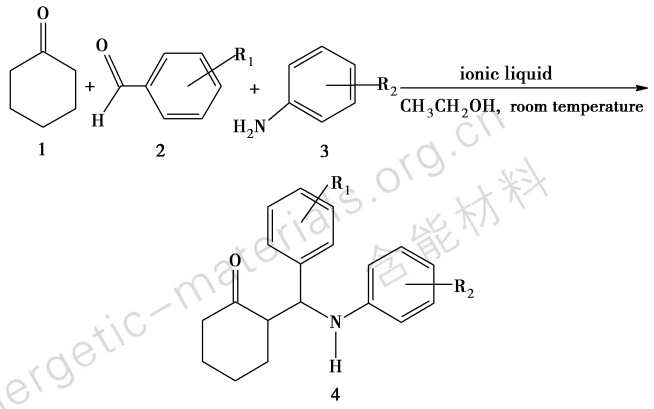
Mannich Reaction Catalyzed by Basic Functionalized Ionic Liquid

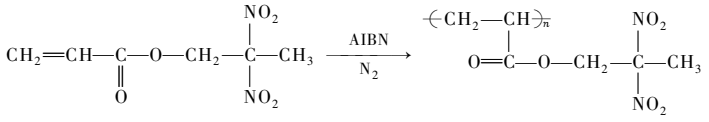


Three-component Mannich-type reaction of cyclohexanone, aromatic aldehydes and aromatic amines was catalyzed by a basic functionalized ionic liquid, 1-butyl-3-methyl- imidazolium hydroxide ([bmim]OH), at room temperature to give various β-amino carbonyl compounds in high yields.

GONG Kai, FANG Dong, SHI Qun-rong, LIU Zu-liang

Chinese Journal of Energetic Materials, 2008, 16(2): 121 – 124

Synthesis and Characterization of Energetic Binder Poly(2,2-dinitropropyl acrylate)

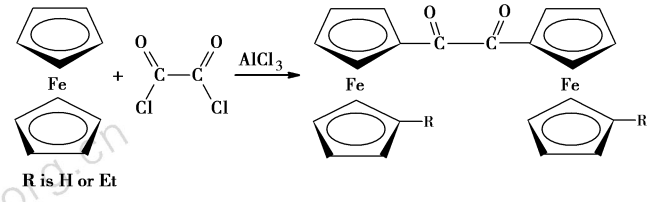


2,2-dinitropropyl acrylate homopolymer (PDNPA) was synthesized by the free radical polymerization. It's structure was confirmed by FTIR, ^{1}HNMR and UV. Thermal behaviors were investigated through DSC and vacuum stability test.

ZHANG Gong-zheng, WANG Fang, FANG Yong-xi, WANG Peng, LI Hai-hua

Chinese Journal of Energetic Materials, 2008, 16(2): 125 – 127

Synthesis and Characterization of Oxalylferrocene Derivatives

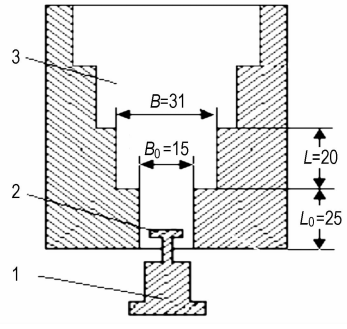


Novel oxalyl bisferrocene derivatives were synthesized as the burning catalyst of AP. The structure of these compounds were characterized by ^{1}HNMR, FT-IR, MS and elemental analysis techniques.

TANG Xiao-ming, LI Zhan-xiong, TANG Song-qing, CHEN Guo-qiang

Chinese Journal of Energetic Materials, 2008, 16(2): 128 – 130

A 2-D Model of Energetic Gas Jet Expansion Process in Liquid and Numerical Simulation

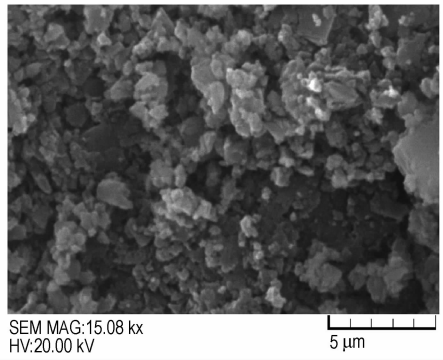


A 2-D model of gas jet expansion process in the stepped-wall chamber was developed. The unsteady process of gas jet interaction with liquid was simulated by the commercial software FLUENT.

