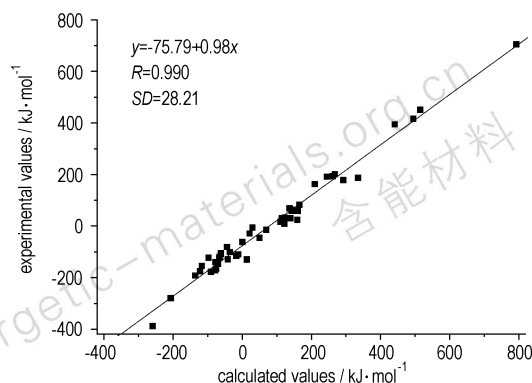


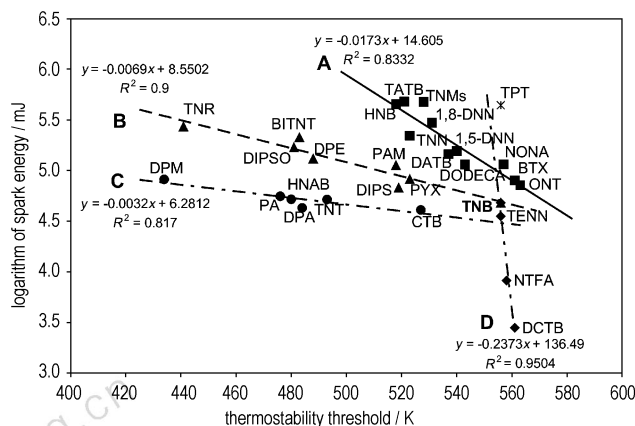
### Heats of Formation for Energetic Compounds Calculated using Atomization Reactions



QIU Li-mei, GONG Xue-dong, ZHENG Jian, XIAO He-ming  
*Chinese Journal of Energetic Materials*, 2008, 16(6): 647 – 651

Based on the calculated results at DFT-B3LYP/6-31G\* or HF/6-31G\* level, heats of formation for 49 energetic compounds were calculated using atomization reactions and physical chemistry formulae.

### A New Aspect of Relationships between Electric Spark Sensitivity and Thermal Stability of Some Polynitro Arenes

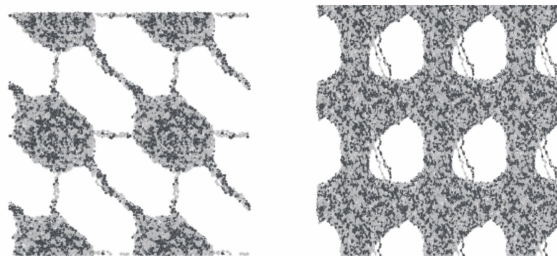


Svatopluk Zeman

*Chinese Journal of Energetic Materials*, 2008, 16(6): 652 – 658

Relationships between electric spark sensitivity and thermal stability of some polynitro arenes were studied.

### Dissipative Particle Dynamics Simulation on the Mesoscopic Structure of TATB-based PBX



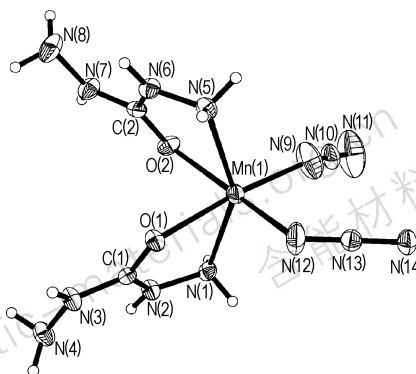
ZHANG Yan-li, JI Guang-fu, GONG Zi-zheng, LI Xiao-feng, CUI Hong-ling

*Chinese Journal of Energetic Materials*, 2008, 16(6): 659 – 662

The temperature effect on the mesostructure for the TATB based-PBX was investigated using the dissipative particle dynamics method.

