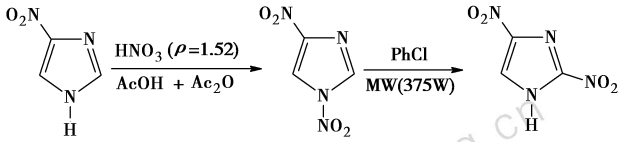
Synthesis of 2,4-Dinitroimidazole by Microwave Heating

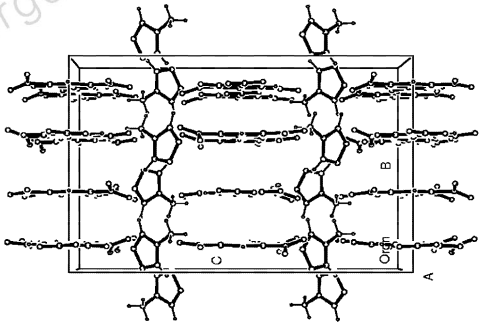


LIU Hui-jun, FAN Yue-qin, FENG Feng, MENG Shuang-ming, GUO Yong, LU Zhen, CAO Duan-lin

Chinese Journal of Energetic Materials, **2010**, **18**(**1**): **1 -3**

2,4-Dinitroimidazole(2,4-DNI) was synthesized by rearrangement of 1,4-dinitroimidazole(1,4-DNI) under microwave irradiation.

Crystal Structure of Energetic Compound 4-Amino-1,2,4-triazolium Picrate

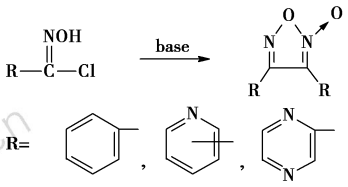


XIA Yun-xia, WANG Ping, SUN Jie, MAO Zhi-hua

Chinese Journal of Energetic Materials, **2010**, **18**(**1**): **4 -6**

A single crystal of energetic compound 4-amino-1,2,4-triazolium picrate (4-ATPA) was cultured from methanol solvent. Its crystal structure was characterized.

Synthesis of Furoxano Derivatives Using Dimerization Reaction



LI Ya-nan, ZHANG Zhi-zhong, ZHOU Yan-shui, JI Yue-ping, WANG Ying-lei

Chinese Journal of Energetic Materials, **2010**, **18**(**1**): **7 -10**

3,4-Diphenylfuroxan and four no-reported compounds 3,4-bis(pyridine-2′-yl)furoxan, 3,4-bis(pyridine-3′-yl)furoxan, 3,4-bis(pyridine-4′-yl)furoxan and 3,4-bis(pyrazine-2′-yl)furoxan were self-designed and synthesized using chloride oxime-based compounds as starting materials. The structures of target compounds were characterized by IR, NMR, MS and elemental analysis.

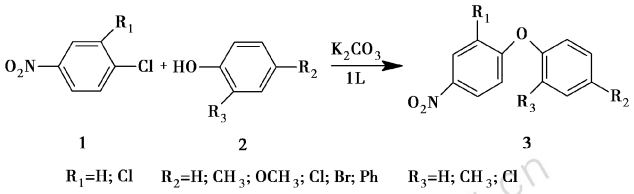
Synthesis of 2-Methyl-2-nitro-1,3-diazido-propane

WANG Ying-lei, JI Yue-ping, LI Pu-rui, CHEN Bin, LAN Ying

Chinese Journal of Energetic Materials, **2010**, **18**(**1**): **11 -14**

2-Methyl-2-nitro-1,3-diazido-propane (NMPA) was synthesized with nitroethane as starting materials by condensation, sulfonylation and azide substitution. Their structures were characterized by IR, NMR and elemental analysis.

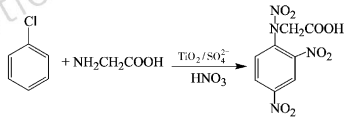
Clean Procedure for Synthesis of Substituted Diphenyl Ethers via Williamson Reaction in Ionic Liquid



FANG Dong, JIAO Chang-mei, ZHANG Hua-bin, LIU Zu-liang
Chinese Journal of Energetic Materials, **2010**, **18**(**1**): **15 -18**

The room-temperature ionic liquid was used as a recyclable solvent for Williamson reaction synthesizing substituted diphenyl ethers with yield of 70% -93%.