QI Li-ting, YU Yong-gang, PENG Zhi-guo, ZHOU Yan-huang

Chinese Journal of Energetic Materials, 2008, 16(2): 131 – 137

Preparation and Characterization of Ultrafine HNS

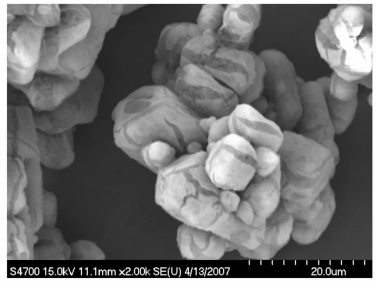


LEI Bo, SHI Chun-hong, MA You-lin, Lü Qiao-li, XU Shuan-lao

Chinese Journal of Energetic Materials, 2008, 16(2): 138 – 141

Ultrafine HNS was obtained by recrystallization and vibration cavity comminute. Their particle size parameters, SEM micrograph, BET specific surface area, DSC curves, and initiation threshold for slapper detonator were measured.

Preparation Technology of Sub-micron HMX/FPM$_{2602}$ Ultra-fine Composite Explosive

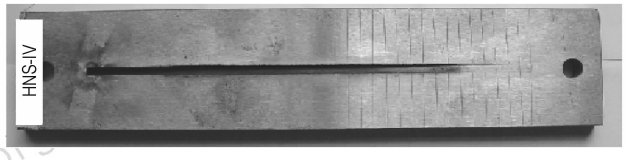


WANG Bao-guo, CHEN Ya-fang, ZHANG Jing-lin

Chinese Journal of Energetic Materials, 2008, 16(2): 142 – 145

The preparation technology of submicron HMX/ FPM$_{2602}$ composite explosive was explored by solution-aqueous suspension technology with ultrasound and supercritical fluids antisolvent (SAS) coating technology.

Critical Thickness of HNS

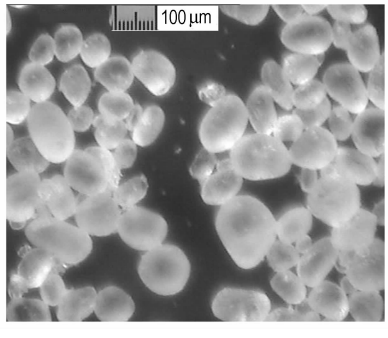


WANG Jian-hua, LIU Yu-cun, LIU Deng-cheng, YU Yan-wu, GUO Feng-bo

Chinese Journal of Energetic Materials, 2008, 16(2): 146 – 148

The critical thickness of hexanitrostilbene (HNS) was measured by wedge shaped charge test; charge of test chose three particle size of HNS respectively were 20 μm, 9 μm, 89 nm at the two different densities.

Crystal Quality and Properties of Spherical HMX



XU Rui-juan, KANG Bin, HUANG Hui, LI Jin-shan, JIANG Yan, HE Fang

Chinese Journal of Energetic Materials, 2008, 16(2): 149 – 152

Crystal quality and properties of spherical HMX such as particle size distribution and shape, particle defects, chemical purity and thermal properties were studied using manifold analysis method.

Hydrogenolysis of Triacetyltribenzylhexaazaisowurtzitane and Tetraacetyldibenzylhexaazaisowurtzitane

HAN Wei-rong, OU Yu-xiang, ZHANG Xue-hong, HUANG Xing, MOU Wei, GAO Yan-lei

Chinese Journal of Energetic Materials, 2008, 16(2): 153 – 155

Tetraacetyldibenzylhexaazaisowurtzitane (TADBIW) was the debenzylation compound of hydrogenolysis of hexabenzylhexaazaisowurtzitane (HBIW), triacetyltribenzylhexaazaisowurtzitane (TATBIW) was the partial debenzylation compound of hydrogenolysis of HBIW.

