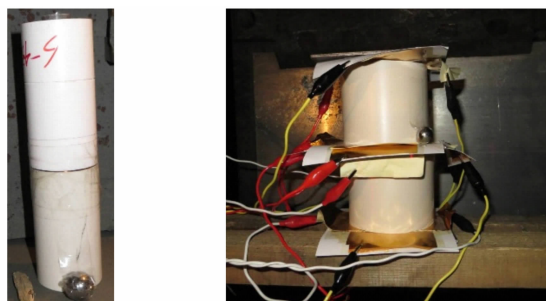


Numerical Simulation and Experimental Study on the Cratering Stage of Shaped Charge Jet Penetrating into Target



SHI Jin-wei, LUO Xing-bai, JIANG Jian-wei, LI Mei,
ZHEN Jian-wei

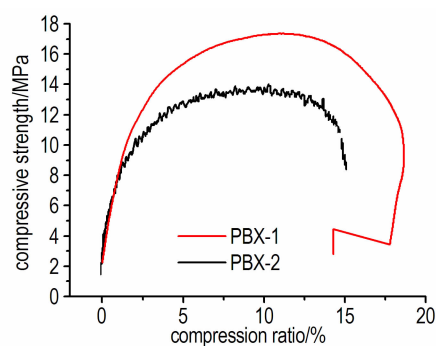
Chinese Journal of Energetic Materials, 2016, 24(3): 213–218

The penetrating process of 50 mm caliber shaped charge penetrating spaced target with water interlayer (2 mm×4 mm steel plates +100 mm water interlayer) was studied through theoretical and experimental methods.

Mechanical Properties of Polyurethane Cured by DDI/IPDI and its Application in PBX

ZHENG Bao-hui, GUAN Li-feng, LI Yu-bin, LUO Guan,
LIU Xu-wang

Chinese Journal of Energetic Materials, 2016, 24(3): 219–225

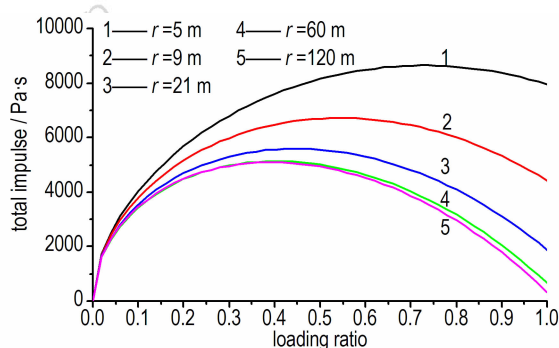


The mechanical properties of HTPB-based polyurethane cured by a new mixed curing agent composed of IPDI and DDI and its application in PBX were studied.

Effect of Loading Ratio of Thermobaric Warhead on Damage Power

ZHANG Ding-shan, ZHOU Tao, XU Bi-ying,
ZHAO Chen-zhong, YAO Xing-zhu

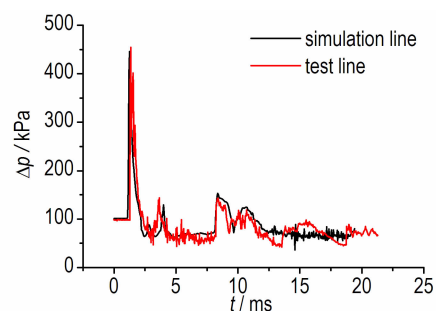
Chinese Journal of Energetic Materials, 2016, 24(3): 226–230



The explosion characteristics test of 30 kg thermobaric charge was carried out and the explosion production and output of energy were obtained. The mathematical model of total energy and total specific impulse was set up according to test results. The total specific impulse at different distance to the explosion center was calculated by using the model when the 200 kg thermobaric warhead had different loading ratio.

Shockwave Propagation Characteristics of Thermobaric Explosive in an Explosion Chamber

ZHAO Xin-ying, WANG Bo-liang, LI Xi, HAN Zao,
DENG Jin-bang
Chinese Journal of Energetic Materials, 2016, 24(3): 231–237



Explosion experiments of thermobaric explosive were implemented in an explosion chamber. Pressure histories were obtained by piezoelectric measurement system. At the same time, the experiments were simulated with AUTODYN. The propagation characteristics of shock wave were obtained by analyzing the pressure-time curves of test and simulation. The curves of overpressure-time obtained by test and simulation were compared.