### Preparation Crystal Structure and Thermal Decomposition

#### Mechanism of $Mn(CHZ)_2(N_3)_2$

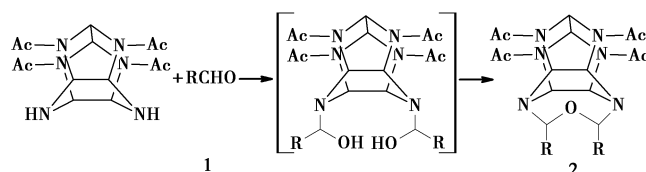


LIU Zhen-hua, ZHANG Tong-lai, ZHANG Jian-guo,  
YANG Li, ZHANG Jin, ZANG Yan

*Chinese Journal of Energetic Materials*, 2008, 16(6): 663 – 668

A mixed ligand complex of manganese (II) carbohydrazide azide,  $Mn(CHZ)_2(N_3)_2$  ( $CHZ$  = carbohydrazide), was synthesized and characterized. Its crystal structure and thermal decomposition mechanism were studied.

### Amine-Aldehyde Condensation Reaction of Tetraacetylhexaazaisowurtzitane



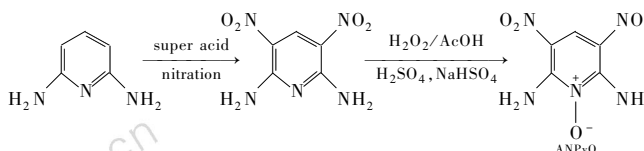
1a: R = H    1b: R = CH<sub>3</sub>    1c: R = CH<sub>2</sub>Cl  
2a: R = H    2b: R = CH<sub>3</sub>    2c: R = CH<sub>2</sub>Cl

SUN Cheng-hui, ZHAO Xin-qi

*Chinese Journal of Energetic Materials*, 2008, 16(6): 669 – 671

Three novel new hexaazaisowurtzitane derivatives were formed by condensation reaction of tetraacetylhexaazaisowurtzitane with different aldehydes.

### Synthesis and Properties of 2,6-Diamino-3,5-dinitropyridine-1-oxide

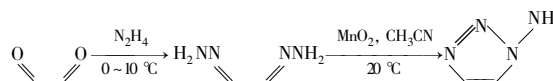


CHENG Jian, YAO Qi-zheng, ZHOU Xin-li, DU Yang,  
FANG Dong, LIU Zu-liang

*Chinese Journal of Energetic Materials*, 2008, 16(6): 672 – 675

2,6-diamino-3,5-dinitropyridine-1-oxide (ANPyO) was synthesized using 2,6-diaminopyridine as the starting materials in two steps including nitration .

### Synthesis of 1-Amino-1,2,3-triazole



SHI Hong-gang, LI Sheng-hua, LI Yu-chuan, LI Xiao-tong,  
PANG Si-ping

*Chinese Journal of Energetic Materials*, 2008, 16(6): 676 – 678

1-Amino-1,2,3-triazole was synthesized by cyclization of glyoxal bishydrazone. 1-Amino-1,2,3-triazole with high purity can be optimally got by crystallization from acetonitrile. The reaction mechanisms of decomposition and synthesis of 1-amino-1,2,3-triazole were discussed.

### Preparation of RDX by Nitrolysis of Hexamethylenetetramine in Fluorous Media

YI Wen-bin, CAI Chun

*Chinese Journal of Energetic Materials*, 2008, 16(6): 679 – 681

The explosive RDX was prepared by perfluorooctanesulfonic acid ( $C_8F_{17}SO_3H$ , PfOS)-catalyzed nitrolysis of hexamethylenetetramine using perfluorodecalin ( $C_{10}F_{18}$ , cis and trans-mixture) as fluorous solvent.

