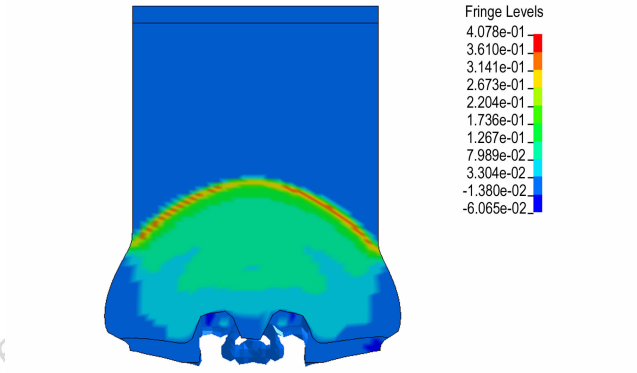
Numerical Simulation and Experimental Study of LEFP on Impact Initiation Process of Charge with Shell

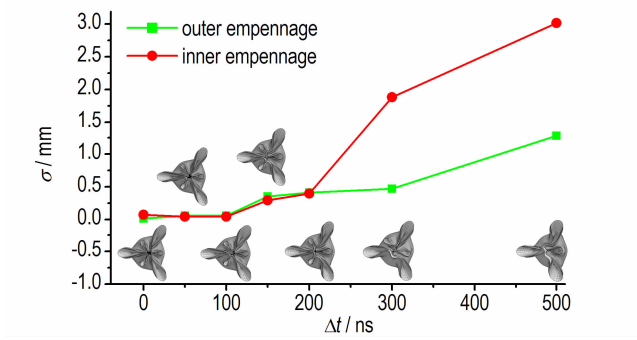


LI Bing, CHEN Xi, DU Zhong-hua, WANG Qi, XU Li-zhi

Chinese Journal of Energetic Materials,2016,24(11): 1034–1040

Based on near-half-cylindrical linear forming the characteristics of LEFP, the impacting initiation characteristics of LEFP on charge warhead with shell was studied.

Effects of Three-point Initiation Synchronization Error on Formation Performance of EFP with Fins

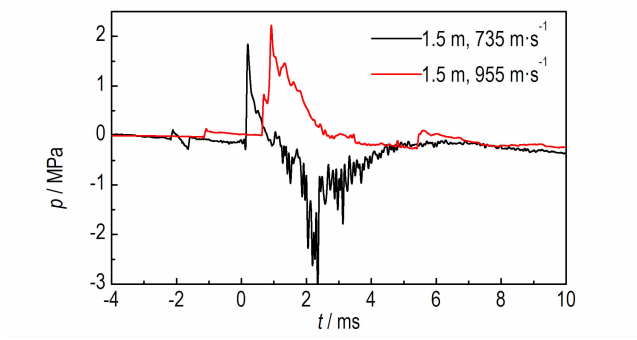


LI Rui, LI Wei-bing, WANG Xiao-ming, LI Wen-bin

Chinese Journal of Energetic Materials,2016,24(11): 1041–1047

The effects of three-point initiation synchronization error on formation and velocity of EFP with fins was studied by using LS-DYNA software in different condition. The asymmetric collision of detonation wave caused by the error and collapse of the liner were analyzed.

Experimental Study on Shock Initiation of Simulative Warhead by Energetic Kill Element

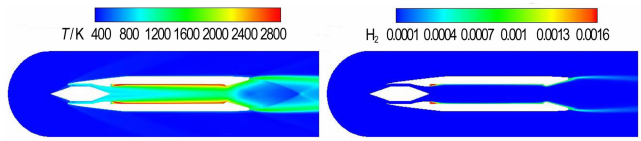


ZHOU Jie, HE Yong, HE Yuan, LING Qi

Chinese Journal of Energetic Materials,2016,24(11): 1048–1056

Experimental study on shock initiation of simulative warhead was carried out. The blast air shock wave overpressure was measured, which act as a parameter to calculate the TNT equivalent.

