

### Characteristics of High Explosives Obtained from Cylinder Test Data

Waldemar A Trzeciński, Stanisław Cudzilo

*Chinese Journal of Energetic Materials*, 2006, 14(1): 1–7

New methods to calculate the acceleration ability of detonation products and the detonation energy of explosives using the cylinder expansion test data were applied to determine the performance characteristics for some high explosives.

### Explosion Impulse of Spherical Vapor Cloud Built-in Barriers

BI Ming-shu, YAO Min

*Chinese Journal of Energetic Materials*, 2006, 14(1): 8–11

The experiments of vapor cloud explosion were carried out in which the hemispherical strip barrier and the global pouched barrier were set respectively. And the effects of the characteristic parameters of barriers on the explosion impulse were studied.

### Experimental Study on Revulsive Effect of Oxidizer on Single-event FAE

CUI Xiao-rong, ZHOU Ting-qing, YU Yong-hua, SHEN Zhao-wu

*Chinese Journal of Energetic Materials*, 2006, 14(1): 12–15

Through optical and electric measurement system, revulsive effects of oxidizer on solid single-event FAE were discussed.

### Matched Relationship between Artificial Viscosity and Mesh Size in Numerical Modeling of Divergent Detonation Wave

SUN Hai-quan, ZHANG Wen-hong

*Chinese Journal of Energetic Materials*, 2006, 14(1): 16–20

The influence of artificial viscosity on the divergent detonation modeling was analyzed. In the numerical simulation of divergent detonation, the matched relation between the viscosity and the mesh size was obtained in terms of the Lee-Tarver's reaction rate and JWL equation of state.

### Preparation, Structure Characterizations and Thermal Analysis of $[Ba_2(H_2TNP)_2(OH)_2(H_2O)_2] \cdot (CH_3CH_2OH) \cdot 2.5H_2O$ Complex

CHEN Hong-yan, ZHANG Tong-lai, ZHANG Jian-guo, YANG Li

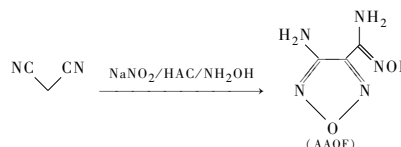
*Chinese Journal of Energetic Materials*, 2006, 14(1): 21–26

The complex of  $[Ba_2(H_2TNP)_2(OH)_2(H_2O)_2] \cdot (CH_3CH_2OH) \cdot 2.5H_2O$  ( $H_2TNP$ : 3,5-dihydroxy-2,4,6-trinitrophenolate) was prepared by mixing barium nitrate solution and sodium  $H_2TNP$  solution, which was obtained through the reaction of sodium bicarbonate and trinitrophenol. The molecular structure was characterized by element analysis, IR analysis and X-ray diffraction.

### 500 Gram-grade Synthesis of 3-Amino-4-aminoximinofurazan

WANG Jun, DONG Hai-shan, HUANG Yi-gang, ZHOU Xiao-qing, LI Jin-shan

*Chinese Journal of Energetic Materials*, 2006, 14(1): 27–28

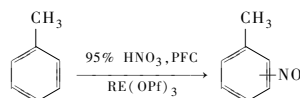


A 500 gram-grade synthesis of 3-amino-4-aminoximinofurazan (AAOF) was fulfilled by one-spot method with yield of 72.4%.

### Nitration of Toluene with Fluorous Biphasic System ( II )

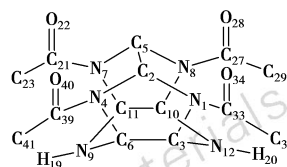
YI Wen-bin, CAI Chun

*Chinese Journal of Energetic Materials*, 2006, 14(1): 29–31



Toluene was nitrated effectively in fluorous phase by nitric acid with perfluorocarbons as fluorous solvents and rare earth ( III ) perfluorooctanesulfonates as catalysts.

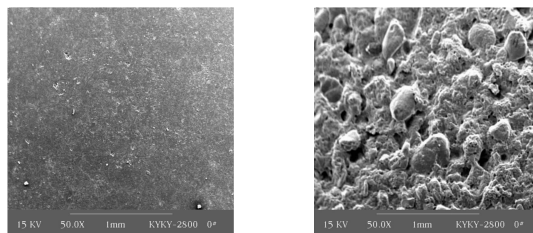
### Theoretical Study on the Molecular Structure of TAIW



The structure of Tetraacetylhexaazaisowurtzitane (TAIW) was optimized by means of Gaussian 98 packages software at the level of B3LYP/6-31G. The theoretical analysis of the structure of TAIW, such as bond length, bond angle, dihedral angle and charge was performed.

