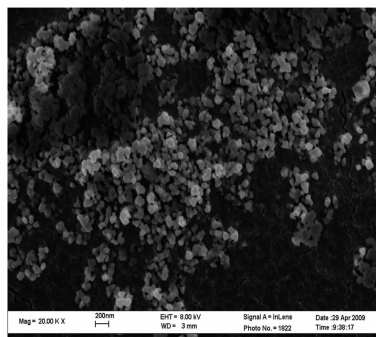


Preparation of $\text{Cu}_2\text{Cr}_2\text{O}_5/\text{SiO}_2$ Composite Particles and Its Effect on Combustion Characteristic of AP Composite Propellant

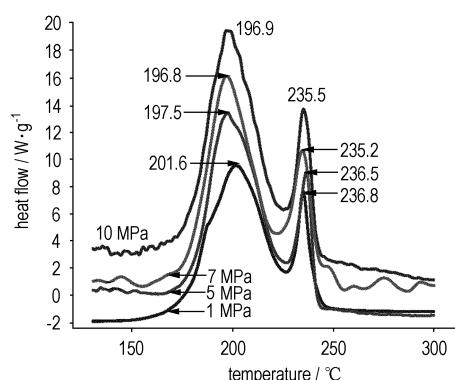


$\text{Cu}_2\text{Cr}_2\text{O}_5/\text{SiO}_2$ composite particles was prepared by the improved coprecipitation method, and were characterized by SEM and BET. Its catalytic effect on ammonium perchlorate (AP) was studied by DTA. The combustion characteristic of AP composite propellant was tested.

BAI Ji-rong, MA Wei-shuai, SONG Hong-chang

Chinese Journal of Energetic Materials, 2010, 18(4): 361–363

Effects of Organic Copper Salts on Combustion Characteristics and Thermal Decomposition at High Pressure of RDX-CMDB Propellants

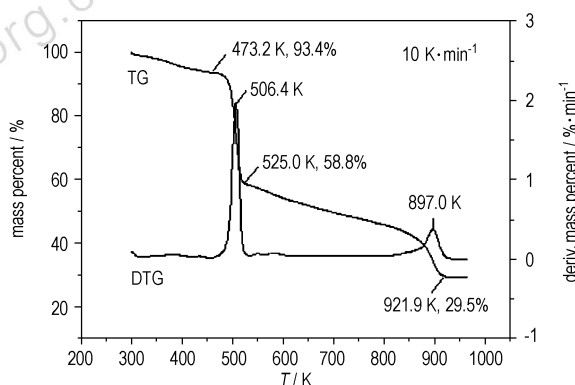


The effects of three organic copper salts, including copper 2,4-dihydroxybenzoate (β -Cu), copper 3-nitro-1,2,4-triazol-5-onate (NTO-Cu) and 2,4-dinitroimidazole copper (NI-Cu) salt on combustion characteristics and thermal decomposition of RDX-CMDB propellant were studied at various pressures.

FU Xiao-long, LI Ji-zhen, FAN Xue-zhong, WANG Qiong, WEI Hong-jian, ZHANG La-ying

Chinese Journal of Energetic Materials, 2010, 18(4): 364–367

Thermal Behavior and Nonisothermal Decomposition Reaction Kinetics of 4-Amino-1,2,4-triazole Copper Complex

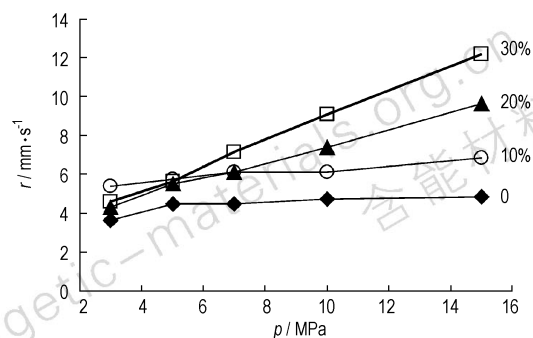


$\text{Cu}(4\text{-ATz})_2\text{Cl}_2 \cdot \text{H}_2\text{O}$ was synthesized and characterized. The thermal decomposition of the complex is composed of two processes, the first one is the main decomposition reaction stage, the reaction mechanism is classified as chemical reaction, and the kinetic equation is $d\alpha/dt = 10^{21.83} \times \frac{3}{2} (1-\alpha) [-\ln(1-\alpha)]^{1/3} \times \exp(-2.75 \times 10^4/T)$.

