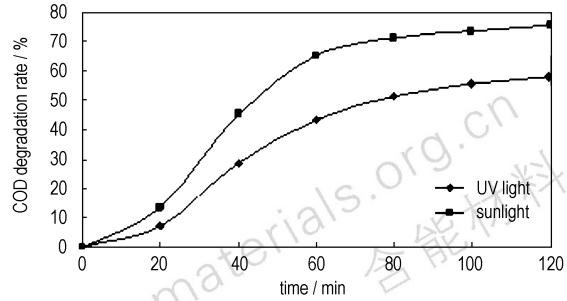
Separation of TNT from Discarded or Obsolete TNT/RDX/Al Explosives by Melting Method

DING Yu-kui, WU Yi, LIU Guo-qing, WANG Hai-dan, MAN Hai-tao

Chinese Journal of Energetic Materials **,2014,22(4): 548-553**

The molten TNT was separated from the discarded or obsolete TNT/RDX/Al explosive by pressure differential filtration.

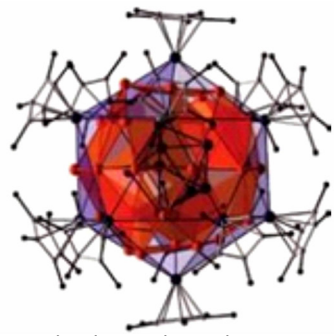
Photocatalytic Degradation of UDMH Wastewater with Nano particles of ZnO/Pd



The nano ZnO/Pd particles with the crystallite size about 41–46 nm were synthesized by hydrothermal method and ethanol-assisted hydrothermal method with Zn^{2+} and Pd^{2+} molar ratio of 100∶0.5, 100∶1, 100∶2. The samples of ZnO/Pd were characterized by X-ray diffraction(XRD), scanning electron microscopy (SEM), energy dispersive X-ray spectrometry (EDS), ultraviolet-visible spectroscopy (UV-vis) and were used in the photocatalysis of unsymnetrical dimethylhydrazine (UDMH) wastewater under UV-light and sun light.

JIA Ying, HE Ya-nan, LIANG Feng-hao, LIU Tian-tian
Chinese Journal of Energetic Materials,2014,22(4): 554–558

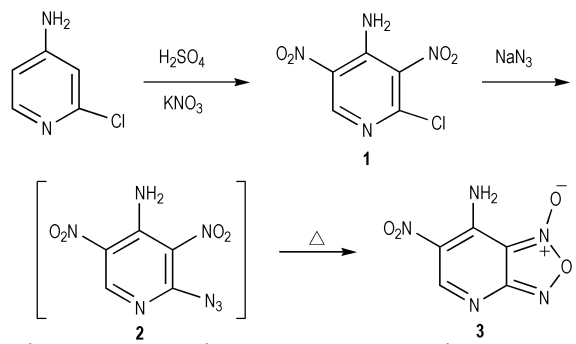
Progress of Structure Characteristics on Several Kinds of Low-valent Aluminum Cluster Complexes



The recent advances in the low-valent aluminum cluster complexes were systematically reviewed, containing organometallic cluster complexes, metalloid aluminum cluster complexes and Al_n^{m-} aluminum cluster complexes with Jellium model. The structure characteristics of the low-valent aluminum cluster complexes were analyzed in the following aspects, such as formation mechanism, coordination mode, performance characteristic and so on.

XUE Lin-jun, BI Yan-gang, REN Hao-yue, QIU Shao-jun, ZHAO Feng-qi, YANG Li, ZHANG Tong-lai
Chinese Journal of Energetic Materials,2014,22(4): 559–571

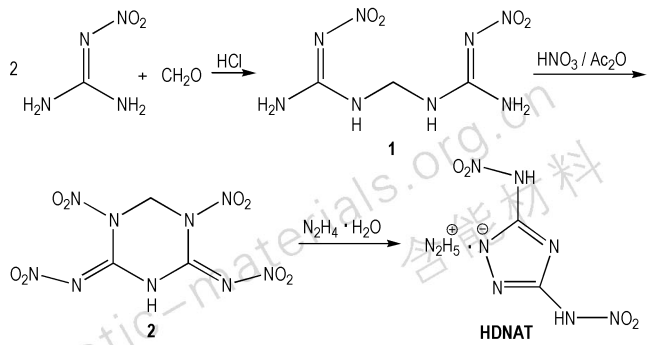
Synthesis and Performance of 7-Amino-6-nitro-[1,2,5]oxadiazolo[3,4-b]pyridine-1-oxide



Using 2-choro-4-aminopyridine as primary material, a new compound 7-amino-6-nitro-[1,2,5]oxadiazolo[3,4-b]pyridine 1-oxide was synthesized by nitration, azide substitution and cyclization reaction. Its structure was confirmed by ^{1}H NMR, ^{13}C NMR, IR, MS and elemental analysis.

MA Cong-ming, WANG Yong-bin, LIU Zu-liang, YAO Qi-zheng
Chinese Journal of Energetic Materials,2014,22(4): 572–575

A Novel Energetic Material Hydrazinium 3,5-Dinitroamino-1,2,4-triazole: Synthesis and Properties



A novel energetic material, hydrazinium 3,5-dinitroamino-1,2,4-triazole(HDNAT) was designed and synthesized for the first time via condensation, nitrification and hydrazinolysis reaction. In addition, some main properties of physico-chemistry and detonation for HDNAT were obtained by test or calculation.

ZHOU Cheng, WANG Bo-zhou, HUO Huan, ZHOU Qun, YANG Wei, YE Zhi-hu

***Chinese Journal of Energetic Materials*,2014,22(4): 576-578**