Design and Synchronization Analysis of Structural Parameter of a Multi-point Explosive Circuit

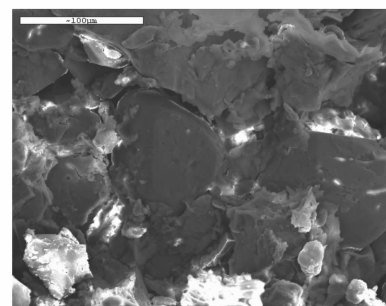
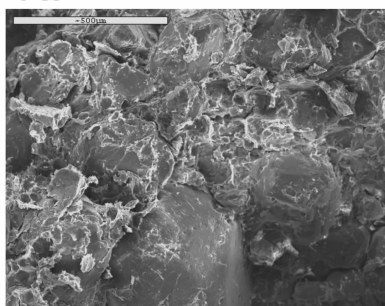
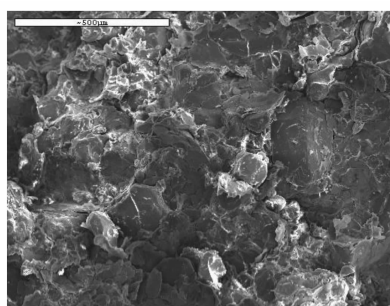
SHEN Hui-ming, LI Wei-bing, WANG Xiao-ming, LI Wen-bin
Chinese Journal of Energetic Materials, 2016, 24(3): 238–243



Asynchronous explosive circuit with the typical plate structure was put forward. The key structural parameters of this explosive circuit are obtained. The synchronization of the explosive circuit was theoretical analyzed.

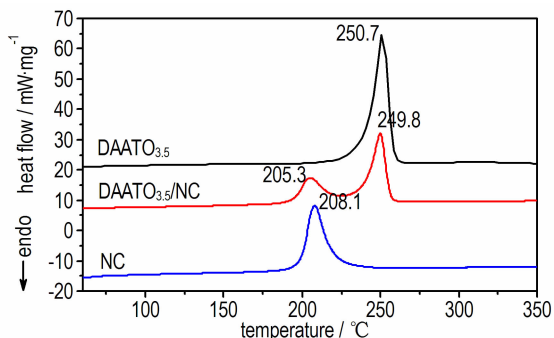
Effects of Thermal Shock on the Performance of a Pressed Aluminized Explosive

WANG Cai-ling, ZHAO Sheng-xiang, FANG Wei,
LI Wen-xiang, YAO Li-na
Chinese Journal of Energetic Materials, 2016, 24(3): 244–248



The microscopic damage styles of JHL-X explosive were investigated after thermal shocktest. Its structure was characterized by a scanning electron microscope.

Interaction and Compatibility of DAATO_{3.5} with Main Components of CMDB Propellant

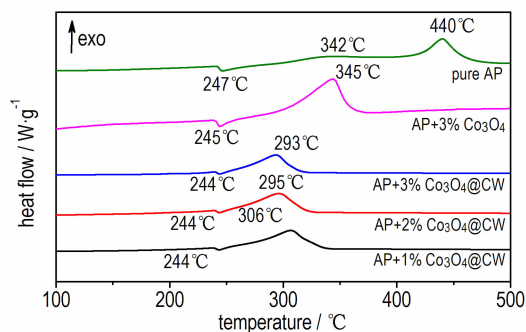
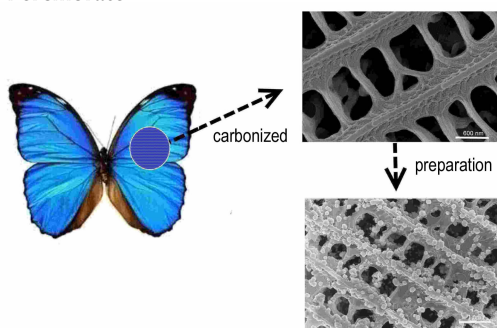


The interaction and compatibility of *N*-oxidation-3,3'-azobis(6-diamino-1,2,4,5-tetrazine) (DAATO_{3.5}) with main components of modified composite double-base (CMDB) propellant were studied by using differential scanning calorimetry (DSC) and vacuum stability test (VST) method, and the compatibility of DAATO_{3.5} with mixture system of CMDB propellant was investigated by curing experiment of propellant at 70 °C.