REN Ying-hui, LI Dan, ZHAO Feng-qi, YI Jian-hua, MA Hai-xia, SONG Ji-rong

Chinese Journal of Energetic Materials, 2010, 18(4): 368–371

Combustion Properties of PGN/ADN Propellants

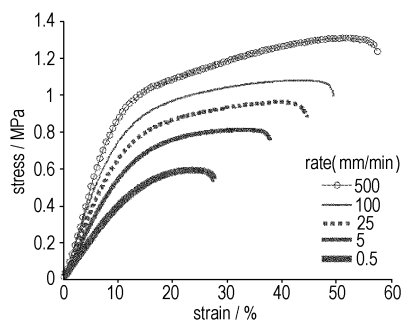


SHANG Dong-qin, HUANG Hong-yong

Chinese Journal of Energetic Materials, 2010, 18(4): 372–376

The effect of ADN content on the combustion properties of PGN/ADN propellants at pressure zone 3 MPa to 15 MPa was studied.

Effect of Strain Rate and Loading on Mechanical Properties and Dissipated Energy for HTPB Propellant

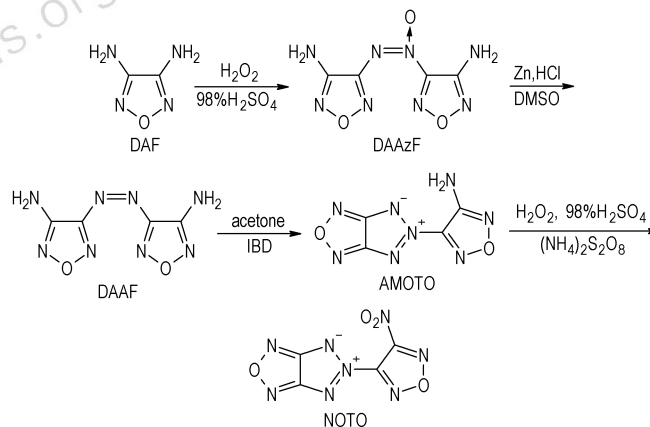


WANG Yu-feng, LI Gao-chun, LIU Zhu-qing, DING Biao

Chinese Journal of Energetic Materials, 2010, 18(4): 377–382

The influence of strain rate and loading on tensile properties of HTPB propellant was studied by means of uniaxial tension and cycling loading. The dissipated characteristics under mechanical loading was analyzed based on dissipated energy model. The relationships between tensile strength, elongation, dissipated energy and the logarithm of strain rate were created by linear regression.

Synthesis of 5-(4-Nitro-1,2,5-oxadiazol-3-yl)-5H-[1,2,3]triazolo[4,5-c][1,2,5]oxadiazolium Inner Salt



ZHANG Ye-gao, WANG Bo-zhou, LIU Qian, ZHOU Yan-shui, WANG Xi-jie

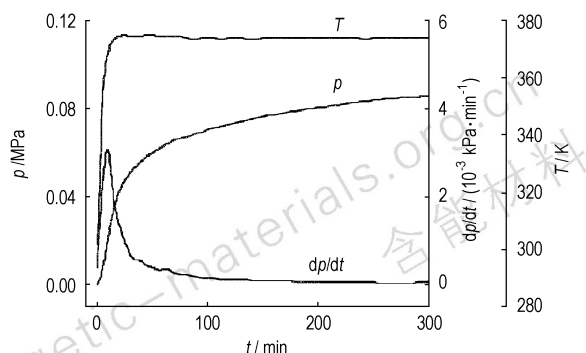
Chinese Journal of Energetic Materials, 2010, 18(4): 383–386

NOTO was synthesized starting from diaminofurzan (DAF) by oxidation, reduction, cyclization and the second oxidation with a total yield of 17.5%.

Dynamic Vacuum Stability Test (DVST) Method (II) : Thermal Decomposition of RDX

YIN Yan-li, YANG Li, HU Xiao-chun, LI Zhi-min, LI Kun-yuan,
ZHANG Tong-lai, ZHANG Jian-guo

Chinese Journal of Energetic Materials, 2010, 18(4) : 387 – 392

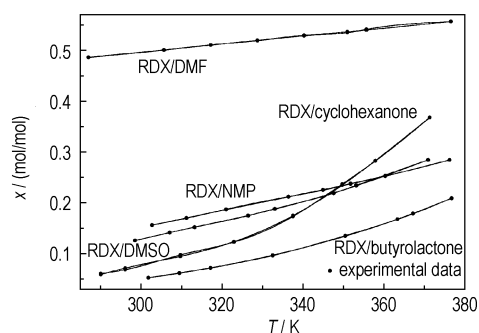


Dynamic Vacuum Stability Test (DVST) method was used to study the thermal decomposition process of RDX. Through the DVST test, the curve of parameters of pressure and temperature was obtained, which could be used to describe the decomposition of RDX. The pressure of test tubes increased with the temperature increasing in the non-isothermal stage, and the rate of pressure change reduced with the time in the isothermal phase.