### Post-Processing for Hydroxy Terminal Polyepoxy Chloropropane and Azido Polyethers

LU Xian-ming, GAN Xiao-xian, XING Ying,  
ZHANG Zhi-gang, HAN Tao

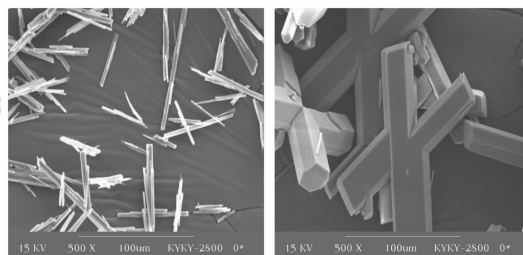
*Chinese Journal of Energetic Materials*, 2008, 16(6): 682 – 685

Good extraction effect can be got by using mixed solvent (mixed by iso-propyl alcohol and petroleum ether) for the rude product of hydroxy terminal polyepoxy chloropropane (CTP), azido polyethers (ATP) and high-molecular-weight azido polyethers (HATP). The number average molecular-weight and functionality could be increased after extraction.

### Recrystallization and Properties of LLM-105

LI Hai-bo, CHENG Bi-bo, LIU Shi-jun, NIE Fu-de,  
LI Jin-shan

*Chinese Journal of Energetic Materials*, 2008, 16(6): 686 – 688

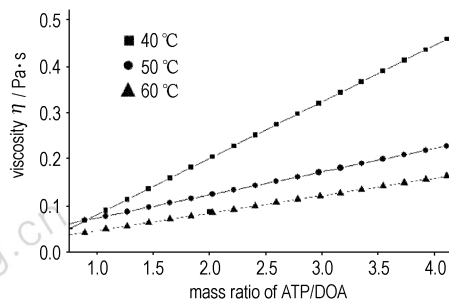


The recrystallization methods of 2,6-diamino-3,5-dinitropyrazine-1-oxide (LLM-105) were studied. Both the products that obtained by cooling crystallization and solvent (DMOS)-nonsolvent (hot water) crystallization have low impact sensitivity. The properties of LLM-105 such as thermal stability, sensitivity, compatibility and detonation velocity were investigated. Results show that LLM-105 has good thermal stability, low sensitivity, good compatibility and high detonation velocity.

### Application of ATP-28 in Cast-cured Explosive

GAO Li-long, XI Peng

*Chinese Journal of Energetic Materials*, 2008, 16(6): 689 – 692

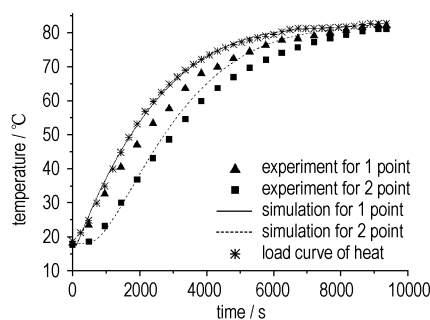


The viscosity of the mixture containing ATP-28 decreased by the increasing of the DOA.

### Properties for PBX Cylinder during Temperature Rising

LAN Qiong, LU Jian-ying, ZHANG Ming, YONG Lian

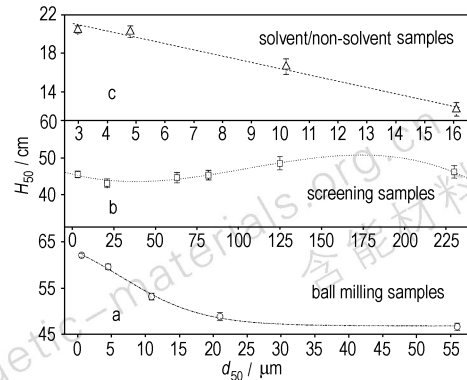
*Chinese Journal of Energetic Materials*, 2008, 16(6): 693 – 697



Numerical simulations were conducted to study the changes of properties for PBX cylinder during heating-up. Results show that numerical simulation can primarily determine the regularity of stress distribution, and estimate variation of density and size, and optimize the heating technology.

### Effect of Preparation Methods on Mechanical Sensitivity and Thermal Decomposition of HMX

SONG Xiao-lan, AN Chong-wei, GUO Xiao-de,  
LIU Hong-ying, ZHANG Jing-lin, LI Feng-sheng  
*Chinese Journal of Energetic Materials*, 2008, 16(6): 698–702



HMX samples with different morphology and particle sizes were prepared. The sensitivities and decomposition properties of these samples were quite different.