Numerical Simulation Investigation on Combustion Characteristic of Polyethylene in High-speed Ramjet Kinetic Energy Projectile

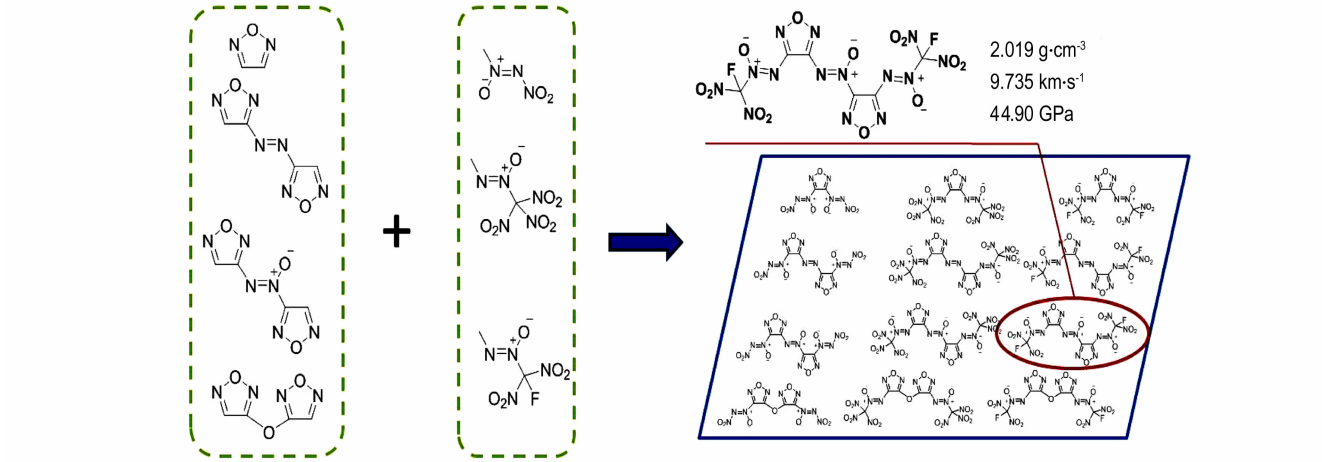


The numerical investigation on the integration flow field of high-speed ramjet kinetic energy projectile was carried out. The flow characteristics difference when ramjet work or no work was analyzed, and both the combustion and propulsive performance characteristics of Polyethylene when ramjet work were analyzed. The values of main performances are the nominal thrust of 250 N, net thrust of 76 N, and specific impulse based fuel of 10593 $m \cdot s^{-1}$.

ZHUO Chang-fei, ZOU Yan-bing, WANG Xiao-ming

Chinese Journal of Energetic Materials, **2016**, **24**(**11**): **1057–1062**

Theoretically Study on the Detonation and Safety Properties of Energetic Derivatives Based on Polynitromethylazoxyfurazan

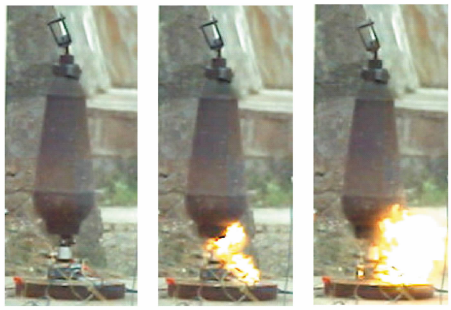


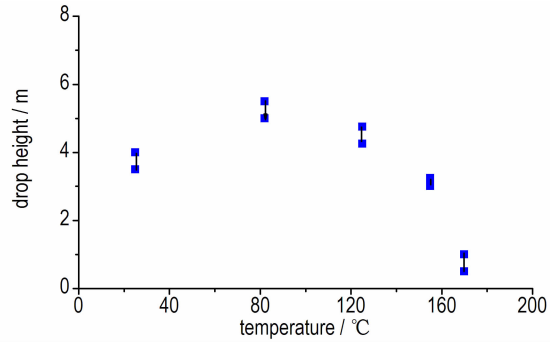
The effect of nitroazoxy, trinitromethylazoxy and fluorodinitromethylazoxy on the properties of disubstituted furazan, azofurazan, azoxyfurazan and furazan ether were studied theoretically and comparatively. Based on the calculated results of 12 furazan energetic derivatives, considering that 3, 3′-bis(fluorodinitromethylazoxy)-4, 4′-azoxyfurazan is considered to be a high energy density compound.