Measurement of Solid-Liquid Equilibrium and Its Model for RDX Solution

ZHU Yong, GE Zhong-xue, WANG Bo-zhou, LI Pu-rui

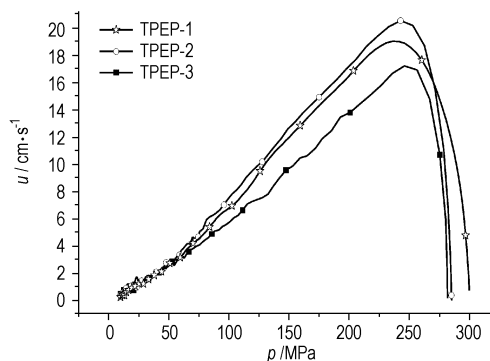
Chinese Journal of Energetic Materials, 2010, 18(4) : 393 – 396



Using a laser monitoring observation technique, the solubility of RDX in cyclohexanone, dimethylsulfoxide, γ -butyrolactone, *N*-methyl-2-pyrrolidone and *N,N*-dimethylformamide was determined. The Apelblat equation, λh equation and NRTL equation were used to correlate the solubility data. Furthermore, the selection of appropriate polynomial and the parameter fitting were conducted.

Effect of Particle Size and Types of Nitramine on Combustion Performance of ETPE Gun Propellants Based on BAMO-AMMO

ZHAO Ying, YANG Li-xia, LIU Yi, ZHAO Hong-li,
JIN Jian-wei, LIU Lai-dong, ZHAO Bao-ming, ZHANG Zou-zou
Chinese Journal of Energetic Materials, 2010, 18(4) : 397 – 401



Effect of particle size and types of nitramine on combustion performance of energetic thermoplastic elastomer (ETPE) gun propellants based on BAMO-AMMO were studied by closed bomb test.

Power Test of Pyrotechnics by Lead Block Method

LI Yu-ping, LIU Yu-cun, YU Yan-wu, GUO Jia-hu, ZHENG Chang-hong

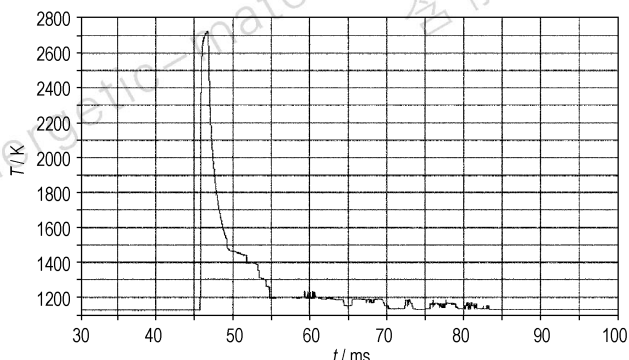
Chinese Journal of Energetic Materials, 2010, 18(4): 402–404

Three kinds of powdery pyrotechnics were tested through lead block method. Results show that the power of fulminating powder is the maximum, and the power of red powder and black powder are the minimum comparatively.

Flame Temperature Measurement of Pyrotechnic Composition Using Multi-spectral Thermometry

LI Zhan-ying, XI Lan-xia, LIU Ju-peng, GUO Chong-xing, LIU Chun-jian, LIU Huan-yang

Chinese Journal of Energetic Materials, 2010, 18(4): 405–408

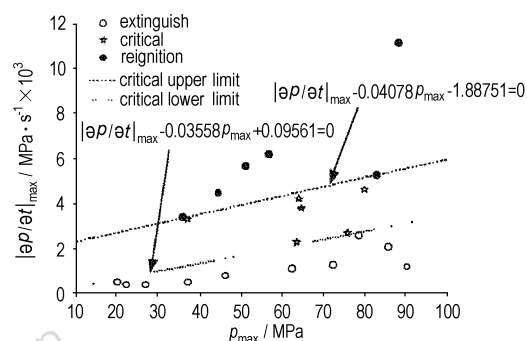


To take a type of electric igniters for example, the multi-spectral thermometry method which is fast-responding and real-time has been used to measure the true temperature of pyrotechnic composition during the combustion process.