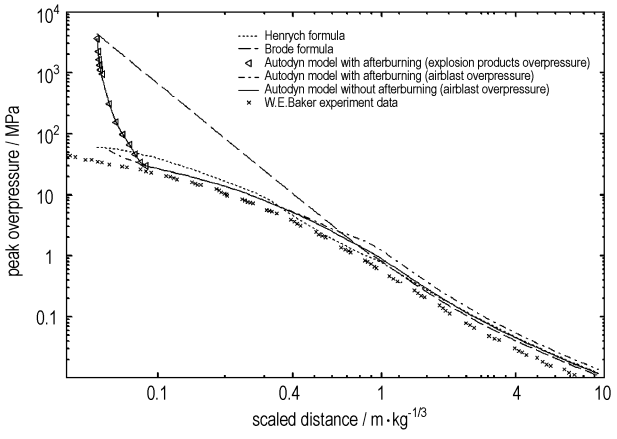
Relationship between Ambient Temperature and Time to Ignition of Exothermic System

WANG Peng, DU Zhi-ming

Chinese Journal of Energetic Materials, 2008, 16(2): 156 – 159

The function of ambient temperature and time to ignition of marginally supercritical system, under uniform and distributed temperatures were worked out. And the definition and calculation with high temperature ignition reliability of energetic materials were given.

Numerical Simulation of TNT Explosion with Post-detonation Burning Effect in Air

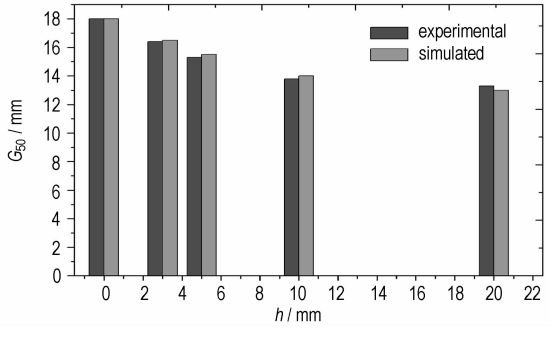


XIN Chun-liang, XU Geng-guang, LIU Ke-zhong, QIN Jian

Chinese Journal of Energetic Materials, 2008, 16(2): 160 – 163

Numerical simulation of TNT explosion in air was performed using AUTODYN software. Post-detonation burning effect in negative oxygen balance explosive was considered in the numerical computing model.

Shock Sensitivity of JO-9159/ECX Composite Charge



HAN Yong, LU Bin, JIANG Zhi-hai, LU Xiao-jun

Chinese Journal of Energetic Materials, 2008, 16(2): 164 – 166

The shock sensitivity of composite charge composed of JO-9159 and ECX was studied by gap test, and was simulated by LS-DYNA finite element method.

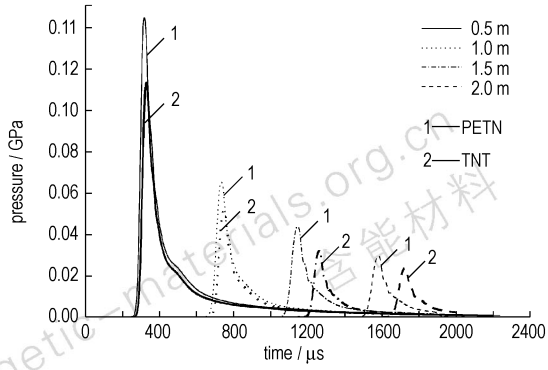
Predicting the Impact Sensitivity of Explosives by Artificial Neural Network

WANG Guo-dong, LIU Yu-cun

Chinese Journal of Energetic Materials, 2008, 16(2): 167 – 170

A new method is introduced for predicting impact sensitivity of some explosives by artificial neural networks.

