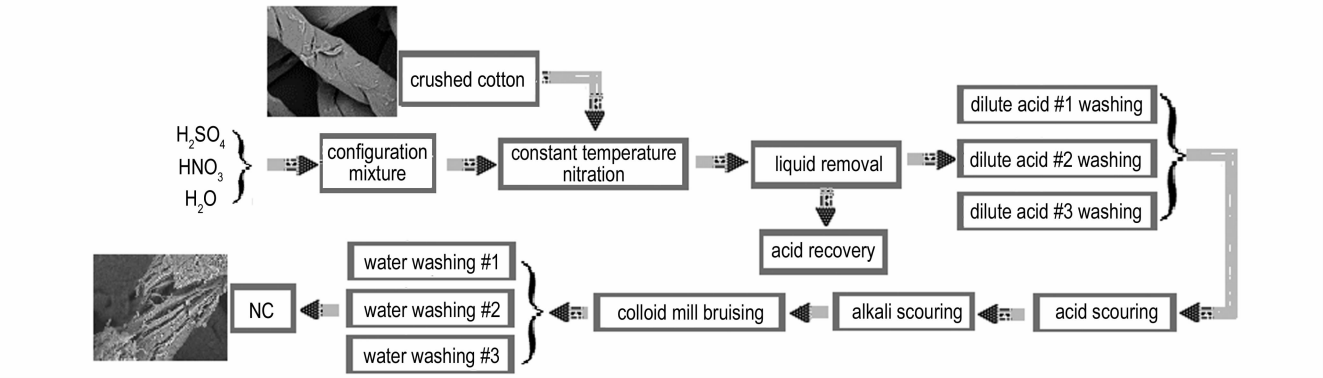
Effect of Maturity and Nitrification Process of Purified Cotton on the Nitrification Uniformity of Nitrocellulose with High-nitrogen Content

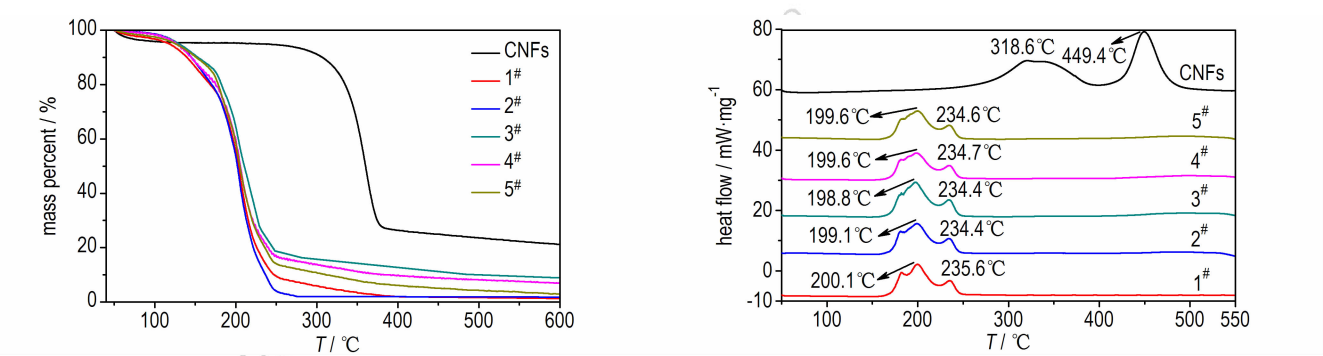


LIU Yan-hua, ZHANG Xin-fang, LI Lei, LI Yong-hong, WANG Wen-jun, SUN Jun, SHAO Zi-qiang

Chinese Journal of Energetic Materials **,2018,26(2): 110-117**

A technological process of preparing NC in nitrification system of H_2SO_4-HNO_3-H_2O with purified cotton via the process of nitration, dehydration, washing, acid boiling, alkali boiling, crushing and rewashing was studied.