BI Fu-qiang, WANG Yu, WANG Bo-zhou, ZHANG Jia-rong, ZHANG Jun-lin, ZHAI Lian-jie, LI Xiang-zhi

Chinese Journal of Energetic Materials, **2016**, **24**(**11**): **1063–1069**

Response of a HMX Based PBX Explosive Under Thermal and Drop Hammer Impact Coupling Effect



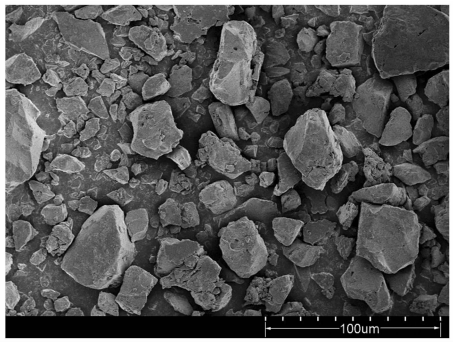


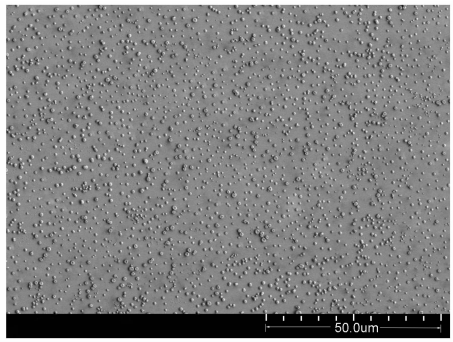
SHEN Chun-ying, HUANG Qian, LIU Shi-jun

Chinese Journal of Energetic Materials,2016,24(11):1070–1074

A thermal-impact coupling test instrument was designed to study the impact sensitivity of HMX-based PBX explosive at different temperature.

Preparationof Ultrafine and Spherical ε-CL-20 by Spray and Ultrasound-Assisted Method



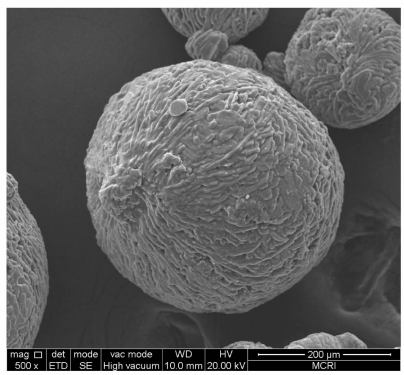


XU Yang, JIAO Qing-jie, CUI Qing-zhong, XU Wen-zheng, ZHANG Xiao-xin

Chinese Journal of Energetic Materials,2016,24(11):1075–1079

Ultrafine and spherical ε-CL-20 particles were prepared by the spray and ultrasound-assisted recrystallization device and characterized by SEM and XRD. Their thermal behaviors were studied by DSC.

Coating of Spherical ADN Particles by GAP/BPS Crosslinked Polymers

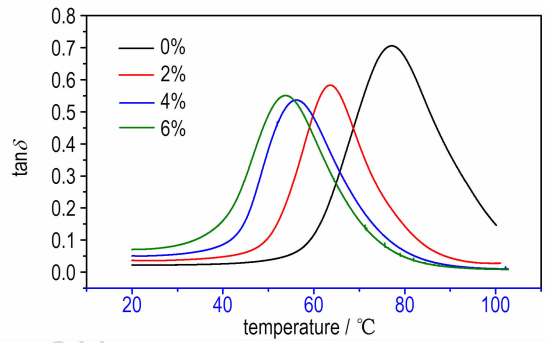


LU Xian-ming, MO Hong-chang, CHEN Bin, LIU Ya-jing, XU Ming-hui

Chinese Journal of Energetic Materials,2016,24(11):1080–1083

To overcome the incompatible problem of ADN and the isocyanates curing agents, the curing coating research of spherical ADN particles were carried out usinng GAP /BPS crosslinked polymers as a coating material via 1, 3 dipolar cycloaddition reaction.

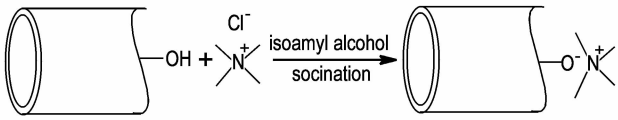
Effect of Ionic Liquid [BMIM][PF_6] on Plasticizing Properties of Acrolein-pentaerythritol Resin

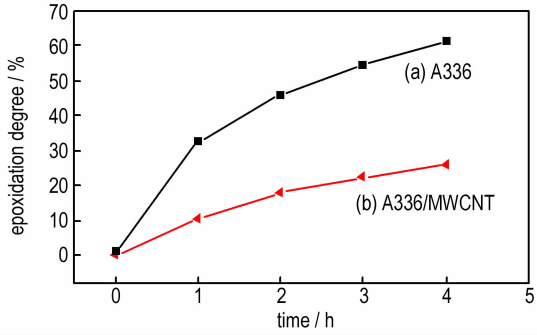


CAI Jia-lin, SHI Yuan-tong, LUO Guan, ZHEN Shen-sheng
Chinese Journal of Energetic Materials, 2016, 24(11): 1084–1088

Ionic liquid [BMIM][PF_6] was used as plasticizer of acrolein-pentaerythritol resin (123 resin). The rheology, comprehensive mechanical properties were studied for 123 resin plasticized by [BMIM][PF_6].

