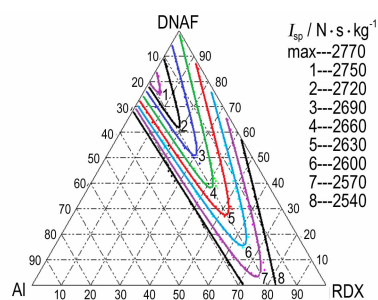


Energy and Smoke Signature of GAP/NC Cross-linked Propellant

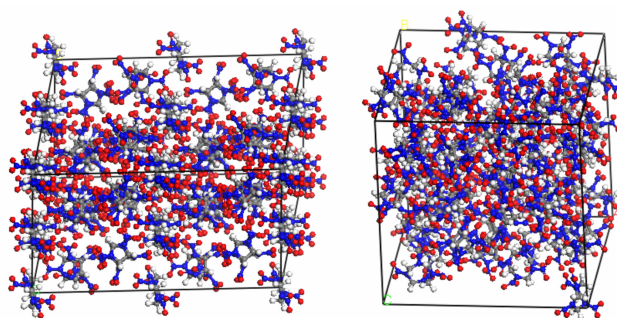


The energy performances of GAP/NC cross-linked double base propellant were predicted, and the iso-property trigonal figures of RDX/oxidizer/Al mass fraction of the propellant with 60% solids content were obtained. The effects of plasticizers and the ratio of RDX/oxidizer/Al were discussed.

HE Li-ming, HE Wei, LUO Yun-jun

Chinese Journal of Energetic Materials, 2016, 24(4): 318–323

Molecular Dynamics Simulation of CL-20/HMX Cocystal and Blends



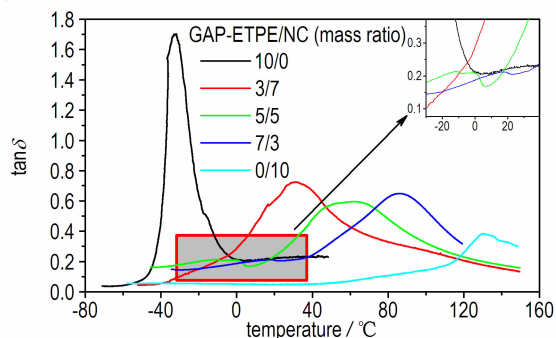
The cocystal structure and blending structure with the molar ratio of CL-20 and HMX as 2 : 1 were constructed. The mechanical properties, structure stability and radial distribution function of the cocystal system and blending system were simulated by MD method.

TAO Jun, WANG Xiao-feng, ZHAO Sheng-xiang,

DIAO Xiao-qiang, WANG Cai-ling, HAN Zhong-xi

Chinese Journal of Energetic Materials, 2016, 24(4): 324–330

Preparation and Performance of GAP-ETPE/NC Polymer Blends

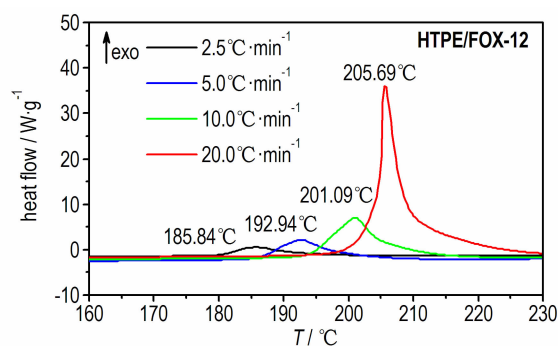
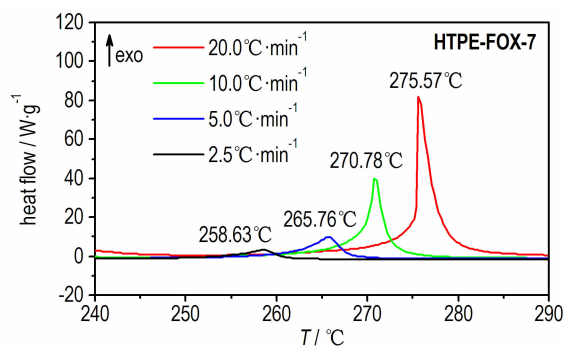


GAP-ETPE/NC polymer blends were prepared using glycidyl azide polymer (GAP) based energetic thermoplastic elastomer (ETPE) and nitrocellulose (NC) with different mass ratios by solution blending process, and their structure, thermal and mechanical properties were investigated.