Application of Cellulose Nanofibers in High-energy TEGDN Gun Propellants

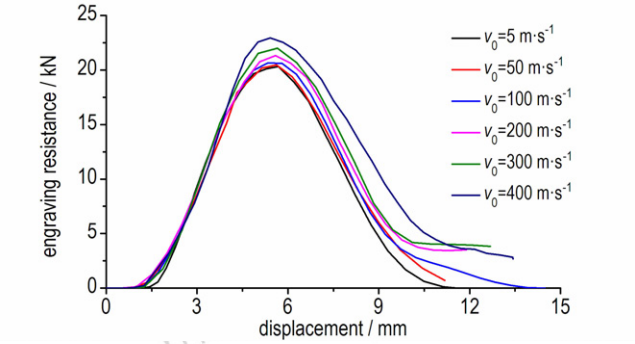


XIA Yong, LIANG Hao, HE Wei-dong

Chinese Journal of Energetic Materials **,2018,26(2): 118-122**

Based on high-energy TEGDN gun propellant formulations, adding a small amount (mass fraction of 0.5%, 1.0%, 1.5%, 2.0%) of cellulose nanofibers (CNFs) obtained from lignocellulose, high-energy TEGDN gun propellants containing CNFs were prepared. The results of TG and DSC show that thermal decomposition performance of high-energy TEGDN gun propellants after adding CNFs is stable.

Numerical Simulation and Analysis of Engraving Process with Serial Launch Method

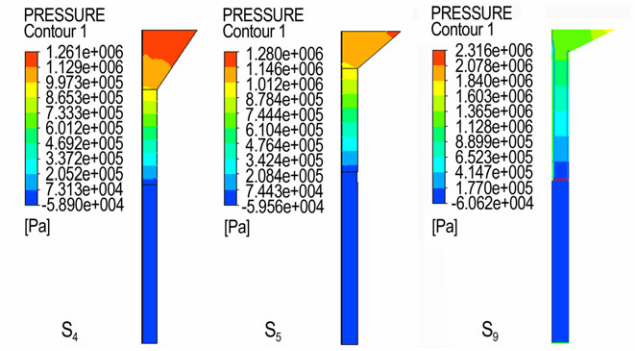


The influences of different initial engraving velocities on strain, stress, movement velocity and engraving resistance of ammunition belt were studied by LS-DYNA.

HANG Yu, SHANG Fei, KONG De-ren

Chinese Journal of Energetic Materials, 2018, 26(2): 123-129

Effect of the Mold Inner Flow Channel Structure on the Forming Process of Nitroguanidine Gun Propellant

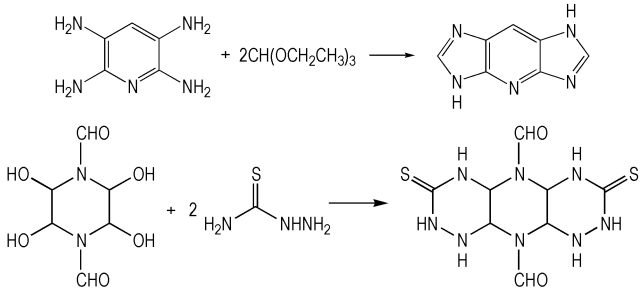


To investigate the effect of mold flow channel structure on the forming process of nitroguanidine gun propellant, the mold flow channel model of 11/7 nitroguanidine gun propellant was established. The numerical simulation of nine schemes of different combinations of shrinkage angle as 30°, 45° and 60° and forming section length as 25, 30 mm and 45 mm was performed. The effect of shrinkage angle and forming section length on the shear rate, pressure and velocity distribution in the extrusion process were analyzed.

CHANG Fei, ZHU Chun-jiu, NAN Feng-qiang, HE Wei-dong

Chinese Journal of Energetic Materials, 2018, 26(2): 130-137

Synthesis and Thermodynamic Properties of Two *N*-heterocyclic Nitramine Precursors

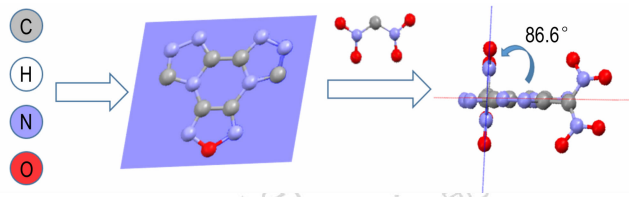


Two *N*-heterocyclic nitramine precursors were prepared by condensation reactions. The geometries of two precursors were optimized by DFT-B3LYP/6-311+G(d) method. Thermodynamic properties of two precursors at 200-800 K were investigated. All the thermodynamic functions increase with the increase of temperature.