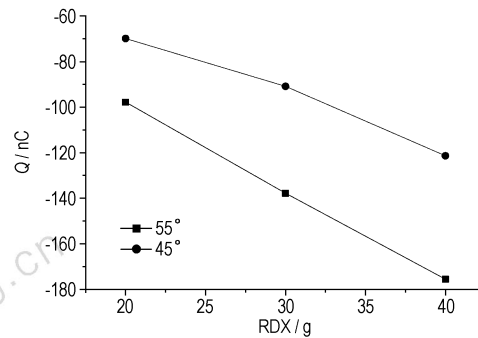
### Prediction for Clamping Deformation of PBX Parts on Machining Process

TANG Wei, LI Ming, ZHANG Qiu, HUANG Jiao-hu,  
ZHAO Yong-zhong, LIU Wei, ZHAO Xiao-dong  
*Chinese Journal of Energetic Materials*, 2008, 16(6): 703–707

A modified time hardening theory based on creep model was used to simulate the deformation of a vacuum absorbed PBX spherical shell. It shows that displacements of points on external profile increase with latitude, and the values from 75 degree to 90 degree are approximate.

### Measurement and Analysis of the Frictional Static Electricity Characteristics of Composite RDX

LU Ming, ZHAO Sheng-xiang, CHEN Jing  
*Chinese Journal of Energetic Materials*, 2008, 16(6): 708–711



Electrostatic accumulation that RDX explosive and RDX-Al composite explosive produced in the friction condition was tested with a one-meter long flume.

### Properties of Prilled Ammonium Dinitramide (ADN) Coated by Polyurethane Binders

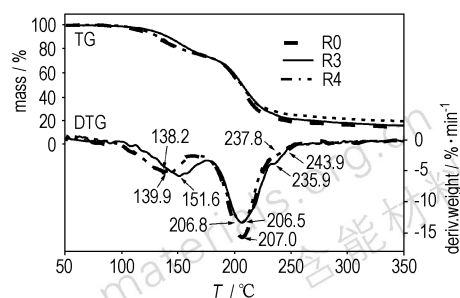
XU Hui-xiang, LIAO Lin-quan, LIU Qian, LI Yong-hong,  
RAN Xiu-lun, ZHAO Feng-qi  
*Chinese Journal of Energetic Materials*, 2008, 16(6): 712–715



The prilled ADN samples were coated by polyurethane binders (PU). The surface appearance and hygroscopicity of ADN after coated were analyzed by SEM and weighing method.

### Catalytic Decomposition of RDX-CMDB Propellants II. Gaseous Products of Decomposition and Catalytic Mechanism

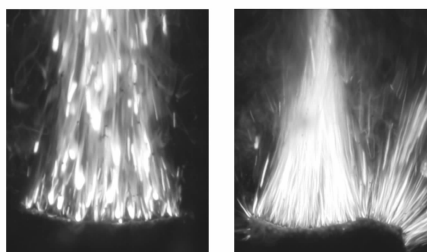
XIE Ming-zhao, LIU Zi-ru, HENG Shu-yun, WANG Han, WANG Xiao-hong, ZHAO Feng-qi  
*Chinese Journal of Energetic Materials*, 2008, 16(6): 716–720



The main gaseous products of RDX-CMDB propellants with burning catalysts (GDPB, PAC and CB) were investigated by using TG-DSC-FTIR-MS simultaneous techniques. The decomposition mechanism of RDX-CMDB propellants with burning catalysts were discussed.

### Effects of Aluminum Powder Content and Granularity on Characteristics of CMDB Propellant

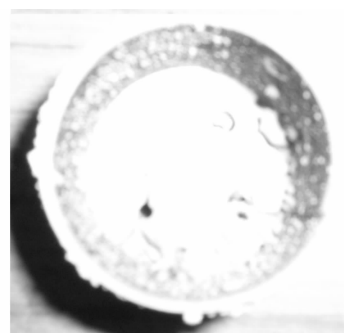
CHEN Xue-li, WANG Ying, WANG Hong, SUN Mei  
*Chinese Journal of Energetic Materials*, 2008, 16(6): 721–723



Effect of aluminum powder content and granularity on the combustion characteristics and energy properties of casted CMDB propellants were studied.