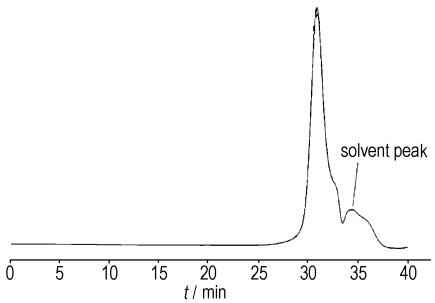
Preparation of Nanosolid Superacid and Synthesis of 2,4,*N*-Trinitroanilinoacetic Acid Directly



XI Li-min, ZHANG Xin-xin
Chinese Journal of Energetic Materials, **2010**, **18**(**1**): **19 -23**

The new nanosolid superacid catalyst TiO_2/SO_4^{2-} was prepared by sol-gel method, and was characterized by acid base titration, XRD and TEM.

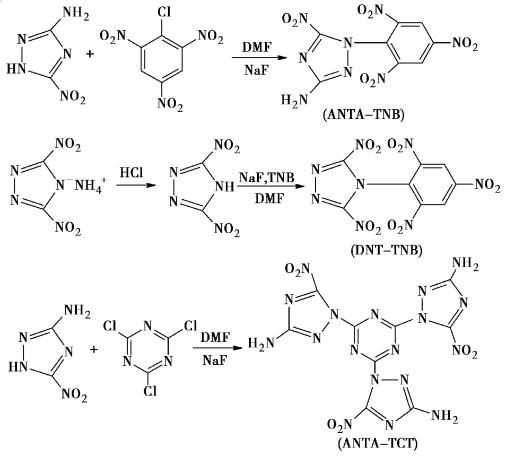
Synthesis and Characterization of Polyepichlorohydrin with Terminal Hydroxyl



SUN Zhao-ren, GU Yao, SUN Dong-dong
Chinese Journal of Energetic Materials, **2010**, **18**(**1**): **24 -28**

The polyepichlorohydrin (PECH) with high relative molecular mass (M_W) and narrow distribution was synthesized by ring-opening polymerizations of epichlorohydrin (ECH) using emulsion double metal cyanide (EDMC) as catalyst. The synthesized polymers were characterized by FTIR, ^{1}H NMR, and GPC.

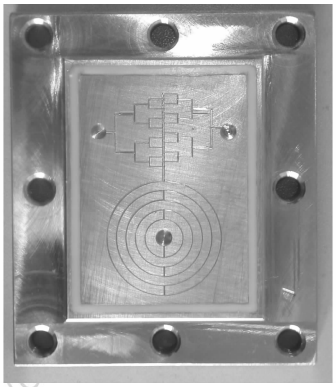
Synthesis and Characterization of 3-Amino(nitro)-5-nitro-1,2,4-triazole derivatives



ZHANG Hai-hao, JIA Si-yuan, WANG Bo-zhou,
XIONG Cun-liang, WANG Xi-jie
Chinese Journal of Energetic Materials, **2010**, **18**(**1**): **29 -33**

1-Picryl-3-amino-5-nitro-1,2,4-triazole (TNTA-TNB) and 4-picryl-3,5-dinitro-1,2,4-triazole (DNT-TNB) were synthesized, and their structures were confirmed by IR, NMR and elemental analysis.

Synthesis of Nitrate Ester Explosives in Micro Reactor



Nitrate ester explosives were synthesized in chip based micro reactor. When alcohol and nitric-sulfuric mixed acid are mixed in the micro reactor, the yield of EGDN is 86.4%, and the yield of diethylene glycol dinitrate is 90.6%.