HU Yi-wen, ZHENG Qi-long, ZHOU Wei-liang, XIAO Le-qin

Chinese Journal of Energetic Materials, 2016, 24(4): 331–335

Thermal Decomposition of HTPE/FOX-7 and HTPE/FOX-12 Mixed Systems

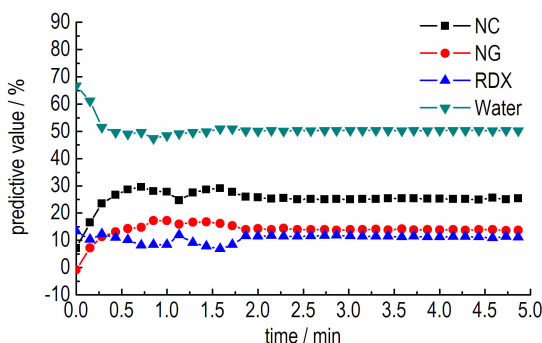


The thermal decomposition behavior of hydroxyl-terminated polyether (HTPE) / 1,1-diamino-2,2-dinitroethene (FOX-7) and HTPE/*N*-guanylurea-dinitramide (FOX-12) mixed systems under different heating rates were investigated by differential scanning calorimetry and thermogravimetry-derivative thermogravimetry analysis.

WANG Guo-qiang, LU Hong-lin, DANG Yong-zhan,
WANG Han, KANG Bing

Chinese Journal of Energetic Materials, 2016, 24(4) : 336–342

Rapid Test of Modified Double-base Propellant Component Uniformity by NIR Spectroscopy

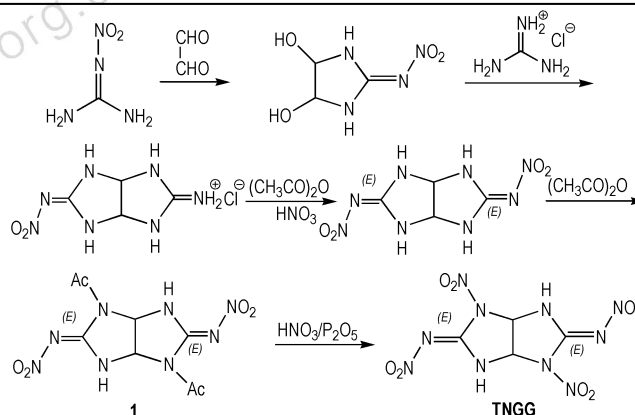


Components quantitative calibration models which were established by NIR spectroscopy were used to analyze the contents of each component and their dispersion uniformity of modified double-base propellant components.

CHENG Shi-chao, LIN Xiang-yang, LI Yan, JIAN Gui-xing

Chinese Journal of Energetic Materials, 2016, 24(4) : 343–347

Synthesis and Properties of 2,6-Dinitro-3,7-dis(nitroimino)-2,4,6,8-tetrazabicyclo[3.3.0]octane

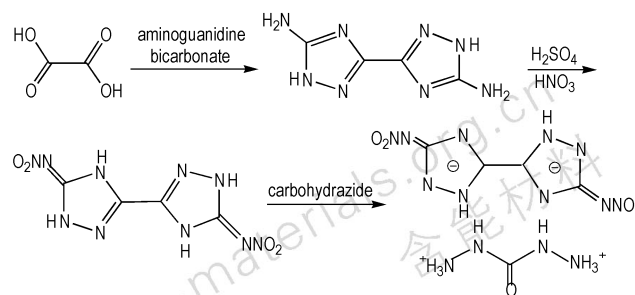


A novel high energetic density compound 2,6-dinitro-3,7-dis(nitroimino)-2,4,6,8-tetrazabicyclo[3.3.0]octane (TNGG) was synthesized by acylation reaction and nitration reaction. The factors affecting the yield of TNGG were investigated. Its thermal decomposition behavior and the detonation performances of TNGG were studied.

WANG Chang-ying, HU Bing-cheng, JIN Xing-hui

Chinese Journal of Energetic Materials, 2016, 24(4) : 348–352

Synthesis and Properties of 5,5'-Dinitramino-3,3'-bi[1,2,4-triazolate] Carbohydrazide Salt

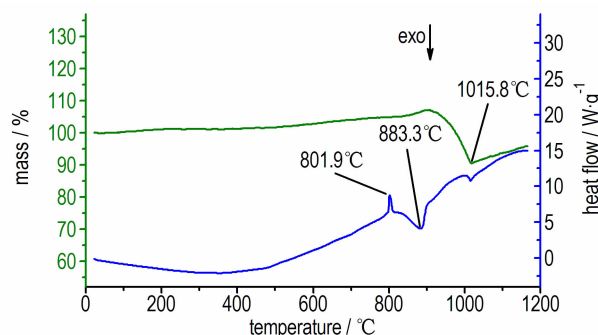


5,5'-Dinitramino-3,3'-bi[1,2,4-triazolate] carbohydrazide salt (CBNT) was synthesized from oxalic and aminoguanidinium bicarbonate. Its structure was characterized by IR, NMR and elemental analysis. The thermal behavior of CBNT was studied by DTA/TG. Its impact sensitivity and friction sensitivity were measured.

