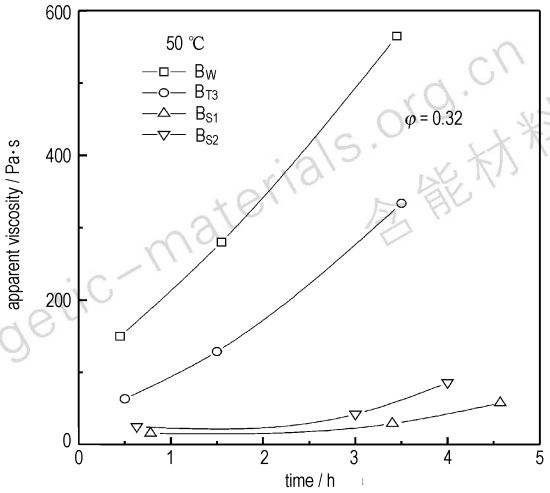
Effect of Modified Boron Powder on Propellant Processing Characteristics

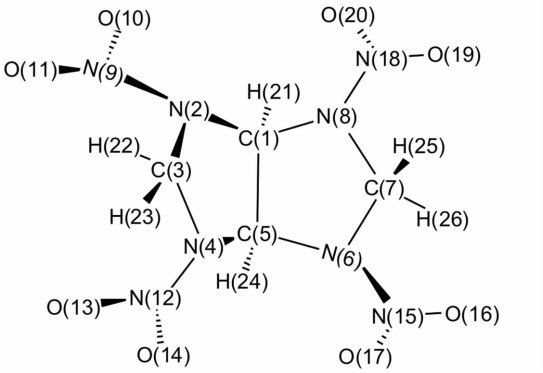


TANG Han-xiang, CHEN Jiang, WU Qian, LI Hong-xu, ZHOU Ming-chuan

***Hanneng Cailiao*, 2005, 13(2): 69**

B_S is the best one of all the modified boron powders including B_D, B_W, B_T, B_S, according as the decreasing viscosity in the simple system, the experimental propellants filled B_S exhibit a good castability, flow level and long potlife.

Theoretical Study on the Pyrolysis Mechanisms of Tetranitrotetraazabicyclooctane in Gas Phase

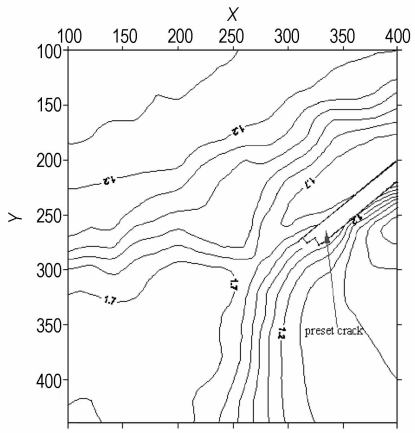


QIU Ling, XIAO He-ming, JU Xue-hai, GONG Xue-dong

***Hanneng Cailiao*, 2005, 13(2): 74**

UHF-SCF-PM3 MO method has been employed to study the pyrolysis initiation reaction of tetranitrotetraazabicyclooctane in gas phase. It is found that the homolysis of N—NO_2 bond into two radicals is the initial step of titled compound, which is similar to that of usual nitramine explosives.

Experimental Investigation to the Damage Localization of PBX Mechanical Failure at Mesoscale

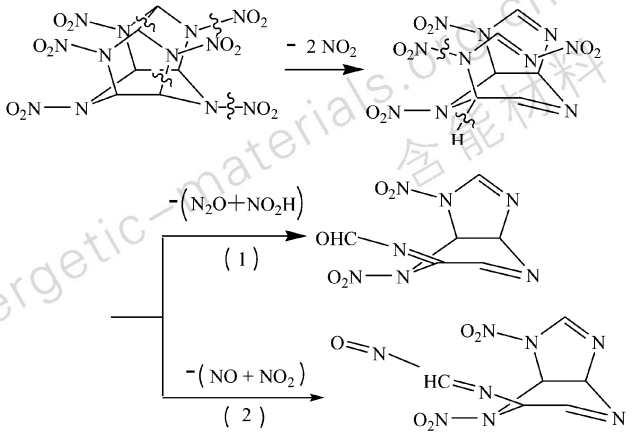


LI Ming, ZHANG Jue, LI Jing-ming, WEN Mao-ping

***Hanneng Cailiao*, 2005, 13(2): 79**

The vertical deformation field in the vicinity of preset crack tip is bifurcated, which shows the strong effects induced by preset lateral crack.