JU Rong-hui, LI Ji-zhen, FAN Xue-zhong, WEI Hong-jian, LUO Yi-ming, JIANG Qiu-li

Chinese Journal of Energetic Materials, 2016, 24(3): 249–255

Cobalt Oxide @ Carbonized Wings Composite: Preparation and Catalytic Performance for Decomposition of Ammonium Perchlorate

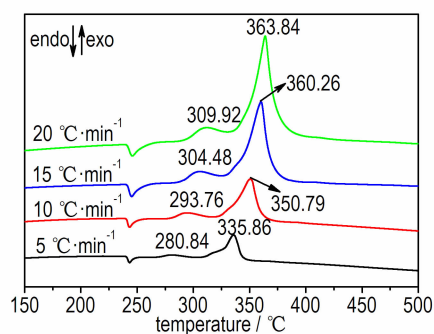


ZHENG Yuan-chuan, LI Zhao-qian, XU Juan, MA Yong-jun, PEI Chong-hua

Chinese Journal of Energetic Materials, 2016, 24(3): 256–260

The cobalt oxide @ carbonized wings composite ($\text{Co}_3\text{O}_4 @ \text{CW}$) was prepared by hydrothermal method. Thermal decomposition of ammonium perchlorate (AP) with $\text{Co}_3\text{O}_4 @ \text{CW}$ was studied.

Preparation and Properties of Ultra-fine Ammonium Perchlorate Composite Particles

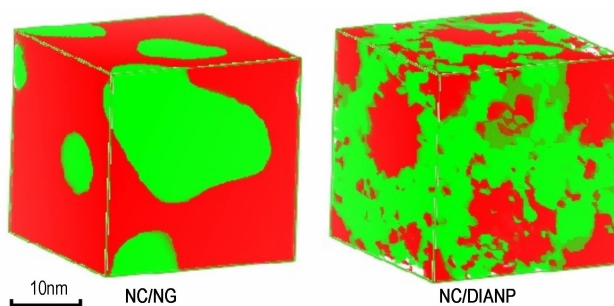


WU Fei, JIAO Zong-ping, GUO Xiao-de, LI Long, LIN Hai-yong, WANG Zhi-xiang

Chinese Journal of Energetic Materials, 2016, 24(3): 261–268

The thermal behavior and kinetic parameters of the exothermic decomposition reaction of ultra-fine ammonium perchlorate (AP) composite particles at various heating rates were investigated by DSC.

