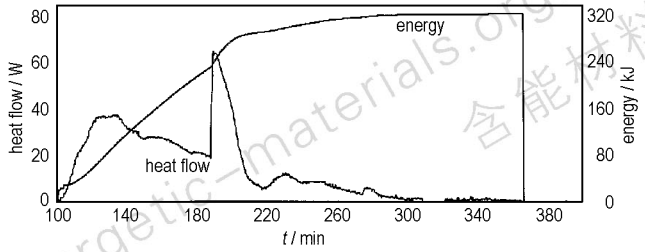
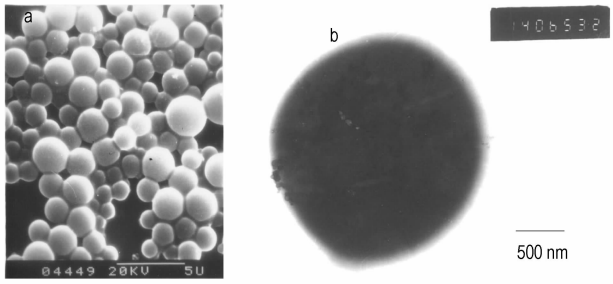
Study on the Reaction Heat and the Optimization of Synthesis Technology of 5-Aminotetrazole



SHENG Di-lun, XU Hou-bao, MA Feng-e
Hanneng Cailiao, 2005, 13(1): 1 – 3

The synthesis of 5-aminotetrazole had been studied by SIMULAR instrument. Its reaction heat and instantaneous heat flow had been calculated out. Synthesis technology had also been optimized.

Preparation and Characterization of Nano-aluminium Microcapsules



ZHANG Kai, FU Qiang, FAN Jing-hui, ZHOU De-hui
Hanneng Cailiao, 2005, 13(1): 4 – 6

Encapsulating dispersion polymerization in the presence of nano-aluminium was used to prepare the nano-aluminium microcapsules using styrene (St) as monomer and ethyl alcohol as reaction media under the conditions without oxygen and water.

Modification of Composition B with Polymers (Ⅱ)

HUANG Heng-jian, DONG Hai-shan, ZHANG Ming, XI Yan
Hanneng Cailiao, 2005, 13(1): 7 – 9

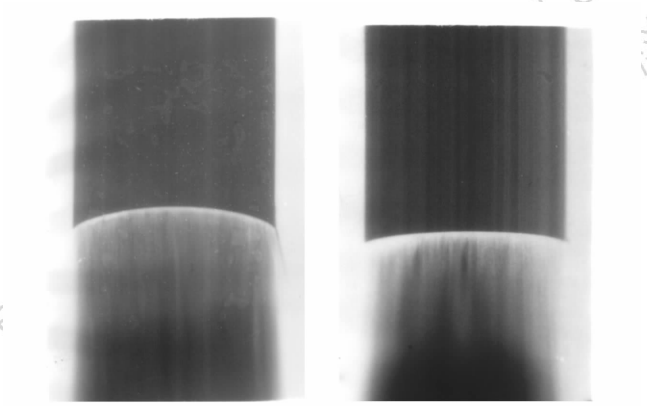
Performances were improved for modified Composition B, which were made with coated RDX by a kind of aromatic copolymer. The exudation percentage and the size growth percentage of modified Composition B could be decreased by 47.6% and 75% respectively, and in the mean time, the mechanical intensity could be increased by 2 times.

Influence of Nanometer-Al_2O_3 on the Impact Sensitivity of HMX

WANG Zuo-shan, ZHANG Jing-lin
Hanneng Cailiao, 2005, 13(1): 10 – 12

The influence of nanometer-Al_2O_3 on the impact sensitivity of HMX/nanometer-Al_2O_3 was studied through testing the drop hammer impact of HMX and HMX/nanometer-Al_2O_3, and the action mechanism of the nanometer-Al_2O_3 in the composite explosive was also investigated.