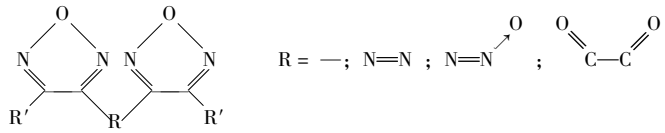
Study on Thermal Decomposition of HNIW by In-situ FTIR Spectroscopy



XIAO He-miao, YANG Rong-jie, PAN Qing

***Hanneng Cailiao*, 2005, 13(2): 84**

Properties of Some Furazan Energetic Compounds

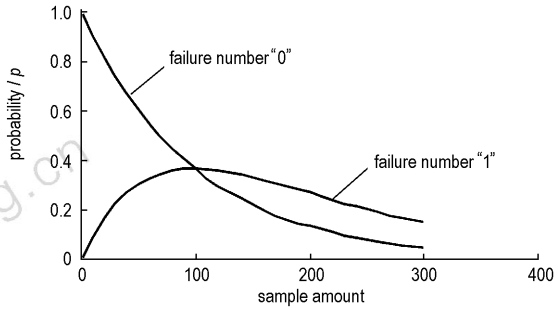


The properties of furazan energetic compounds were investigated such as physical-property, detonation, thermal-stability. The results show that the properties of furazan derivatives are rich and some of the furazan compounds can be used as energetic additives with excellent properties.

LI Zhan-xiong

***Hanneng Cailiao*, 2005, 13(2): 90**

Bayes Estimation and Classical Reliability Estimation Methods of Initiating Devices



The probability of failure number "*i*" in sample depends on the sample size "*n*" and reliability "*R*" of the population. By use of the maximum probability failure number "*i*" in the sample size "*n*", a new method "GO-NO GO" and Bayes method were studied.

ZHOU Mei-lin, CAI Rui-jiao, HAN Dun-xin

***Hanneng Cailiao*, 2005, 13(2): 94**

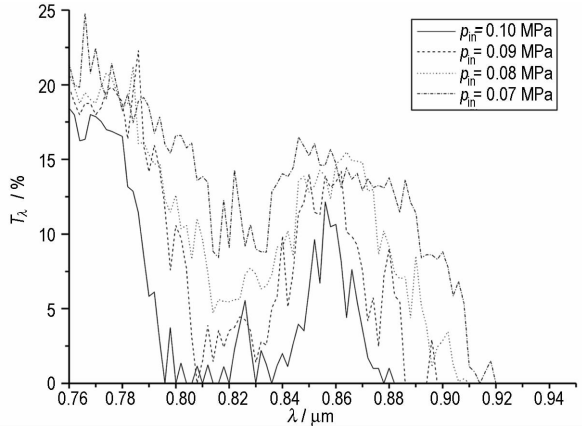
Study on Titanium Dioxide Retardation of Flaming in the Propellant

The burning rate of triethylene glycol dinitrate (TEGDN) propellant slows down when anatase titanium dioxide has been dispersed into it. Through experiments of DTA and closed bomb vessel, it can be found that the main mechanism is titanium dioxide endothermic effect caused by crystal type transformation and surface-covering effect of titanium dioxide particles.

DU ping, HE Wei-dong, WANG Ze-shan

***Hanneng Cailiao*, 2005, 13(2): 99**

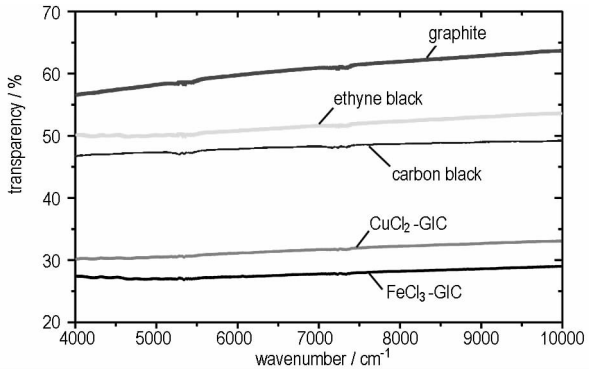
Effect of Different Vacuum Degrees on the Smoke NIR Attenuation Performance



Experiment results show that the smoke NIR (0.76 ~ 0.95 μm) transmittance increases with the reducing of p_{in} value from 0.10 MPa to 0.07 MPa. When the p_{in} value is 0.10 MPa, smoke maximal transmittance is less than 18%, the minimal transmittance is nearly zero, the average transmittance value is about 5%; when p_{in} value is 0.07 MPa, and the average transmittance value is about 15%.

CHEN Ning, CHEN Hou-he, PAN Gong-pei
***Hanneng Cailiao*, 2005, 13(2): 103**

Measurement of Mass Extinction Coefficient of Particles Based on the Infrared Quantitative Analysis



A method to measure infrared absorbency of aerosol materials is discussed. According to the law of infrared quantitative analysis, transparency spectrograms of particles are obtained and mass extinction coefficients are calculated. The advantages of this test technology are low-cost, convenient, rapid and accurate.