Prediction Model for Combustion State of Base Bleed Propellant Based on Perceptron Simulation

ZHANG Ling-ke, ZHOU Yan-huang, YU Yong-gang, ZHAO Wei

Chinese Journal of Energetic Materials, 2010, 18(4): 409–413



The combustion behavior of base bleed propellant has three states under the condition of transient depressurization. A single layer and a double-layer perceptron were trained by test data. The decision boundary of combustion states of base bleed propellant was obtained.

Experimental Investigation of Local Ignition for Emulsion Explosives

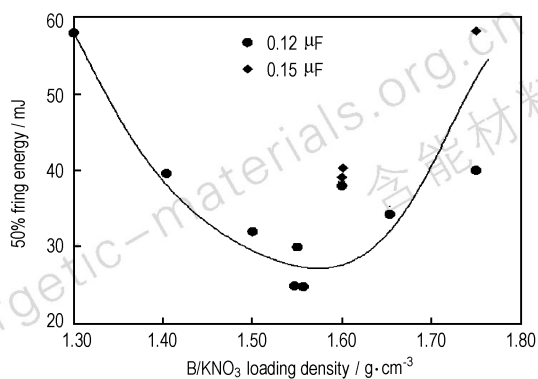
XU Zhi-xiang, LIU Da-bin, HU Yi-ting, YE Zhi-wen, WEI Yan-an

Chinese Journal of Energetic Materials, 2010, 18(4): 414–418



Local ignition was investigated for emulsion explosives containing expanded perlite as the density control material with small sized equipment that has been referred to the French method and American method.

Study on Low Energy Exploding Foil Igniter

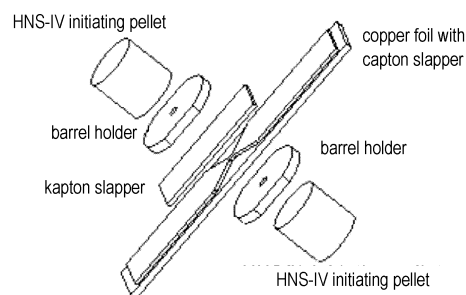


YANG Zhen-ying, LIANG Guo-ying, CHEN Jing, ZHOU Zhi,
ZHANG Yu-ruo, LEI Ming

Chinese Journal of Energetic Materials, 2010, 18(4): 419–422

After grain refinement, 50% fring energy of B/KNO₃ composition is much lower than before, with small standard deviation scatter as well. The loading density of 1.50–1.64 g·cm⁻³ for ignition composition has some effect on igniting energy.

Initiation Technique of One Foil Bi-directional Exploding Foil

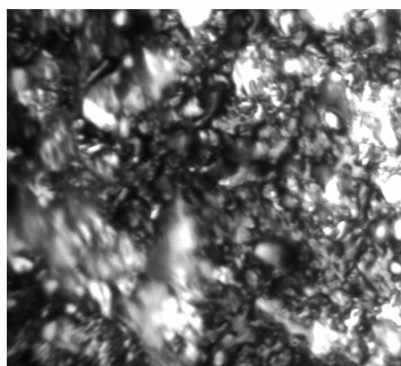


ZHANG Yu-ruo, LI Hong-qi, GAO Yan, LIANG Guo-ying,
YANG Zhen-ying, HUANG Hao

Chinese Journal of Energetic Materials, 2010, 18(4): 423–426

A unique bi-directional exploding foil initiator (EFI) has been demonstrated. A single bridge foil propels two flyers in opposite directions, thereby initiating two HNS-IV explosive pellets.

Chemical Reaction Property of Al/CuO Multilayer Films

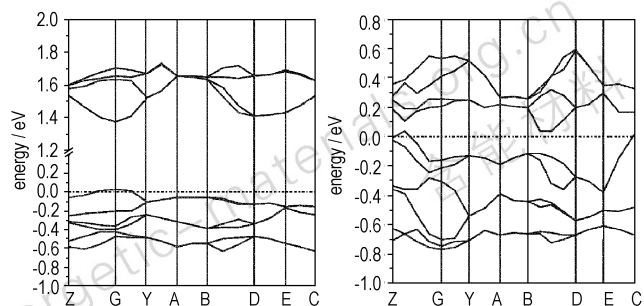


ZHU Peng, SHEN Rui-qi, YE Ying-hua, HU Yan,
HUANG Dao-wu

Chinese Journal of Energetic Materials, 2010, 18(4): 427–430

Al/CuO multilayer films were deposited with magnetron sputtering process and analysed with differential scanning calorimetry (DSC).