Numerical Analysis on Energy Output of Underwater Explosion for High Energetic Explosives

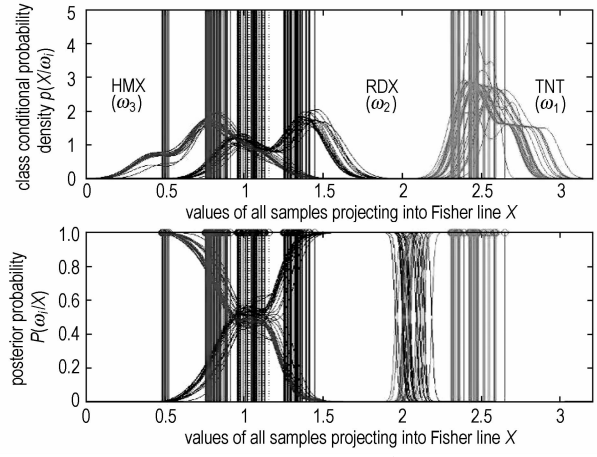


ZHANG Zhi-jiang, XU Geng-guang

Chinese Journal of Energetic Materials, 2008, 16(2): 171 – 174

The coefficients of JWL about detonations were obtained from isentropic expansion data calculated by Kihara-Hikita Tanaka and were programmed. The energy output of underwater explosion for TNT and PETN was calculated.

Pattern Recognition for Images of Explosion Fireball of Condensed Explosives Based on Fisher Criterion

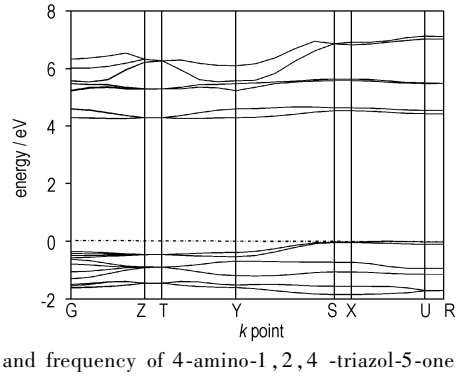


YI Jian-kun, WU Teng-fang, PENG Jian-xiong, ZHAI Guo-feng

Chinese Journal of Energetic Materials, 2008, 16(2): 175 – 179

The distinguishing patterns of three explosives (TNT, RDX, HMX) were obtained from GRB images of explosion fireball.

Theoretical Study on Molecular Structure and Crystal Band Structure of 4-Amino-1,2,4-triazol-5-one



YAN Biao, MA Hai-xia, SONG Ji-rong

Chinese Journal of Energetic Materials, 2008, 16(2): 180 – 184

The geometry and frequency of 4-amino-1,2,4 -triazol-5-one (ATO) were calculated by density-functional theory (DFT) method of the Amsterdam density functional (ADF).

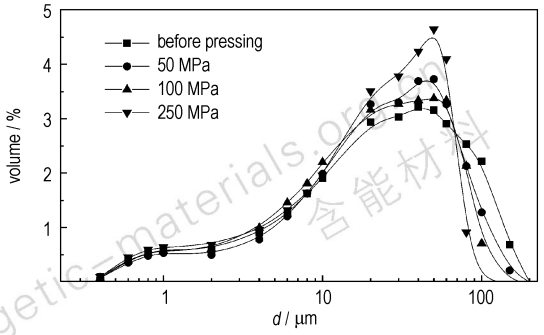
Effects of Low-pressure Heat Treatment on Charge Density and Inner Quality of PBX

LAN Qiong, HAN Chao, YONG Lian, ZHANG Ming

Chinese Journal of Energetic Materials, 2008, 16(2): 185 – 187

Low-pressure heat treatment can release internal stress, increase density, improve inner quality, and restrain growth of pressed PBX charges.

Microstructural Evolution of HMX During Pressing

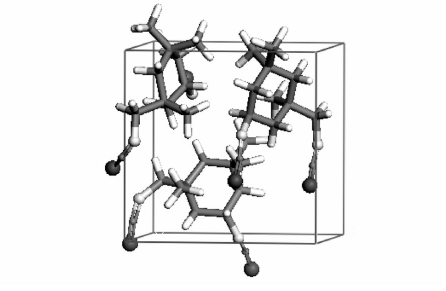


LIANG Hua-qiong, ZHOU Xu-hui, TANG Chang-liang, YANG Yong-lin

Chinese Journal of Energetic Materials, 2008, 16(2): 188 – 190

The microstructural changes of polymer-bonded explosives (PBX) based on HMX were investigated by scanning electron microscopy (SEM).