REN Hui, KANG Fei-yu, CUI Qing-zhong, SHEN Wan-ci
***Hanneng Cailiao*, 2005, 13(2): 106**

Influence of RDX and HMX on the Thermal Stability of TEX

ZUO Yu-fen, XU Rong, CHANG Kun, PENG Qiang, LIU Jia-bin
***Hanneng Cailiao*, 2005, 13(2): 110**

RDX and HMX influence the thermal stability of TEX was analyzed with VST, Bourdon type glass manometer test and critical temperature determination.

Study on Thermal Stability of PBX-HKF by Accelerating Rate Calorimeter

WANG Zhi-xin , LI Guo-xin, LAO Yun-liang, LI Hao
***Hanneng Cailiao*, 2005, 13(2): 113**

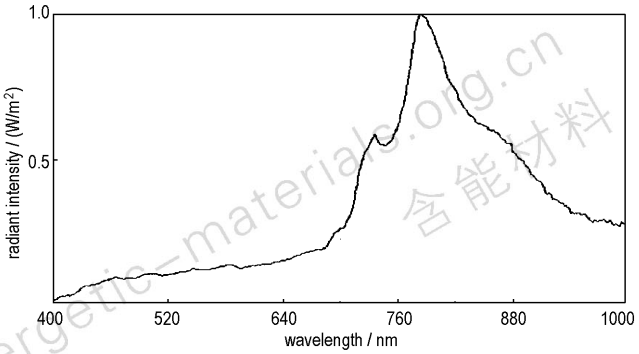
The thermal stability and kinetic parameters of the exothermic decomposition reaction of a new plastic bonded explosive PBX-HKF, composed of main explosive (HMX and potassium picrate), plasticizer and binder, were studied by an accelerating rate calorimeter.

Synthesis of 7-Amino-6-nitrobenzodifuroxan and its Thermal Properties

LI Jun-suo, Lü Lian-ying, OU Yu-xiang
***Hanneng Cailiao*, 2005, 13(2): 115**

7-amino-6-nitrobenzodifuroxan (ANBDF) with all atoms on the same plane, was synthesized through three reactions from starting material 3,5-dinitrobenzoic acid. The TGA and DSC results show that ANBDF is excellent explosive with high thermal stability.

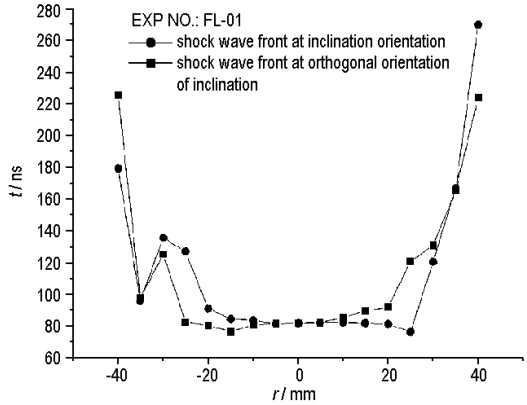
Characteristic Emission Spectra of Zirconium Base and Magnesium Base Pyrotechnic Composites



ZHU Chang-xing, YE Ying-hua, SHEN Rui-qi, XIANG Xun
Hanneng Cailiao, 2005, 13(2): 118

The spectrogram characteristics of pyrotechnic composition containing zirconium and magnesium were studied by a spectrograph. Zirconium and magnesium in pyrotechnic composition have different emission spectrograms.

Design of Plane-wave Lens Utilizing Nitromethane and Lead



JIN Ke, ZHOU Xian-ming, LIU Xiao-hai, XI Feng
Hanneng Cailiao, 2005, 13(2): 121

A simple plane-wave lens, using lead wave shaper and nitremethane donor explosive, has been designed. The arrival time deviation of wave front of the plane-wave lens is less than 20 ns within 50 mm diameter.

Recent Development on Crystal Transition Technology of Hexanitrohexaazaisowurtzitane

OU Yu-xiang, LIU Jin-quan, MENG Zheng, WANG Yan-fei
Hanneng Cailiao, 2005, 13(2): 124

This paper presents development of crystal transition technology for HNIW in the last five years, including the modified procedures in the laboratories and the industrial process for HNIW's crystal transitions.

Applications of Small-angel Scattering (SAS) Technique in the Structure Measuring of Energetic Materials

ZENG Gui-yu, LI Chang-zhi
Hanneng Cailiao, 2005, 13(2): 128

SAS technique can be used to measure not only the special microstructure of explosives' powder, but also the explosives pillar and PBX's microstructure quantificationally. It is also very useful for ultrafine and nanometer energetic materials.

Progress in the Synthesis of Explosives by the VNS Aminating Method

LI Hai-bo, LI Bo-tao, YU Wei-fei, ZENG Gui-yu
Hanneng Cailiao, 2005, 13(2): 132

Based on the principle of VNS (Vicarious Nucleophilic Substitution of Hydrogen) amination, the syntheses of TATB, DADNB, DATB, DATNT, CL-14, LLM-116, LLM-119 by the VNS amination method are reviewed.

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