Catalytic Preparation of Epoxidized Hydroxyl-terminated Polybutadiene by Multiwalled Carbon Nanotubes

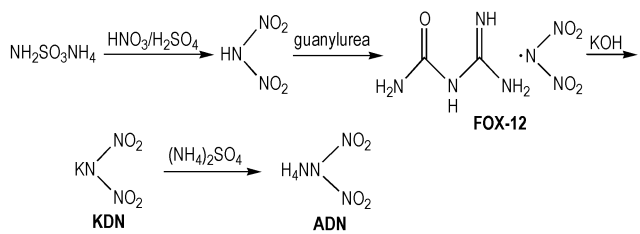




SHI Fei, WANG Qing-fa, ZHANG Xiang-wen
Chinese Journal of Energetic Materials, 2016, 24(11): 1089–1092

Multiwalled carbon nanotubes (MWCNT) grafted methyl trioctyl ammonium chloride (A336) was prepared by ultrasonication method. The synthesized A336/MWCNT catalyst was characterized by FTIR and TGA, and its catalytic behavior for the epoxidation of hydroxyl-terminated polybutadiene (HTPB) to synthesize epoxidized hydroxyl-terminated polybutadiene (EHTPB) was investigated.

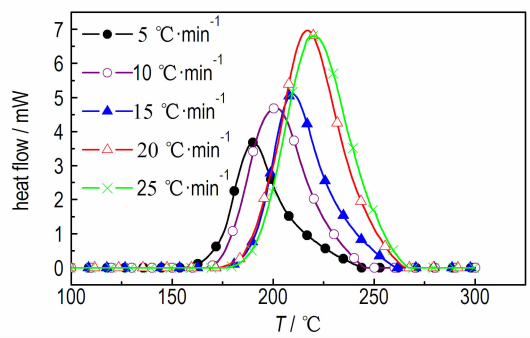
Enlargement Synthesis Technology and Perfomance Characterization of Dinitramide Salts



LEI Qing, LU Yan-hua, HE Jin-xuan
Chinese Journal of Energetic Materials, 2016, 24(11): 1093–1096

Ammonium sulfamate was nitrated at low temperature with mixed acid, and the reacting solution was neutralized with *N*-guanylurea to form *N*-guanylurea dinitramide (FOX-12). Potassium dinitramide (KDN) was produced by reacting FOX-12 with KOH in an aqueous solution. Ammonium dinitramide (ADN) was prepared by an ion-exchange reaction of KDN and $(NH_4)_2SO_4$.

Curing Reaction Kinetics of HTPB/TDI Bonding System

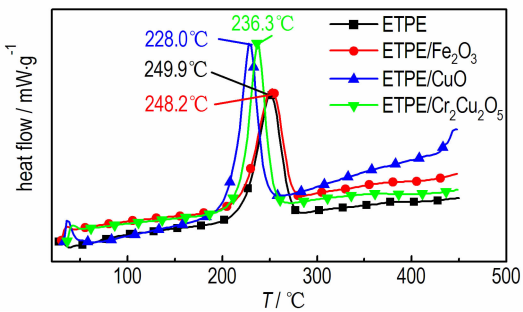


Isothermal and non-isothermal differential scanning calorimetry were used to study the curing kinetic processes of hydroxyl-terminated polybutadiene(HTPB) used for PBX. The function relation between the curing temperature and the curing time is fitted and obtained.

WU Xing-yu, CUI Qing-zhong, XU Jun

Chinese Journal of Energetic Materials,2016,24(11): 1097–1101

Effect of Burning Rate Catalysts on the Thermal Decomposition Properties of GAP-based ETPE Energetic Thermoplastic Elastormer

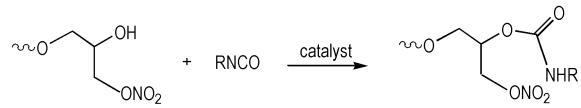


To selecte the optimum burning rate catalyst for the thermal decomposition of GAP-based energetic thermoplastic polyurethane elastomer (ETPE), the effect of the burning rate catalysts Fe_2O_3, CuO, $Cr_2Cu_2O_5$, $PbCO_3$, $C_6H_5O_7Pb$, NP and CB on the thermal decomposition properties of GAP-based ETPE were studied by TG and DSC.