Molecular Simulation of Solubility Parameter for HTPB Solid Propellants

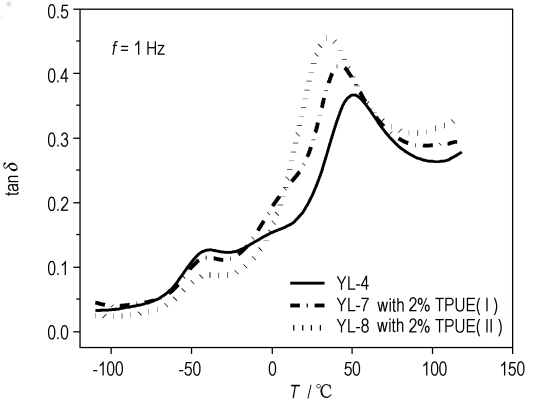


YANG Yue-cheng, JIAO Dong-ming, QIANG Hong-fu, WANG Guang

Chinese Journal of Energetic Materials, 2008, 16(2): 191 – 195

Solubility parameters of bonding agent hydroxy terminated polybutadience (HTPB), conventional plasticizers and curing agent of solid propellant were calculated respectively by Amorphous Cell Dynamics (ACD), Synthia and Blend methods to predict the miscibility of these components.

Effect of Thermoplastic Polyurethane Elastomer on Mechanical Properties of Modified Double-base Propellants

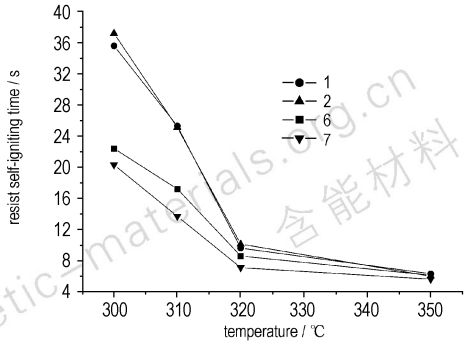


YAO Nan, WANG Jiang-ning, LIU Zi-ru, ZHANG La-ying

Chinese Journal of Energetic Materials, 2008, 16(2): 196 – 200

The effects of thermoplastic polyurethane elastomer (TPUE) on mechanical properties of modified double-base propellants were investigated by dynamic mechanical analyzer (DMA) and tensile strength measurement, and its functional mechanism was analyzed by scanning electron microscope (SEM).

Effects of Fiber on Sensitivity and Spontaneous Combustion of Caseless Ammunition

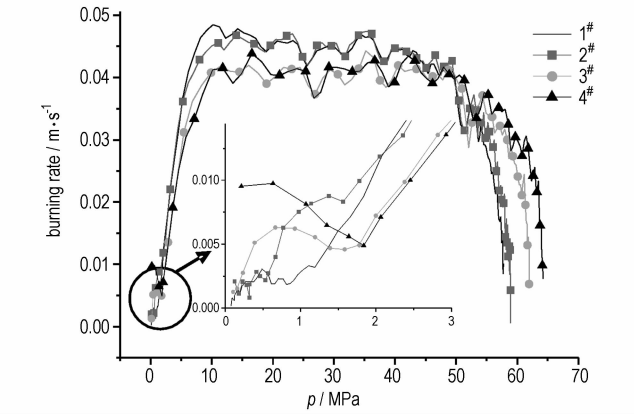


MA Zhong-liang, TIAN Su-ming, LIU You-ping,
XIAO Zhong-liang

Chinese Journal of Energetic Materials, 2008, 16(2): 201 – 203

With the simulating chamber test, the effects of the carbon fiber and chemical cotton linters on resist self-igniting time of casless ammunition were studied.

Investigation on Burning Rate of B/KNO_3 Pellet in Closed Bomb Test



ZHU Ming-shui, HE Bi, JIANG Ming, ZHU He-ping

Chinese Journal of Energetic Materials, 2008, 16(2): 204 – 206

The burning rate of B/KNO_3 was investigated by using closed bomb test system.