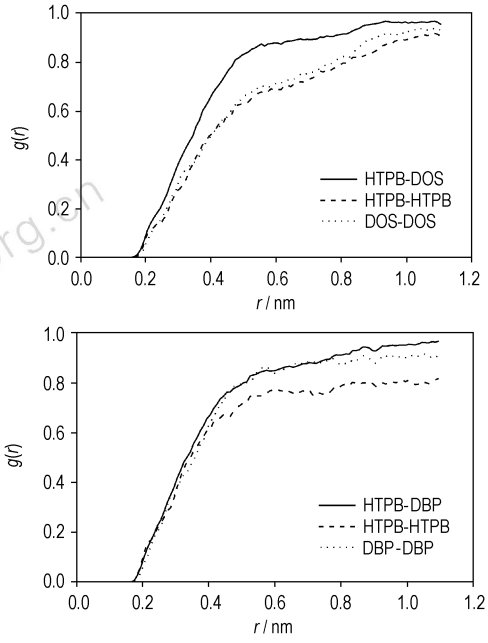
HAN Jun-qi, MENG Zi-hui, MENG Wen-jun,
CHEN Guang-wen, WANG Bo-zhou, GE Zhong-xue
Chinese Journal of Energetic Materials, **2010**, **18**(**1**): **34 –36**

Thermal Behaviors of CL-20 Systems Mixed with Three Binders by Gasometric Method

The thermal behaviors of CL-20 mixed with three binders ((NC + NG), PET and PBT) at 160 – 200 ℃ were investigated by NBK LAWA gasometric measuring system.

HE Shao-rong, HENG Shu-yun, ZHANG Lin-jun, LIU Zi-ru
Chinese Journal of Energetic Materials, **2010**, **18**(**1**): **37 –41**

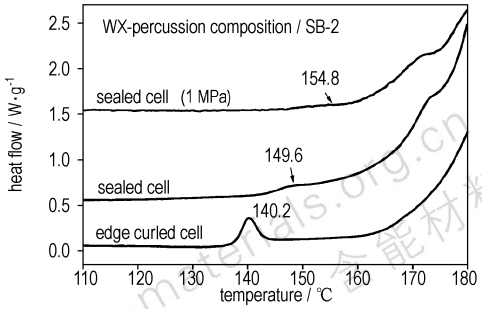
Molecular Dynamics Simulation on Compatible Evaluation of HTPB and Plasticizers Blends



The density, binding energy and radical distribution function of HTPB/plasticizers blends were calculated by molecular dynamics simulation (MD). The compatibility between HTPB and four kinds of plasticizers blends was evaluated.

LAN Yan-hua, LIU Ya-qing, FU Yi-zheng
Chinese Journal of Energetic Materials, **2010**, **18**(**1**): **42 –46**

Compatibility of Double-base Propellant with Priming Composition

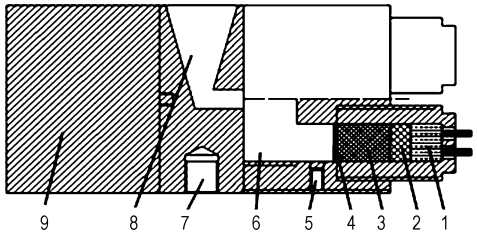


WANG Lin, LIU Zi-ru, ZHANG La-ying, HE Shao-rong, YUE Pu, HAN Fang, ZHANG Lin-jun

Chinese Journal of Energetic Materials, **2010**, **18**(**1**): **47 -50**

The compatibility of two double-base propellants (SB-1 and SB-2) and priming composition (WX-percussion composition) was investigated by differential scanning calorimeter (DSC) and vacuum stability test (VST).

Factors Affecting Sympathetic Ignition of Three-impulse-at-one-spot Thruster

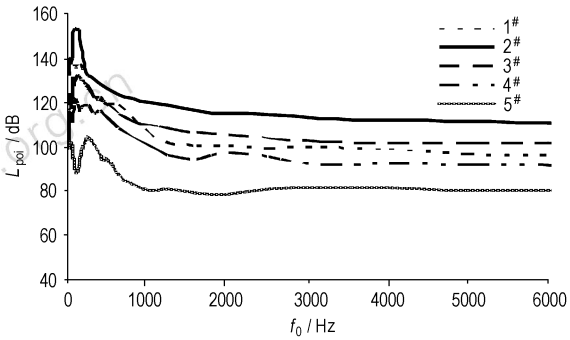


GUO Ning, YAN Nan, WANG Pei-lan

Chinese Journal of Energetic Materials, **2010**, **18**(**1**): **51 -54**

The effects of different main charge amounts, thickness of sealing film and combustion chamber volume on igniters sympathetic ignition were analyzed.