LI Li-jie, CHEN Shu-sen, JIN Shao-hua, ZHAO Xin-qi  
*Chinese Journal of Energetic Materials*, 2006, 14(1): 32–34

### Effect of Ultrasonic Cavitation Treatment on the Surface Structure of Polymer Bonded Explosive



The polymer bonded explosive (JB-1) samples were treated by ultrasonic cavitation. The surface structure of JB-1 explosive was observed by scanning electron microscope (SEM), and its element distribution was analyzed by X-ray energy spectrum.

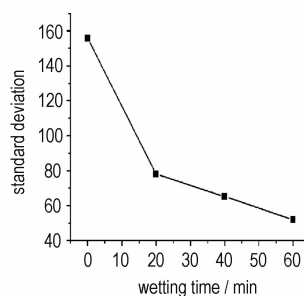
LI Jing-ming, TIAN Yong, DENG Zhi-guo, WEI Xing-wen  
*Chinese Journal of Energetic Materials*, 2006, 14(1): 35–37

### Steven Test and Impact Sensitivity for Two Explosives

Two explosives PBX-1 and PBX-2 were studied by using Steven test with a steel projectile of 2.0 kg. The pressure change was measured by pressure gauges, and ignition delay time was estimated and analyzed by high-speed motion pictures.

DAI Xiao-gan, XIANG Yong  
*Chinese Journal of Energetic Materials*, 2006, 14(1): 38–41

### Delay-time Precision of B-BaCrO<sub>4</sub> Delay Composition by Press Charge in Wet State



The precision of B-BaCrO<sub>4</sub> delay composition pressed in wet state was studied with high-low temperature test and long-storage test.

LI Hui-qin, CHENG Yi, JIANG Xian-guang,  
 ZHU Xu-qiang, WU Han-jie  
*Chinese Journal of Energetic Materials*, 2006, 14(1): 42–44

### Preparation of Nano-size Lead Phthalate and its Catalysis for Double-base Propellant Combustion

The nano-sized Pb(II)-Phtalate with average diameter in 43 nm was prepared. The effects of reaction temperature, reactant concentration, quantity of dispersant on particle size were studied. Combustion catalyzing capability of nano-sized Pb(II)-Phtalate in double-base propellant (DB propellant) was studied. The catalysis of the nano-particle for double-base propellant (DB propellant) was studied.

WANG Han, ZHAO Feng-qi, GAO Hong-xu,  
 LI Shang-wen, HAO Hai-xia  
*Chinese Journal of Energetic Materials*, 2006, 14(1): 45–48

### Locus Model for the Pellet's Shiver of Smoke Projectile

ZHU Chen-guang, PAN Gong-pei, CHEN Jing-ye,  
YANG Zhi-qiang

*Chinese Journal of Energetic Materials*, 2006, 14(1): 49–52

The locus equation for the flying shiver of smoke projectile was established considering the air friction and the gravitation. The exploding process of smoke projectile was shot by a high speed camera and its data were used to obtain related coefficients. The mathematical model was modified further.

### Heat Treatment of Polymer Bonded Explosive by Using Ultrasonic Characterization

TIAN Yong, ZHANG Wei-bin, LI Jing-ming,  
LIU Shi, YANG Zhan-feng

*Chinese Journal of Energetic Materials*, 2006, 14(1): 53–55

Ultrasonic characterization of polymer bonded explosive PBX-03 under 50 °C heat treatment was studied. Some new information about the effect and mechanism of heat treatment on PBX-03 was obtained.

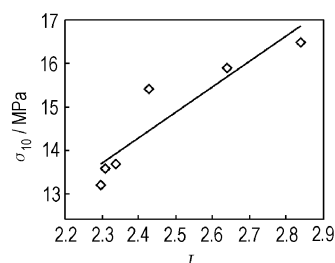
### Aging Mechanism of Rigid Polyurethane Foams at Indoor Storage Conditions

LIU Yuan-jun, HE Chuan-lan,

DENG Jian-guo, YOU Yu-sheng,

JI Ke-jian, ZHANG Yin-sheng, SUN Si-xiu

*Chinese Journal of Energetic Materials*, 2006, 14(1): 56–58



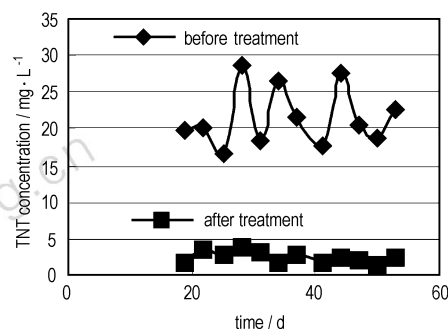
The aging mechanism of rigid polyurethane foam during storage was investigated with indoor storage tests, accelerated hygrothermal aging tests and Infrared (IR) spectra.