ZHAO Guo-zheng, LU Ming

Chinese Journal of Energetic Materials, 2018, 26(2): 138-143

Synthesis and Properties of 5,10-Bis(dinitromethyl)-furazan[3,4-*e*]bis([1,2,4]triazolo)[4,3-*a*:3′,4′-*c*]pyrazine and Its Energetic Ion Compounds

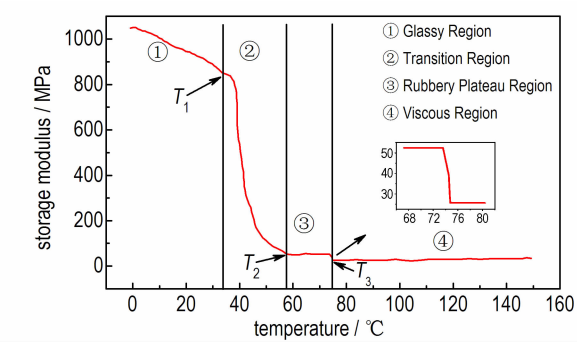


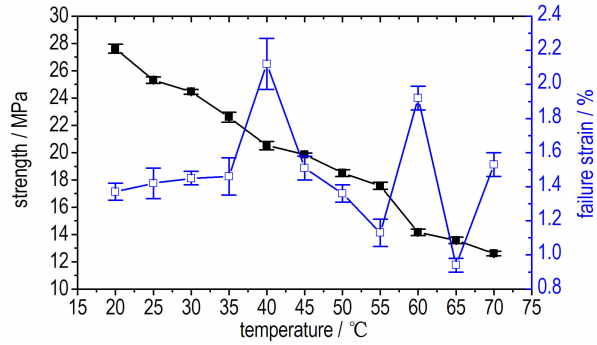
DENG Mu-cong, ZHANG Qing-hua, WANG Kang-cai, ZHANG Wen-quan, MA Qing

Chinese Journal of Energetic Materials, 2018, 26(2): 144−149

A new promising insensitive explosive 5,10-bis(dinitromethyl)-furazan[3,4-*e*]bis([1,2,4]triazolo)[4,3-*a*:3′,4′-*c*]pyrazine was synthesized. The calculated detonation velocity and pressure are batter than those of TNT.

Influence and Mechanism of High Temperature and Mechanical Stress on the Mechanical Behaviors of PBXs



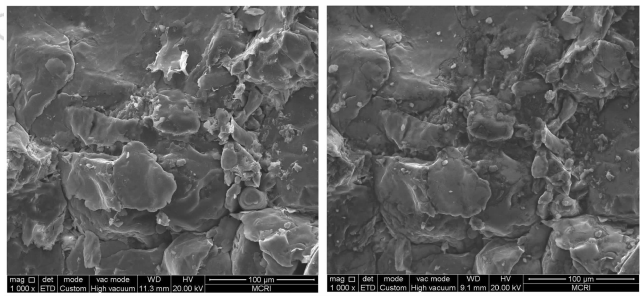


TANG Ming-feng, WEN Mao-ping, TU Xiao-zhen, LAN Lin-gang, DAI Xiao-gan

Chinese Journal of Energetic Materials, 2018, 26(2): 150−155

High temperature softening and mechanical property degradation behavior of two polymer bonded explosives under coupled and sequence high temperature-mechanical stress loading were experimentally investigated and its mechanism was discussed.