### Selection of Fireproof Materials in Combustion Heat Testing of Fuel-rich Propellant

WANG Ying-hong, PAN Kuang-zhi, SUN Zhi-hua, ZHANG Xiao-hong  
*Chinese Journal of Energetic Materials*, 2008, 16(6): 724–726



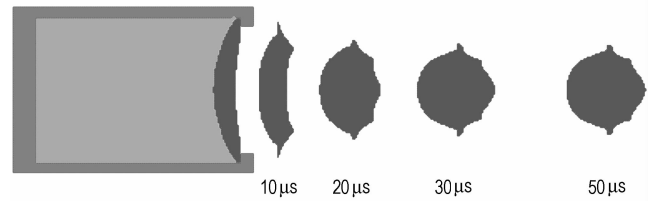
Some fireproof materials' characteristics and their application in the combustion heat testing process of fuel-rich propellant were studied by experiment. These fireproof materials include acid washing asbestos, C—C compound materials, Al<sub>2</sub>O<sub>3</sub> chinaware and tungsten crucible.

### Synthesis and Explosion Characteristics of Porous Silicon/NaClO<sub>4</sub> Composites

LI Xue-ming, HU Xin, HUANG Hui, YU Wei-fei, NIE Fu-de  
*Chinese Journal of Energetic Materials*, 2008, 16(6): 727–730

Porous silicon was prepared by electrochemical anodized method. The porosity and film depth of porous silicon as well as the explosive characteristics of porous silicon/NaClO<sub>4</sub> composite were studied.

### Numerical Simulation of Parameters on Formation of Quasi-spherical EFP

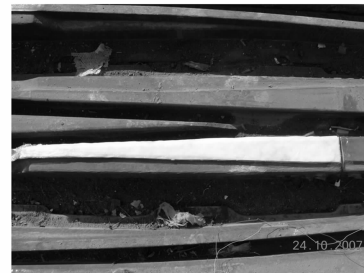


The collapse and formation process of quasi-spherical EFP was simulated by nonlinear dynamic software AUTODYN. Effects of structure parameters of liner outer curvature radius ( $R_2$ ) and liner thickness ( $h$ ) on the velocity and length/diameter ratio of EFP were studied.

WANG Shu-you, JIANG Jian-wei, MEN Jian-bing

*Chinese Journal of Energetic Materials*, 2008, 16(6): 731 – 733

### Application Study on a Polymer Bonded Plastic Explosive after Explosion Hardening

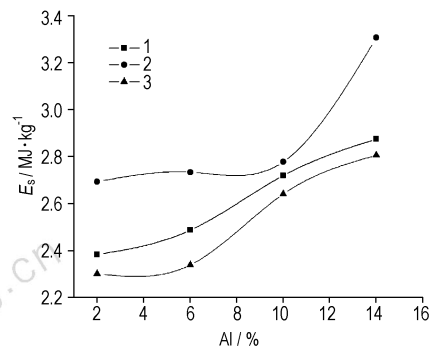


A new polymer bonded plastic explosive was developed, which can be applied on explosion hardening of Hadfield steel rail frogs.

AN Er-feng, CHEN Peng-wan, YANG Jun

*Chinese Journal of Energetic Materials*, 2008, 16(6): 734 – 737

### Effect of Aluminum Powder Content on Performance of Emulsion Explosive

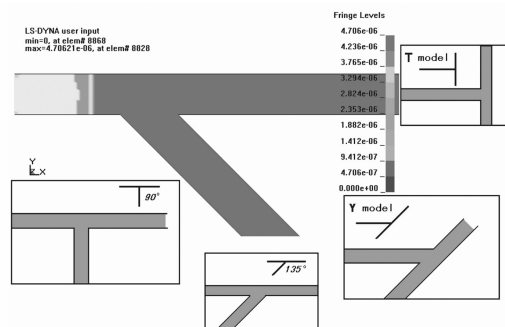


The performance parameters including explosion heat, explosion velocity, shock wave energy, bubble energy of emulsion explosive were investigated by means of underwater explosion test and theoretical calculation.