Effect of Thermite Content on Acoustic Radiation Characteristics of Pyrotechnic Composition Underwater Combustion



OUYANG De-hua, PAN Gong-pei, GUAN Hua, FAN Lei, ZHENG Lei, YANG Sha

Chinese Journal of Energetic Materials, **2010**, **18**(**1**): **55 -57**

The acoustic radiation characteristics of pyrotechnic composition with different thermite contents were studied by underwater acoustics.

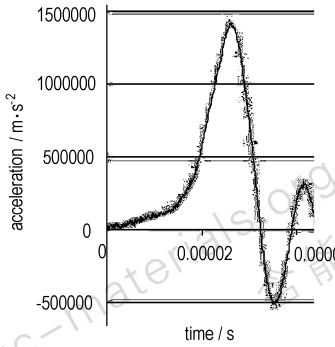
Comparative Study on Estimating Method of Firing Level of Pyrotechnics

TIAN Yu-bin, WANG Dian-peng, FANG Yong-fei

Chinese Journal of Energetic Materials, **2010**, **18**(**1**): **58 -62**

The up and down method, the Langlie method, the Wu method, the Neyer method and the optimal stochastic approximation method were compared under the normal and logistic sensitivity distribution by using Monte Carlo technique.

Design of Electric Delay Detonator Withstanding a High Acceleration Impact

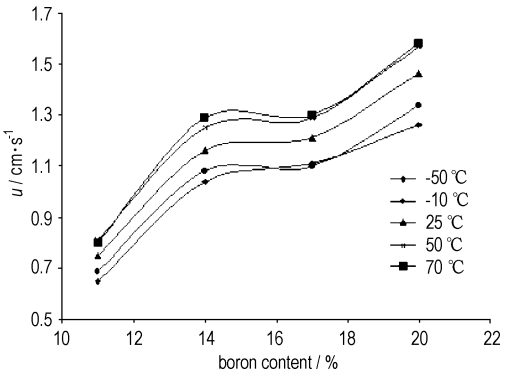


The loading process was analyzed to improve performance of delay electric detonator withstanding a high acceleration impact. The consolidating and buffering structures, and delaying technology withstanding impact were also studied. The design of stress distribution, firing, auxiliary ignition, consolidating design of delay element, annular gas storage space structure design were adopted.

LEI Ming, GAO Yan, LIU Wen-hao

Chinese Journal of Energetic Materials, **2010**, **18**(**1**): **63 -67**

Numerical Simulation and Burning Rate of B/CuO Delay Compositions



The effects of boron content and ambient temperature on the burning rate of B/CuO delay compositions were investigated, and an empirical model was proposed.

CHENG Yi, HUI Yun-long, LI Yan-chun, YAN Shi

Chinese Journal of Energetic Materials, **2010**, **18**(**1**): **68 -71**

Plasma Sensitivities of Different Kinds of Primary Explosives

The plasma sensitivities of different kinds of primary explosives were studied. The voltage-time curves, current-time curves and light-time curves were obtained. The data were analyzed by using D-optimization method.

MA Peng, ZHU Shun-guan, ZHANG Lei, XU Lu

Chinese Journal of Energetic Materials, **2010**, **18**(**1**): **72 -75**

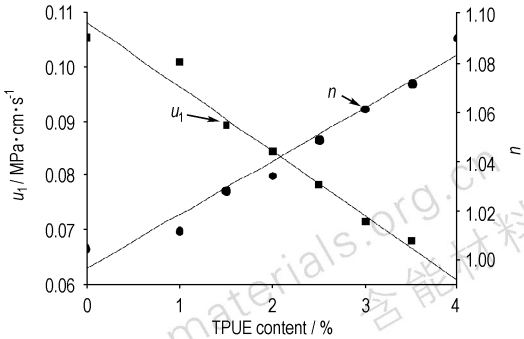
Preparation of a High Energy Boosters

A new high energy booster was prepared and initiated by 3.6 g · m^{-1} detonating cord.