LI Xin, GE Zhen, LI Qiang, LI Duo, ZUO Ying-ying, YAN Bin, LUO Yun-jun

Chinese Journal of Energetic Materials,2016,24(11): 1102–1107

Synthesis and Curing of Poly(glycidyl nitrate)(PGN)

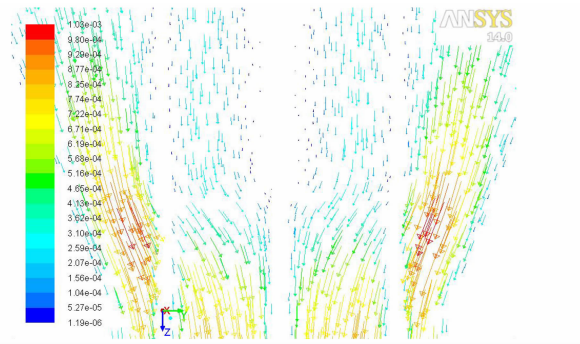


PGN were synthesized and cured. The curing characteristics of PGN were investigated.

WANG Wei, HAN Shi-min, ZHANG De-liang, XUE Jing-qiang, SHANG Bing-kun, XU Yan-lu, WANG Bo

Chinese Journal of Energetic Materials,2016,24(11): 1108–1113

Numerical Simulation of Extrusion Process and Die Optimization for 19-Hole Propellant

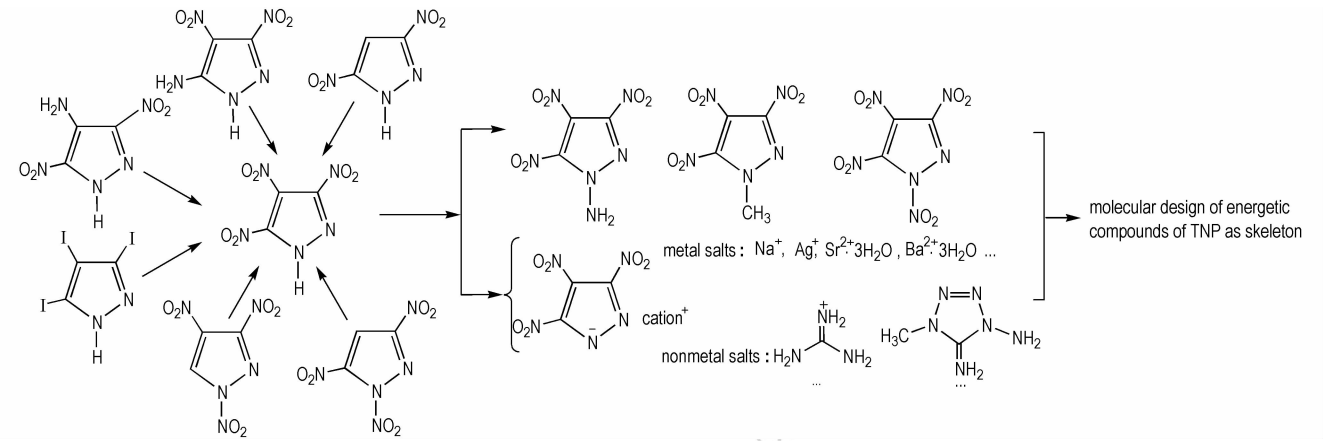


JI Dan-dan, LIU Zhi-tao, LIAO Xin, LÜ Sheng-tao, WANG Ze-shan

Chinese Journal of Energetic Materials, 2016, 24(11): 1114–1120

Simulation of the propellant flow in a 19-hole die channel provides the basis for optimization. The new die was processed and used to extrude propellant successfully.

Progress on 3,4,5-Trinitro-1*H*-pyrazole and Its Derivatives



WU Jun-peng, CAO Duan-lin, WANG Jian-long, LIU Yang, LI Yong-xiang

Chinese Journal of Energetic Materials, 2016, 24(11): 1121–1130

Synthesis methods, properties and applications of 3,4,5-trinitro-1*H*-pyrazole(TNP), and its covalent derivatives, and energetic ionic salts (including metal salts and nonmetal salts) were reviewed. The molecular design of energetic compounds of TNP as skeletonwas discussed.

Executive editor: WANG Yan-xiu ZHANG Qi JIANG Mei