WANG Xiao-jun, ZHANG Xiao-peng, LU Zhi-yan, WANG Xia, JIN Shao-hua, CHEN Shu-sen

Chinese Journal of Energetic Materials, 2016, 24(4): 353–356

Thermal Decomposition of Nano Porous Silicon/ NaClO_4 in a Wide Temperature Range



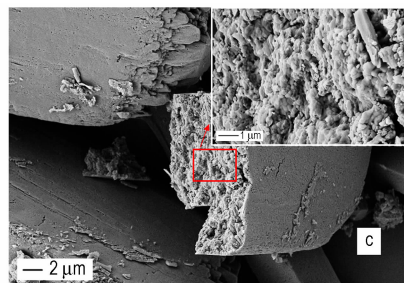
The composite energetic material nPS/ NaClO_4 was prepared and its thermal decomposition was analyzed by differential scanning calorimetry (DSC)-thermogravimetric (TG) analysis in a wide temperature range from 25 °C to 1200 °C. The thermal decompositions of nPS, NaClO_4 , Si/ NaClO_4 , and nPS/ NaCl were also analyzed.

FU Qiong, LIU Yu-cun, ZHANG Zhi-jun, WU Ye,

YU Guo-qiang, LI Shang-jie, LIU Yuan

Chinese Journal of Energetic Materials, 2016, 24(4): 357–362

Microstructure and Performance in the Desolvation Process of HNS/Dioxane Solvate by In-situ XRD Method

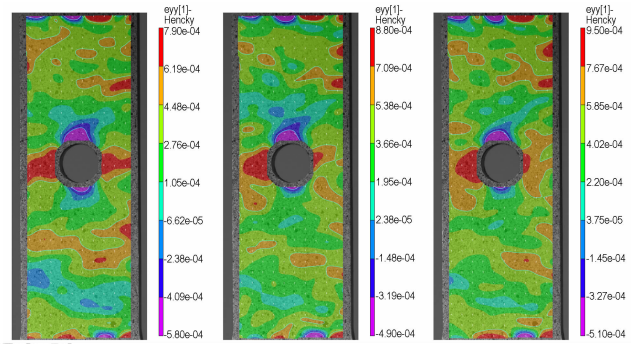


ZHANG Hong-li, LIU Yu, LI Shi-chun, YANG Shi-yuan, LI Jin-shan

Chinese Journal of Energetic Materials, 2016, 24(4): 363–367

Under the condition of fast desolvation of HNS/Dioxane solvate, the microcrystalline clusters of HNS with a porous structure can be obtained by in-situ XRD technique.

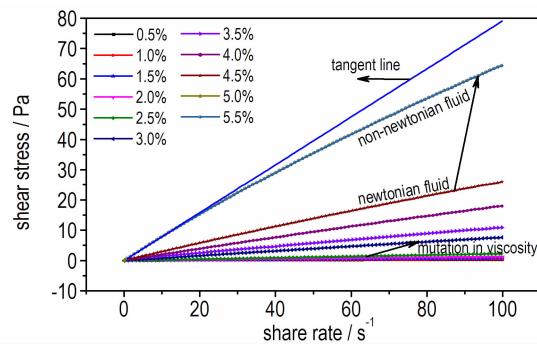
Strain Analysis for PBX Plate with Hole under Tension Based on Digital Image Correlation Method



LIU Chen, LAN Lin-gang, TANG Ming-feng, LI Ming
Chinese Journal of Energetic Materials, 2016, 24(4): 368–374

A tensile test was conducted on a polymer-bonded explosive plate with hole specimen, with digital image correlation method (DICM) applied to analysis the strain fields of the test.

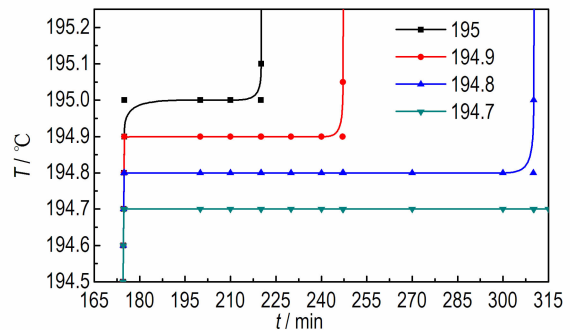
Rheological Properties of Nitrated Bacterial Cellulose Solution



ZHU Juan, LUO Qing-ping, LI Zhao-qian, DUAN Xiao-hui,
PEI Chong-hua, ZHAO Jing, MAO Chang-yong
Chinese Journal of Energetic Materials, 2016, 24(4): 375–379

The rheological curves of nitrated bacterial cellulose (NBC) solution with different concentrations (0.5% – 5.5%) were measured by a HAAKE rotational rheometer.