ZHANG Hu, XIE Xing-hua, GUO Zi-ru, WAN Xiang-dong

*Chinese Journal of Energetic Materials*, 2008, 16(6): 738 – 740

### Numerical Simulation Research on Shockwave Propagation Characteristics Inside Branch Tunnel



Numerical simulation was adopted to study on the shockwave propagating through the branch tunnels and the relationship between the shockwave attenuation and the branch angle was studied.

QIN Bin, ZHANG Qi, XIANG Cong, WANG Deng-gui,  
LI Wei

*Chinese Journal of Energetic Materials*, 2008, 16(6): 741 – 744

### Photocatalytic Degradation of HMX and RDX Wastewater with CdS/Cu Nanophotocatalyst

Hamid Reza Pouretdal, Mohammad Hossien Keshavarz, Mohammad Hasan Yosefi, Arash Shokrollahi, Abbas Zali  
*Chinese Journal of Energetic Materials*, 2008, 16(6): 745–752

Treatment of HMX and RDX as nitramine explosives in wastewater samples was done using photodegradation process under UV and Vis irradiations in the presence nanoparticles of cadmium sulfide doped with copper as a new photocatalyst.

### Review on $\beta \rightarrow \delta$ Phase Transition of HMX

XUE Chao, SUN Jie, SONG Gong-bao, KANG Bin, XIA Yun-xia  
*Chinese Journal of Energetic Materials*, 2008, 16(6): 753–757

The crystal structure of HMX, kinetics of the  $\beta \rightarrow \delta$  phase transition and the influencing factors of phase transition were reviewed.

### High Energy Density Compounds Cyclophosphazene. VI. Cyclophosphazene Compounds and Their Application on Energetic Materials

ZHENG Hui-hui, ZHANG Jian-guo, ZHANG Tong-lai, YANG Li, FENG Li-na  
*Chinese Journal of Energetic Materials*, 2008, 16(6): 758–761

The research developments and application of cyclophosphazene compounds in energetic materials are reviewed.

### Application of Microreactor in Strong Exothermic Reactions

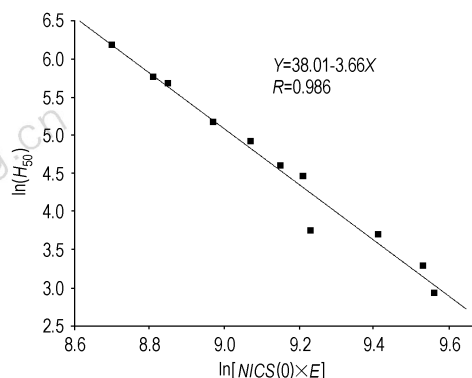
SONG Hong-yan, WANG Peng, MENG Wen-jun, HAN Jun-qi, MENG Zi-hui, ZHOU Zhi-ming  
*Chinese Journal of Energetic Materials*, 2008, 16(6): 762–765

The advantages, structures of microreactor were introduced, and its applications in the strong exothermic reaction process were summarized.

### A Simple Method of Characterizing Impact Sensitivity of Nitroaromatic Explosives

DU Jun-liang, SHU Yuan-jie, ZHOU Yang, YIN Ming, LONG Xin-ping, ZHU Zu-liang  
*Chinese Journal of Energetic Materials*, 2008, 16(6): 766

The eleven nitroaromatic compounds were investigated by density functional theory (DFT). The relationship between the impact sensitivity and aromaticity was examined.



### Experimental Study on Micron Crystal Defect of Explosive by $\mu$ VCT

ZHANG Wei-bin, DAI Bin, TIAN Yong, HUANG Hui, YANG Cun-feng, ZONG He-hou, LI Hong-zhen  
*Chinese Journal of Energetic Materials*, 2008, 16(6): 767

The quantity distribution of crystal defect along with hole-volume of single HMX crystal grain and the volume and superficial hole ratio were analyzed by  $\mu$ VCT.