Experiment and Simulation on Plastication of NC by DIANP

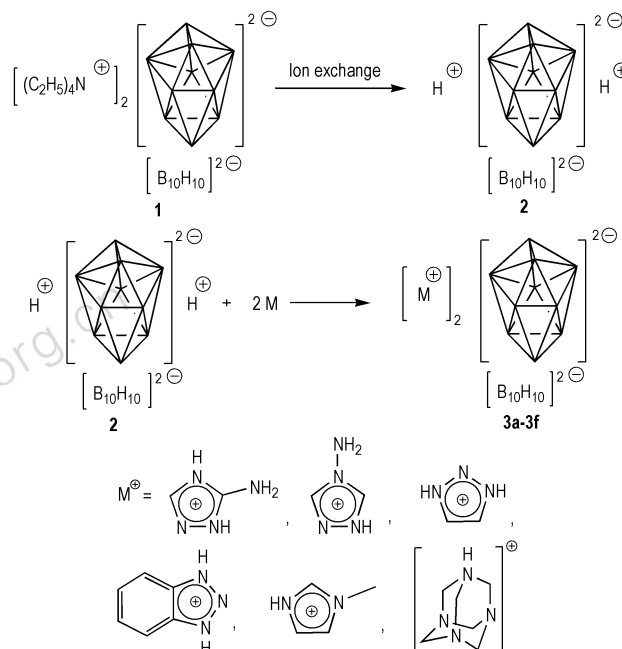


The plasticizing rate and quality of 1, 5-diazo-3-nitrazapentane (DIANP) and nitroglycerine (NG) on nitrocellulose (NC) were compared using dynamic rheology and scanning electron microscope technologies. The solubility parameters of DIANP, NG and NC, and diffusion coefficients of DIANP and NG in NC matrix were calculated by molecular dynamics simulations. Meanwhile, the mesoscopic structure of NC/DIANP and NC/NG blend systems were established by mesoscopic dynamics simulations.

QI Xiao-fei, YAN Qi-long, LIU Meng, HU Mi

Chinese Journal of Energetic Materials, 2016, 24(3): 269–273

Synthesis, Structure Characterization and Thermal Properties of Novel Cationic Polynitrogen Heterocyclium Decahydrodecaborates



Six novel heterocycliumdecahydrodecaborates were synthesized by the reaction of $H_2B_{10}H_{10}$ and the heterocyclic compounds or urotropine. The structures were characterized by IR, 1H NMR, ^{13}C NMR and EA. Their thermal properties were investigated by DSC and TG.

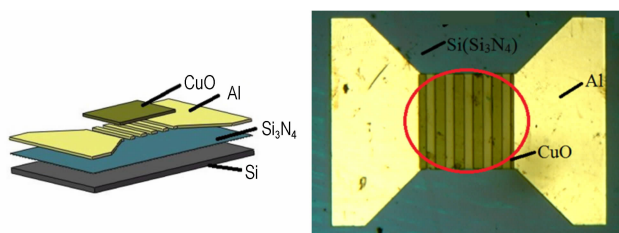
XUE Yun-na, WANG Wei-qiang, LI Jiao-yi, LU Ju-you, Lü Jian

Chinese Journal of Energetic Materials, 2016, 24(3): 274–278

Nonlinear Energy Conversion Performance of Electrical Explosion of Schottky Barrier Structured Al/CuO Transduction Chip

LI Jie, ZHU Peng, HU Bo, SHEN Rui-qi, YE Ying-hua,
WU Li-zhi

Chinese Journal of Energetic Materials, 2016, 24(3): 279–283

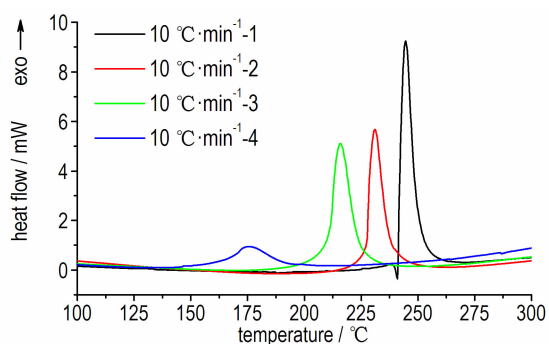


Al/CuO Schottky junction transduction chip was designed and prepared based on Schottky barrier theory. The electrical initiation performance of the transduction chip was studied by a breakdown voltage instrument. The electrical explosion characteristics of the transduction chips were studied by a capacitance discharge mode of capacitor discharging circuit.

Autocatalytic Thermal Decomposition Properties and Adiabatic Safety of Nitroguanidine