Theoretical Studies of Impact Sensitivity of Energetic Crystals-First-Principles Band Gap (ΔE_g) Criterion

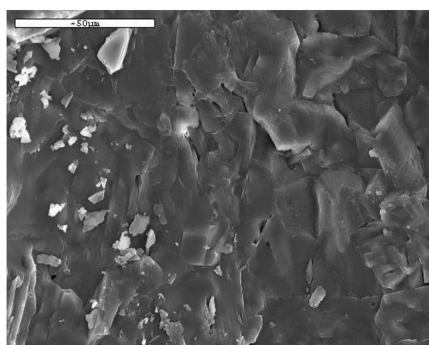


ZHU Wei-hua, ZHANG Xiao-wen, XIAO He-ming

Chinese Journal of Energetic Materials, 2010, 18(4): 431–434

Band structure of ϵ -CL-20 crystal at different pressures (200 GPa and 400 GPa) were revealed. As the pressure increased, its band gaps decreased.

Shock Sensitivity of DNTF Reduced by Using DNAN



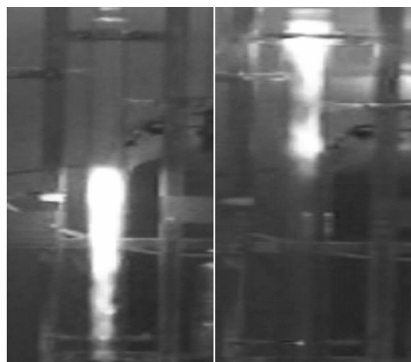
WANG Hao, WANG Qin-hui, HUANG Wen-bing,

LUO Yi-ming, WANG Hong-xing

Chinese Journal of Energetic Materials, 2010, 18(4): 435–438

Crystal shape of DNTF/DNAN 80/20 shows the co-melt explosive has good integrated performance between sensitivity to shock and crystal structure.

Experimental Study on Explosion Limits and Suppression of Combustible Liquid



YAO Gan-bing, XIE Li-feng, LIU Jia-cong, WANG Xin

Chinese Journal of Energetic Materials, 2010, 18(4): 439–442

The explosion limits and the least suppression explosion concentrations of RP-5 oil, RP-3 oil and alcohol air mixtures were measured respectively by use of the apparatus, which was designed for measuring explosion limit of combustible liquid vapor.

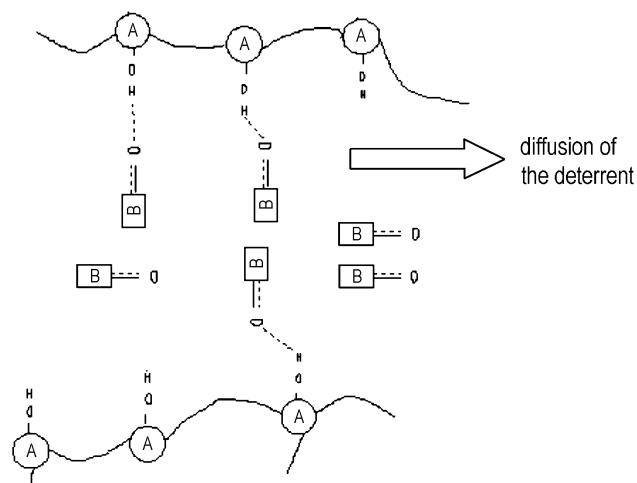
Development and Innovation of Pyrotechnics in China



PAN Gong-pei

Chinese Journal of Energetic Materials, 2010, 18(4): 443–446 The development of pyrotechnics in China were reviewed.

Review on Distribution and Diffusion of Deterrents in Gun Propellants



LIU Bo, WANG Qiong-lin, LIU Shao-wu, PAN Qing,
YU Hui-fang, WANG Feng, LI Da

Chinese Journal of Energetic Materials, 2010, 18(4): 447–452 The concentration distribution, diffusion and mechanism of the deterrents were reviewed.

Review on Computer Simulation of Solid Propellant Aging

LI Qian, QIANG Hong-fu, WU Wen-ming

Chinese Journal of Energetic Materials, 2010, 18(4): 453–459 Applications of microcosmic and mesoscopic molecular simulation methods for construction propellant microstructure, estimation of component consistency, analysis of micro-mechanism of cross linkage, degradation and phase change were mentioned.

Review on Electrostatic Hazards of Composite Solid Propellant

BAO Tong, ZHANG Wei

Chinese Journal of Energetic Materials, 2010, 18(4): 460–466 The progress in research on electrostatic hazards of composite solid propellant was summarized in three aspects, which are experimental testing method, theoretical prediction and electrostatic effect mechanism.