Curvature Effect for Insensitive Explosive at Normal Atmospheric Temperature



TAN Duo-wang, FANG Qing
Hanneng Cailiao, 2005, 13(1): 13 – 16

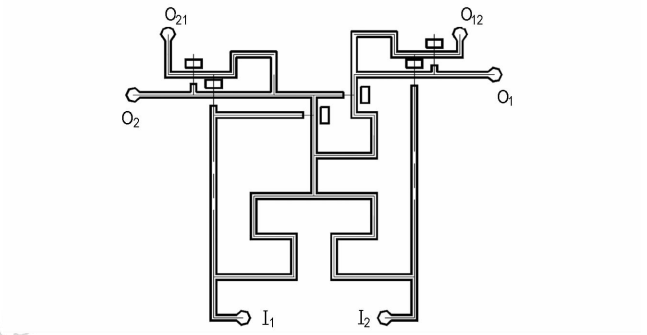
In this paper, steady-state detonation velocities and wave shapes were measured for insensitive explosive rate sticks at the temperature 24 ℃, with diameters of 10, 12.5, 15, 30 mm respectively.

Numerical Investigation of Different Initiation Modes for Dual-focusing Fragment Warhead

WEI Ji-feng, JIAO Qing-jie, NING Jian-guo
Hanneng Cailiao, 2005, 13(1): 17 – 21

By numerical investigation, a certain dual-focusing fragment warhead was studied with different initiation modes, the characteristics parameters of fragments were calculated.

Study on an Explosive Logic Circuit with Two-input-four-output



WEN Yu-quan, JIAO Qing-jie,
CAI Rui-jiao, HUANG Hai-long
Hanneng Cailiao, 2005, 13(1): 22 – 25

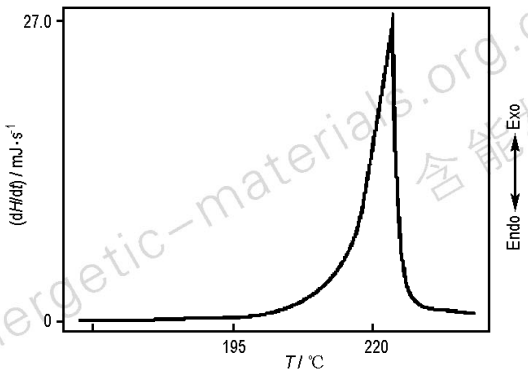
The structure of two-input-four-output explosive logic circuit is designed with the basal element of null gate, in which the structure and input-output relationship are given, and its logic function is tested too.

Indication of the Surface Acid-base Properties of Fluoro Rubber and RDX by Inverse-gas-chromatography

GUO Wei, WU Wen-hui, ZHUO Ping,
ZHANG Yong, DONG Hai-shan
Hanneng Cailiao, 2005, 13(1): 26 – 28

The acid-base properties of fluoro rubber (F_{246G}, F_{2463}, F_{2311}, F_{2314}) and RDX were measured by inverse gas chromatography (IGC).

Kinetic Study on the Exothermic Decomposition Reaction of 2,4,6,8,10,12-Hexanitro-2,4,6,8,10,12-hexaazatricyclo[7·3·0·$0^{3,7}$]dodecane-5,11-dione



ZHAO Feng-qi, HU Rong-zu, YANG De-suo, GAO Hong-xu, LUO Yang, SONG Ji-rong, GAO Sheng-li, SHI Qi-zhen

Hanneng Cailiao, 2005, 13(1): 29 – 32

The thermal behavior and kinetic parameters of the exothermic decomposition reaction of the title compound have been studied by means of DSC.

The Application of Double-base Ball Propellant in 9 mm Pistol Ammunition

TIAN Xin

Hanneng Cailiao, 2005, 13(1): 33 – 35

Compared the initial velocity, bore pressure and leavings after shooting of double-base ball propellant with that of D25 propellant, the double-base ball propellant was better at ballistic performance, shooting stability and safety reliability.

Molecular Structure and Nuclear Quadrupole Coupling Constants (NQCC) of ^{14}N in PETN

SONG Hua-fu, XU Geng-guang, WANG Ting-zeng, LIU De-run

Hanneng Cailiao, 2005, 13(1): 36 – 39

The relationship among the nuclear quadrupole coupling constants (NQCC), local electric field gradient (EFG) and bonding structure of pentacrythritol tetranitrate (PETN) were studied by means of ab inito and TOWNES-DAILEY theory.