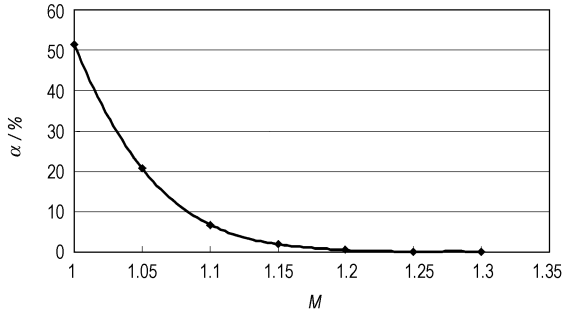
Effect of Oxygen Balance on Combustion Rate of Gas-generating Compositions Containing $KClO_4$/NH_4NO_3

JIN Shao-hua, WANG Wei, SONG Quan-cai

Chinese Journal of Energetic Materials, 2008, 16(2): 207 – 208

The combustion of gas-generating compositions (GGC) including composite oxidants ($KClO_4$, NH_4NO_3) and fuels (methylcellulose, MC; wooden powders, WP) under atmosphere was studied.

Producer Risk Analysis Based on Margin of Firing Reliability for Initiating Explosive Devices



DONG Hai-ping, MU Hui-na

Chinese Journal of Energetic Materials, 2008, 16(2): 209 – 211

Based on sensitivity distribution and the definition of margin of firing reliability for initiating explosive devices given in GJB376, the quantitative relationship between producer risk and margin of firing reliability of initiating explosive devices was presented.

Statistical Analysis of Sensitivity Coefficient of Variation for Mechanical Explosive Devices

MU Hui-na, JIAO Qing-jie, WEN Yu-quan

Chinese Journal of Energetic Materials, 2008, 16(2): 212 – 215

Sensitivity coefficient of variation for D6-2 artillery primer and mechanical explosive devices were obtained by histogram method and Kolmogorov test.

Approximate Lower Limit of Bilateral Reliability of Initiating Explosive Devices

HONG Dong-pao, WEN Yu-quan

Chinese Journal of Energetic Materials, 2008, 16(2): 216 – 218

The bilateral reliability model for initiating explosive devices was studied. The calculation method was proposed for the lower limit bilateral reliability based on the classical two-rank approximate limit, and the simulation tests were conducted by Monte Carlo method.

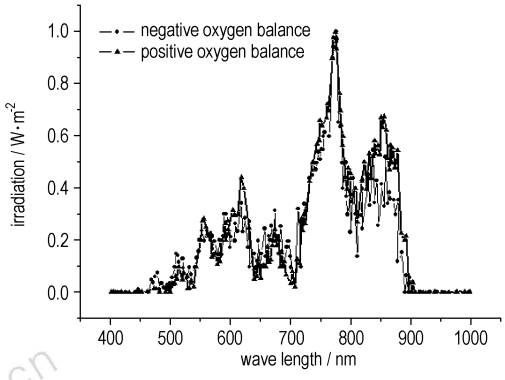
Effect of Particle Sizes of Aluminum Powder on Radiation Intensity of Flash Pyrotechnic Composites

BA Shu-hong, JIAO Qing-jie, REN Hui

Chinese Journal of Energetic Materials, 2008, 16(2): 219 – 221

Combined with combustion model of aluminum, the emissivity of condensed-phase product particles and flash radiation model of pyrotechnics deflagration, the relationship between Al particles diameter and radiation intensities of pyrotechnic composites was outlined.

Emission Spectrum Characteristics of Zr-O_2 Flashlamp

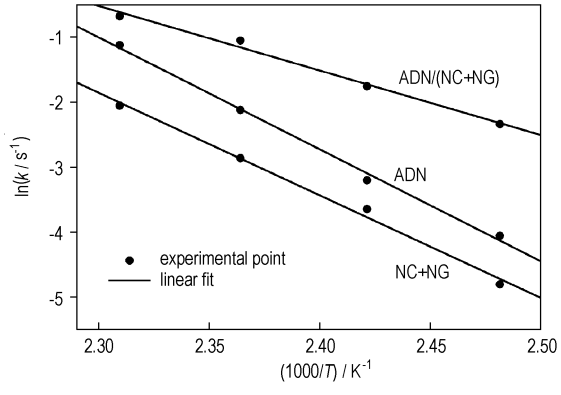


YE Ying-hua, SHEN Rui-qi, XIANG Xun, HU Yan

Chinese Journal of Energetic Materials, 2008, 16(2): 222 – 224

Combustion characteristic of Zr-O_2 flashlamp was studied. Emission spectrum of Zr-O_2 flashlamp was also obtained.