WANG Kai, LIU Da-bin, XU Sen, CAI Gao-wen, SHI Liang-yu,
BU Ling-tao

Chinese Journal of Energetic Materials, 2016, 24(3): 284–288

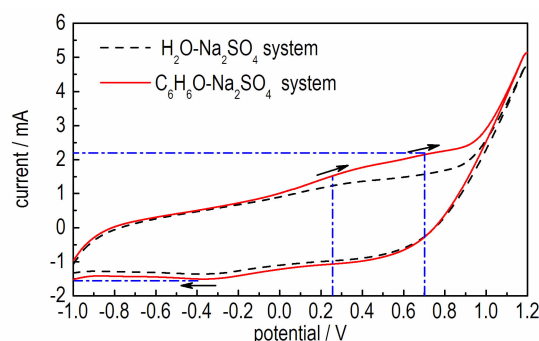


Thermal decomposition characteristics of nitroguanidine (NQ) was studied by differential scanning calorimetry (DSC) dynamic experiment. The effect of thermal history on the thermal stabilities of NQ was investigated by “interruption and re-scanning” method, and the conclusion was verified with the isothermal DSC experiment. The adiabatic security of NQ was investigated by the adiabatic calorimeter (ARC).

Electrochemical Reaction for Phenol on Ti/IrO₂-Ta₂O₅ Electrode

LI Hao-yue, GAO Jing, LIU You-zhi

Chinese Journal of Energetic Materials, 2016, 24(3): 289–294

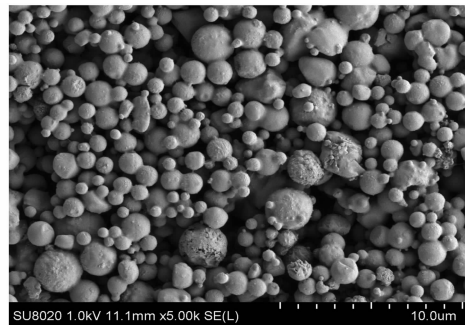


The oxidation of phenol on Ti/IrO₂-Ta₂O₅ electrode mainly occurs in the range of oxygen evolving potential. The electrochemical reaction behaviors of phenol on Ti/IrO₂-Ta₂O₅ electrode were investigated by cyclic voltammetry. The efficiency of the electrode degradation of phenol was explored.

Effect of the Spray Drying Technological Conditions on the Particle Size of HMX/ F_{2602} Core-shell Composite Microspheres

Ji Wei, LI Xiao-dong, WANG Jing-yu

Chinese Journal of Energetic Materials, 2016, 24(3) : 295–299

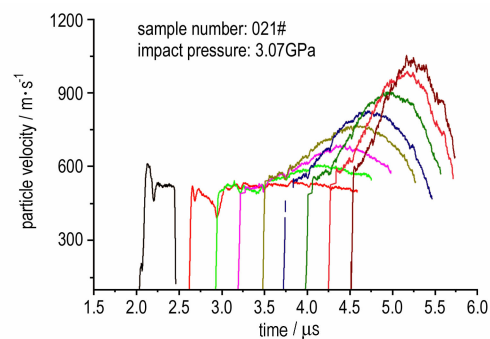


HMX/ F_{2602} core-shell composite microspheres were prepared via coat of F_{2602} on HMX particle surface using the suspension spray drying method. The effects of the suspension spray drying technological conditions including the inlet temperature, feed rate and solution concentration on the particle size of HMX/ F_{2602} core-shell composite microspheres were investigated.

Al-based Electromagnetic Particle Velocity Gauge Technique of Measuring the Particle Velocity of HMX-based PBX Explosives

LIU Jie, WANG Yan-fei, WANG Guang-jun, ZHANG Rong, ZHONG Bin, ZHAO Feng, ZHANG Xu

Chinese Journal of Energetic Materials, 2016, 24(3) : 300–305



Al-based electromagnetic particle velocity gauge together with gun driven experimental technique were studied. The reaction-build-up velocity profiles of HMX-based explosive with high accuracy under four different incident shock wave pressures are obtained by the Al-based electromagnetic particle velocity gauge.

Review on Interfacial Bonding Improving of TATB-based PBX

HE Guan-song, LIN Cong-mei, LIU Jia-hui, LIU Shi-jun, LIU Yong-gang

Chinese Journal of Energetic Materials, 2016, 24(3) : 306–314

The progress on the methods of improving the interfacial bonding for TATB-based polymer bonded explosive (PBX) in recent years was reviewed.

Executive editor: ZHANG Qi WANG Yan-xiu JIANG Mei