Effect of Thermal-aging on Launching Safety of RDX-based Aluminized and Pressed Explosive Charge

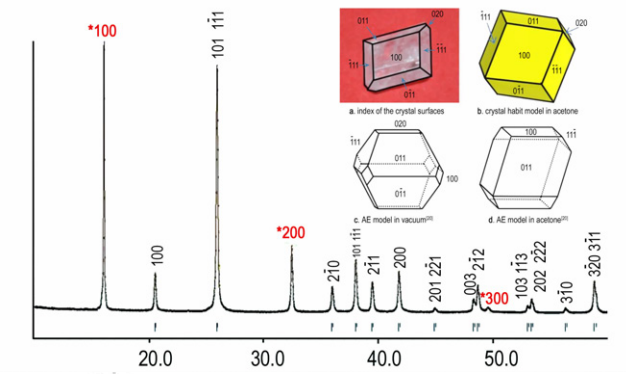


ZHANG Lin-jun, DU Jiao-jiao, LUAN Jie-yu, JIA Lin, LIU Wen-liang, CHANG Hai, WANG Fang-fang

Chinese Journal of Energetic Materials, 2018, 26(2): 156−160

The accelerating aging of RDX-based aluminized and pressed explosive charge was performed at 71 ℃ for 39 days. The launching safety of charge before and after aging were checked by a drop hammer loading device and the effect of explosive column structure, deterrent and binder content and quality of RDX crystal on the launching safety of charge was analyzed.

The Crystal Habit of HMX in Acetone Solution: An Internal Standard Powder X-ray Diffraction Study

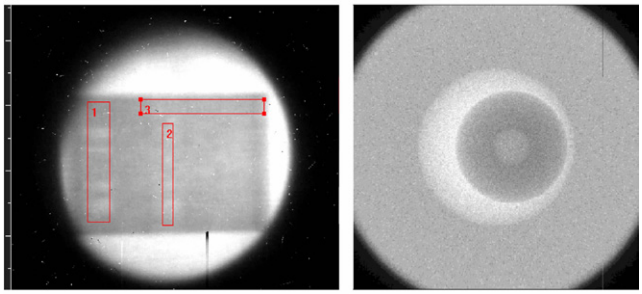


All the crystal surfaces of the β-HMX cultivated in acetone solution were indexed by the combination of internal standard method of X-ray diffraction and the angle between crystal surfaces. The model of the crystal habit of β-HMX in acetone solution was established. The influence of acetone on the crystal habit of β-HMX was discussed.

GUAN Yu-xiang, HUANG Shi-liang, LIU Yu, XU Jin-jiang, CAO Xiong

***Chinese Journal of Energetic Materials*, 2018, 26(2): 161−166**

Feasibility of Fast Neutron Radiography in Weapon Quality Detection

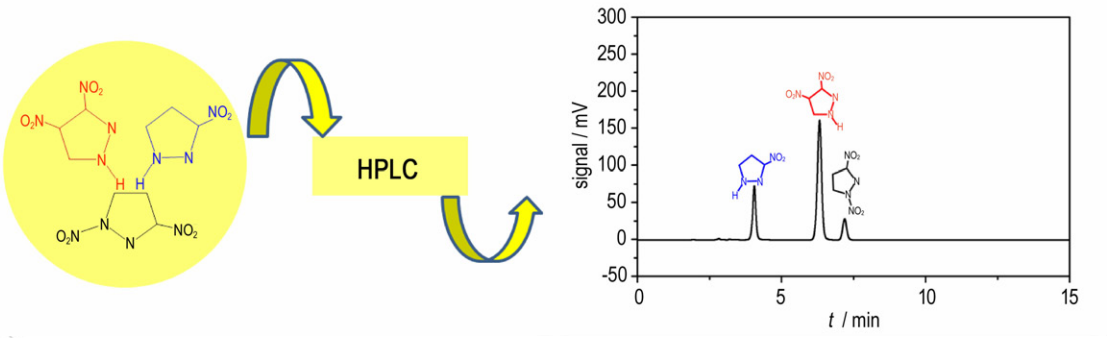


Based on the experiment and MC simulation, the research object is established on the basis of the data of the open hypothetical weapon model, circular hole in the sample and the central displacement of the radioactive material in the dynamite.