Study on Interaction of ADN and (NC + NG) by Gasometric Method

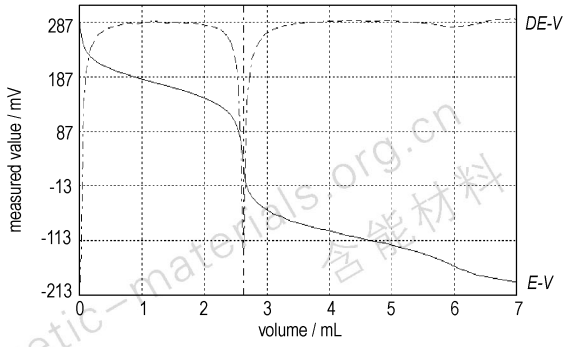


HE Shao-rong, ZHANG Lin-jun, HENG Shu-yun, LIU Zi-ru

Chinese Journal of Energetic Materials, 2008, 16(2): 225 – 228

The interaction of ADN and (NC + NG) under the higher temperature was studied by a NBK lawa gasometric measuring system.

Chemical Certification Method for Military Purity Standard Substance NTO



WEN Xiao-yan, LIANG Yi, CHEN Zhi-qun, PAN Qing, ZHOU Cheng

Chinese Journal of Energetic Materials, 2008, 16(2): 229 – 231

Using methanol as solvent and sodium methanol standard solution as titrant, the certification method for NTO standard substance was investigated by non-aqueous titration.

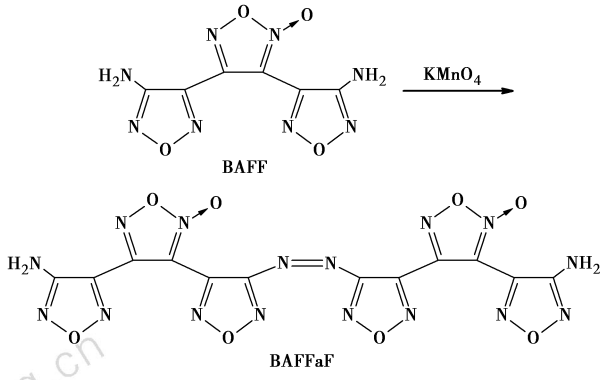
Review on the Aging of Solid Propellants

ZHANG Xing-gao, ZHANG Wei, ZHU Hui, WANG Chun-hua

Chinese Journal of Energetic Materials, 2008, 16(2): 232 – 237

The progress of the aging of double-base propellants, NEPE propellants and HTPB propellants was reviewed. The future trend was given.

Synthesis and Characterization of 3, 3′-Bis (3-aminofurazanofuroxan-4-yl)-4, 4′-azafurazan



WANG Jun

Chinese Journal of Energetic Materials, 2008, 16(2): 238

A new energetic compound 3, 3′-bis(3-aminofurazanofuroxan-4-yl)-4, 4′-azafurazan was synthesized using 3, 4-bis(aminofurazano)furoxan as initial material and $KMnO_4$ as oxidant.

Glass-transition Temperature of PECH and GAP

SONG Xiao-qing, ZHOU Ji-yi, WANG Wen-hao, WANG Jian-wei, BAI Sen-hu

Chinese Journal of Energetic Materials, 2008, 16(2): 239

The glass-transition temperature of PECH and GAP were studied.

Application of Modified Polyepoxysuccinic Acid in Reverse Osmosis Treating Wastewater Contaminated by Explosives

ZHANG Su-fang, SHU Yuan-jie, TANG Shao-ming, WANG Xiao-chuan, LIU Xue-yong

Chinese Journal of Energetic Materials, 2008, 16(2): 240

Modified polyepoxysuccinic acid was synthesized starting from 2-acrylamido-2-methylpropare sulfonic acid and compared with other usual water treatment agents on scale inhibition. The application of modified polyepoxysuccinic acid in reverse osmosis treating wastewater contaminated by explosives was studied.

Executive editor: WANG Yan-xiu; Computer typesetter: ZHANG Gui-hong