YAN Ji-Sheng

Chinese Journal of Energetic Materials, **2010**, **18**(**1**): **76 -79**

Application of Thermoplastic Elastomer to Triethylene Glycol Dinatrate Propellants

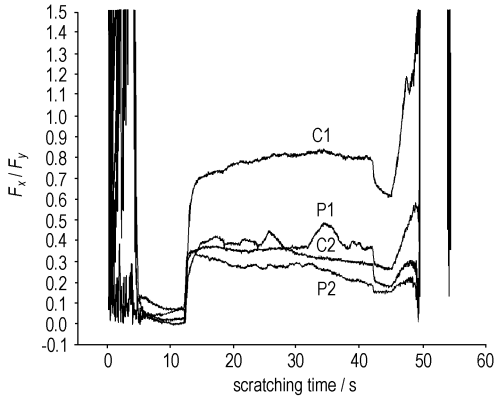


The effects of thermoplastic polyurethane elastomer (TPUE) on mechanical, energy and combution property of triethylene glycol dinatrate (TEGN) propellants were studied.

HE Wei-dong, WEI Xiao-an, WANG Ze-shan

Chinese Journal of Energetic Materials, **2010**, **18**(**1**): **80 -82**

Friction Properties of Polymer Bonded Explosives and Coatings



The friction properties of two types of polymer bonded explosives coded P1 and P2 and two coatings named C1 and C2 have been tested by the universal testing machine based friction system and the nano-indenter respectively.

WEN Mao-ping, LAN Lin-gang, PANG Hai-yan

Chinese Journal of Energetic Materials, **2010**, **18**(**1**): **83 -87**

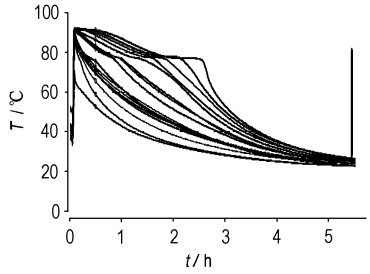
Mechanical Properties of Casting High Energy Composite Modified Double-base Propellant

The effects of the varieties and contents of nitrocellulose (NC) ball, particle sizes of Ammonium perchlorate (AP), the contents of AP and RDX on the mechanical properties of casting high energy composite modified double-base (CMDB) propellant, were studied.

WANG Han, FAN Xue-zhong, LIU Xiao-gang,
LI Ji-zhen, QI Xiao-fei

Chinese Journal of Energetic Materials, **2010**, **18**(**1**): **88 -92**

Distribution of Temperature Field During Cooling Process of Melt-cast Explosive



Multiple channels data collecting instrument has been used to investigate the temperature distribution of the melt-cast explosive during the cooling process under various cooling conditions.

GUO Peng-lin, LUO Guan, XI Yan, ZHANG Ming,
WANG Dong-lei, CAI Zhong-zhan, HUANG Yong

Chinese Journal of Energetic Materials, **2010**, **18**(**1**): **93 -96**

Performance of 2, 6-Diamino-3, 5-dinitropyridine-1-oxide-based Heat-resistance Composite Explosives

HE Zhi-wei, LIU Zu-liang

Chinese Journal of Energetic Materials,2010,18(1): 97 –101

Three heat-resistant composite explosives composed of 2,6-diamino-3, 5-dinitropyridine-1-oxide (ANPyO) were prepared. The performance tests were conducted by measuring the heat resistance, formability, sensitivity, explosion energy and penetration power.