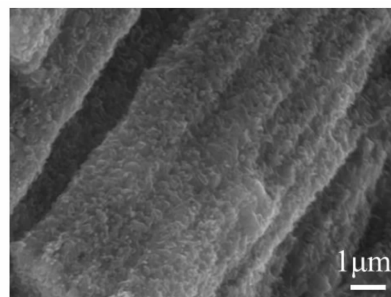
Effect of Heating Rate on the Critical Temperature of Thermal Initiation of Cook-off Bomb in Defined Condi- tions



WANG Hong-wei, ZHI Xiao-qi, HAO Chu-jie, LI Juan-juan
Chinese Journal of Energetic Materials, 2016, 24(4): 380–385

Cook-off bomb with RDX based high energy explosives was heated at a heating rate of $1\text{ }^{\circ}\text{C} \cdot \text{min}^{-1}$ and then makes the outer wall temperature of case keep at 160, 170, 180, 185 $^{\circ}\text{C}$ and 195 $^{\circ}\text{C}$ respectively for 50 min and then the response of cook-off bomb was observed.

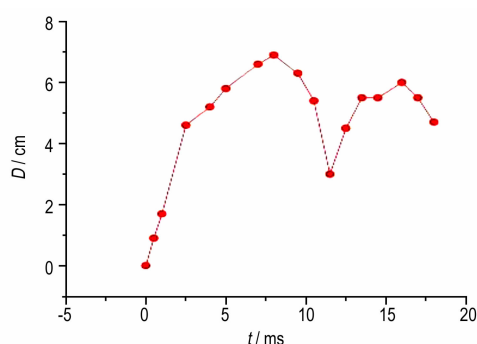
In-situ Preparation of Carbon Nanotubes Array Confined with Copper Azide



Carbon nanotubes (CNTs) array confined with copper azide was obtained by gas-solid in-situ reaction using CNTs array confined with nano copper as precursor. Scanning electron microscope, X ray diffractometer and differential scanning calorimetry were used to characterize the structures and thermal properties of CNTs array confined with copper azide and nano copper.

WANG Yan-lan, ZHANG Fang, ZHANG Lei,
ZHANG Zhidong, HAN Rui-shan, SUN Xing
Chinese Journal of Energetic Materials, 2016, 24(4) : 386–392

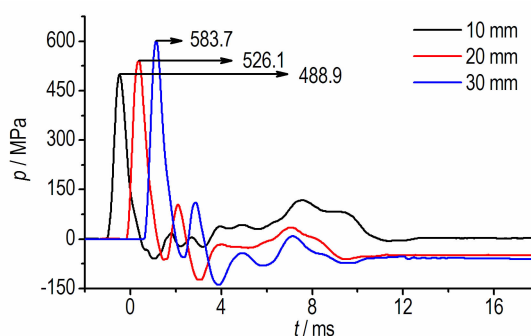
Pulsation Phenomena of Underwater Explosion Bubble with Low Energy Detonating Cord



An experimental research on the pulsation characteristics of underwater explosion bubble with single or two horizontal and vertical placed low energy detonating cord (LEDC) was carried out by a high-speed photography system. The pulsation characteristics of bubble under different placement of LEDC were obtained.

JIA Hu, SHEN Zhao-wu
Chinese Journal of Energetic Materials, 2016, 24(4) : 393–398

Impact Pressure of Al/Steel Clad Pipe by Interior Explosive Expansion under Water



A reliable polyvinylidene fluoride (PVDF) piezoelectric film sensor was first used for testing the impact pressure of Al/steel clad pipe by interior explosive expansion under water, and the pressure history curves were obtained and compared.

YU Yong, MA Hong-hao, ZHAO Kai, MIAO Guang-hong,
FAN Zhi-qiang, SHEN Zhao-wu, LI Zhan-jun
Chinese Journal of Energetic Materials, 2016, 24(4) : 398–402

**Review on the Mechanical Properties and Constitutive
Models of Solid Propellants**

WANG Zhe-jun, QIANG Hong-fu, WANG Guang,
CHANG Xin-long

Chinese Journal of Energetic Materials, 2016, 24(4): 403–416

Mechanical properties and constitutive models of solid propellants were reviewed from experimental techniques, mechanical parameters determination and developing constitutive models. Based on that, the current shortages and future research contents were also proposed.

Executive editor: WANG Yan-xiu ZHANG Qi JIANG Mei