### Immobilized Anaerobic Treatment for Waste Water Containing TNT by Using Chitosan

XIAO Xiang-zhu, HAN Dun-xin,

XU Yong-hong, ZHANG Jin-wei

*Chinese Journal of Energetic Materials*, 2006, 14(1): 59–61



The immobilized anaerobic sludge ball was prepared by using chitosan as embedding agent, and waste water containing TNT was degraded by using upflow anaerobic sludge bed.

### Two Methods for Analyzing N<sub>2</sub>O<sub>4</sub> and N<sub>2</sub>O<sub>5</sub> in Anhydrous HNO<sub>3</sub>

ZHANG Jing, WANG Li, SU Min,

ZHANG Xiang-wen, MI Zhen-tao

*Chinese Journal of Energetic Materials*, 2006, 14(1): 62–65

The concentrations of tetroxide dinitrogen (N<sub>2</sub>O<sub>4</sub>) and pentoxide dinitrogen (N<sub>2</sub>O<sub>5</sub>) and nitric acid in N<sub>2</sub>O<sub>4</sub>-N<sub>2</sub>O<sub>5</sub>-HNO<sub>3</sub> system were measured by the chemical titration and the nuclear magnetic resonance spectra (NMR) combining titration, respectively. The effects of the oxidants, the solvents and the sampling methods on the concentrations analyzed by the chemical titration were investigated.

### Progress in Electrochemical Synthesis of a New Green Nitrating Agent of Dinitrogen Pentoxide

SU Min, WANG Qing-fa, ZHANG Xiang-wen,  
WANG Li, MI Zhen-tao

*Chinese Journal of Energetic Materials*, 2006, 14(1): 66–70

The electrochemical synthesis of  $N_2O_5$  by oxidation of  $N_2O_4$  and by dehydration of  $HNO_3$  were reviewed, and the comparison between two methods was presented. The development and prospect on the research of  $N_2O_5$  were also proposed.

### Review on Methods of Preparing Nanocomposites Energetic Materials in Liquid Phase

ZHANG Guang-quan, LI Jin-shan

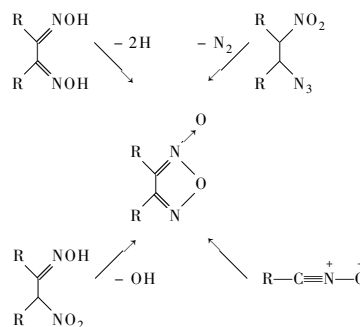
*Chinese Journal of Energetic Materials*, 2006, 14(1): 71–76

Four methods of preparing nanocomposites energetic materials using sol-gel, spray route, precipitation, and freeze-drying were reviewed.

### Review on the Synthesis of Furoxan Derivatives

LI Zhan-xiong, TANG Song-qing

*Chinese Journal of Energetic Materials*, 2006, 14(1): 77–79



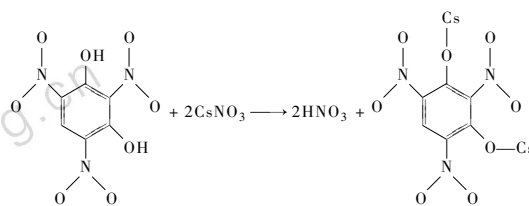
The synthesis and property of furoxan derivatives, reactions giving 3-amino-4-azidocarboxyl-furoxan precursor, and other phenyl furoxan derivatives, were summarized.

### Synthesis, Crystal Structure and Thermal Behaviour

of  $[Cs_2(TNR) \cdot 2(H_2O)]_n$

ZHENG Hong, ZHANG Tong-lai, YANG Li,  
ZHANG Jian-guo, QIAO Xiao-jing

*Chinese Journal of Energetic Materials*, 2006, 14(1): 80



$[Cs_2(TNR) \cdot 2(H_2O)]_n$  was synthesized. The structure of  $[Cs_2(TNR) \cdot 2(H_2O)]_n$  was characterized by X-ray diffraction, elemental analysis and FT-IR. The thermal decomposition mechanism was studied by means of DSC and TG-DTG and FTIR techniques.

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