LU Chang-bing, WANG Song, WEN Gang, XU Peng, ZHANG Xian-peng, BAO Jie

***Chinese Journal of Energetic Materials*, 2018, 26(2): 167−172**

Purity Analysis of 3,4-Dinitropyrazole by High Performance Liquid Chromatography

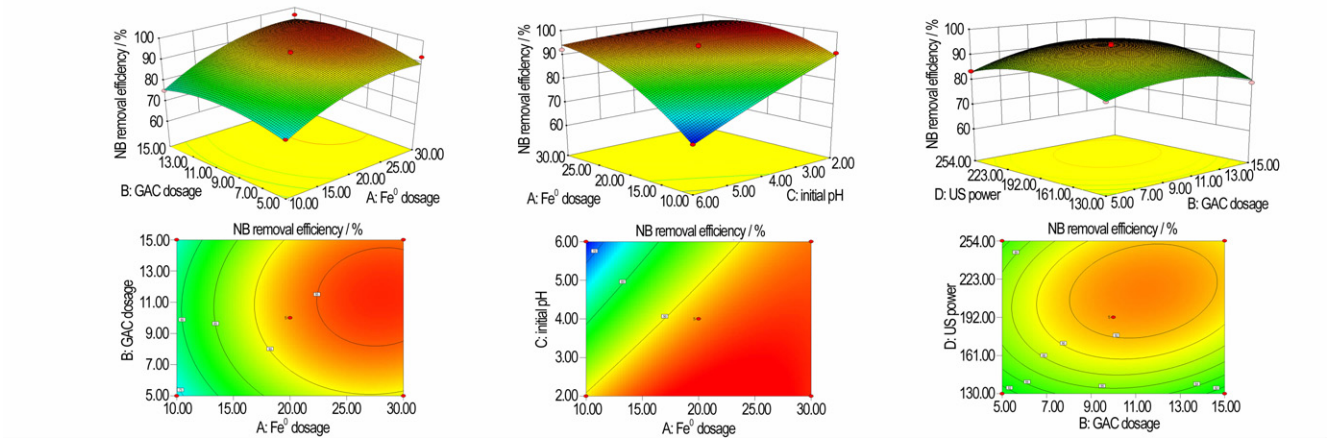


A high performance liquid chromatography (HPLC) method for the determination of 3,4-dinitropyrazole and possible impurities (3-nitropyrazole, 1,3-dinitropyrazole) was established.

LIU Yuan-yuan, XU Jian-xin, WANG Jian-long, CHEN Fang, CHEN Li-zhen, CAO Duan-lin

***Chinese Journal of Energetic Materials*, 2018, 26(2): 173−177**

Treatment of Nitrobenzene Wastewater via Ultrasonic Enhanced Iron-carbon Micro-electrolysis with Response Surface Methodology

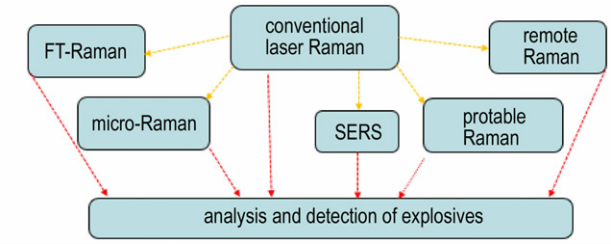


ZHANG Dong-sheng, YU Li-sheng, JIAO Wei-zhou, LIU You-zhi

Chinese Journal of Energetic Materials, 2018, 26(2): 178−184

Selecting 29 representative groups as the test points, taking ultrasonic (US) power, zero iron (Fe^0) dosage, activated carbon (GAC) dosage, initial pH value of wastewater as main factors, removal rate of NB as response value, the response surface experiments of four factors and three levels were designed and the optimum process conditions were obtained.

Review on Application of Laser Raman Spectroscopy in Analysis and Detection of Explosives



GAO Feng, LIU Wen-fang, MENG Zi-hui, XUE Min, SU Peng-fei, HU Lan

Chinese Journal of Energetic Materials, 2018, 26(2): 185−196

Research progress on the applications of several laser Raman spectroscopy techniques in the field of explosives analysis and detection was reviewed. Their advantages and limitations were analyzed. Raman spectra data of some typical explosives were compared.