Theoretical Study on the Vibrational Spectra, Thermodynamic Properties for Polynitroadamantanes

XU Xiao-juan, XIAO He-ming, JU Xue-hai, GONG Xue-dong

Hanneng Cailiao, 2005, 13(1): 40 – 44

IR spectra of polynitroadamantenes were obtained by vibrational analysis based on fully optimized molecular geometries and electronic structures obtained at B3LYP/6-31G* level and assigned. Thermodynamic properties were calculated by statistic thermodynamics.

Research on $CuCl_2$-$NiCl_2$-GIC Interfering Military Infrared Frequency

REN Hui, JIAO Qing-jie, SHEN Wan-ci, CUI Qing-zhong

Hanneng Cailiao, 2005, 13(1): 45 – 48

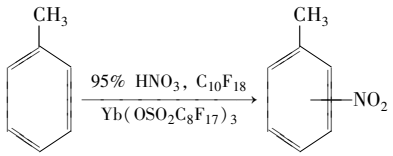
The super-fine graphite is used as main body to synthesize the acceptor GIC of $CuCl_2$-$NiCl_2$ by means of ration-blend method. The layer structures of samples are investigated by X-ray diffraction (XRD).

Preparation of Freeze Resistant Expanded Ammonium Nitrate Explosive

ZHOU Xin-li, HU Bing-cheng,
LIU Zu-liang, Lü Chun-xu
Hanneng Cailiao, 2005, 13(1): 49 – 51

An effective technical approach is introduced to manufacture freeze-resistant expanded ammonium nitrate explosive, when antifreezing agent is added in composite fuel oil.

Nitration of Toluene with Fluorous Biphasic System



YI Wen-bin, CAI Chun
Hanneng Cailiao, 2005, 13(1): 52 – 54

Toluene was nitrated effectively in fluorous phase by using perfluorodecalin ($C_{10}F_{18}$) as a fluorous solvent and ytterbium(Ⅲ) perfluorooctanesulfonate ($Yb(OSO_2C_8F_{17})_3$) as a catalyst.

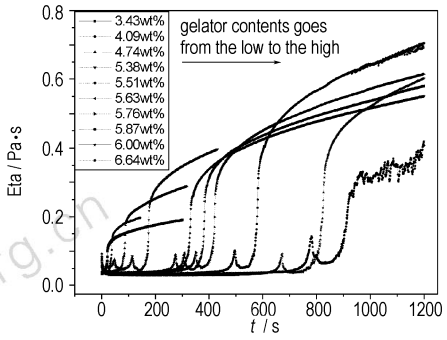
Ballistic Parameters Calculation and Closed Combustion Pressure Experiments

REN Peng, ZHU Ming-shui, JIANG Xiao-hua
Hanneng Cailiao, 2005, 13(1): 55 – 57

$$\frac{pV}{RT}=1+B^{※}\left(\frac{b_0}{V}\right)+\frac{B^{※}}{(T^{※})^{\frac{1}{4}}}\sum_{n=3}^{m}\frac{\left(\frac{b_0}{V}\right)^{n-1}}{(n-2)^n}$$

By VLW EOS method, it only takes a few minutes to determine the change parameters of combustion pots.

The Gelation of Aviation Kerosene by Hydroxypropyl Cellulose



LIU Kai-qiang, CHEN Tian,
WANG Ning-fei, FANG Yu
Hanneng Cailiao, 2005, 13(1): 58 – 60

Aviation kerosene can be gelled within 3 min by hydroxypropyl cellulose in the presence of suitable surfactants and other solvents. Furthermore, the thermo-stability of the gels can be significantly improved by introduction of a small amount of an additive, which is a compound of low molecualr weight.

Review on Classical Molecular Dynamics Studies of Initiation in Solid Explosives

TAN Xiao-li, ZENG Xin-wu, WANG Pei
Hanneng Cailiao, 2005, 13(1): 61 – 68

Using modern computers, multimillion-atom molecular dynamics simulations can offer a direct insight into the atomic processes of detonation in energetic materials. In this paper, history and recent advances of classical molecular dynamics studies of shock initiation in solid explosives are reviewed.

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