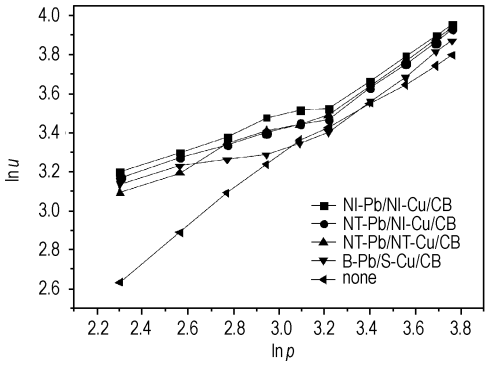
Application of High-speed Photography in Bubble Oscillation at Underwater Explosion

WANG Bin, ZHANG Guang-sheng,
GAO Ning, WANG Yan-ping

Chinese Journal of Energetic Materials,2010,18(1): 102 –106

The explicit pictures of bubble oscillation at free field and water jet formed during bubble and boundary interaction at underwater explosion were captured by APX-RS digital high-speed camera.

Combustion Characteristics of High-energy Smokeless Modified Double-base Propellant at Middle and High Pressures

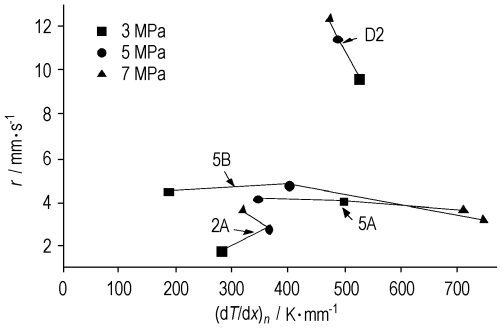


FU Xiao-long, SHAO Chong-bin, WU Shu-xin,
FAN Xue-zhong, LI Ji-zhen, YU Hong-jian,
LIAO Lin-quan

Chinese Journal of Energetic Materials,2010,18(1): 107 –109

The burning rate of the high-energy smokeless modified double-base propellant(HESMDB) increases with pressure enhancement. There is an inflexion point in the combustion curve of HESMD propellant at the pressure of 25 MPa, and then the burning rate of HESMDB increased rapidly.

Relationship between Burning Rate and Combustion Wave Characteristic Value of Double-base Propellant with Low Burning Rate and Low Flame Temperature

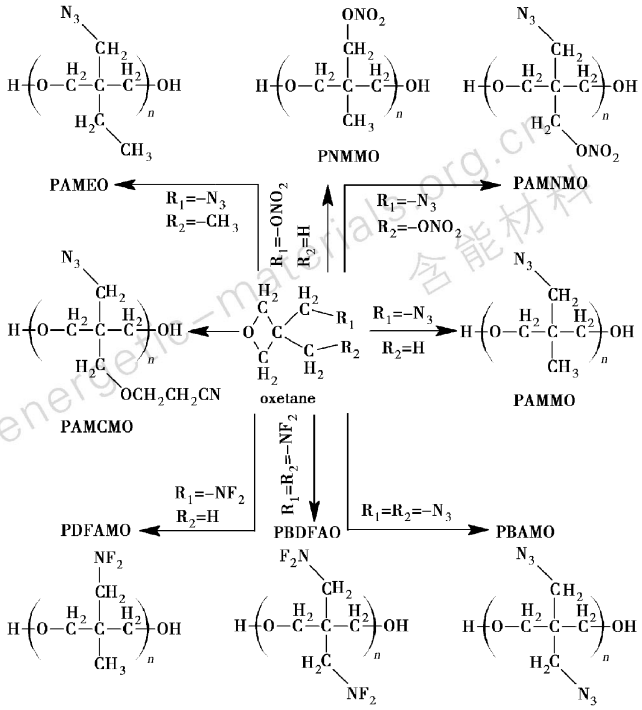


QIN Neng, ZHANG Chao, WANG Ming-xing

Chinese Journal of Energetic Materials,2010,18(1): 110 –114

There are different combustion wave structures when double-base propellant with low burning rate and low flame temperature appended different catalysts, and the relationship between the burning rate and the characteristic value of combustion wave is also changed along with.

Review on Homopolymer of Energetic Binders



ZHOU Yang, LONG Xin-ping, SHU Yuan-jie

***Chinese Journal of Energetic Materials*,2010,18(1): 115 –120**

The structures and properties of energetic binders based on the oxirane and oxetane were reviewed and their possibility used in PBX explosives was discussed.

Executive editor: WANG Yan-xiu; JIANG Mei
Computer typesetter: LI Shao-hui