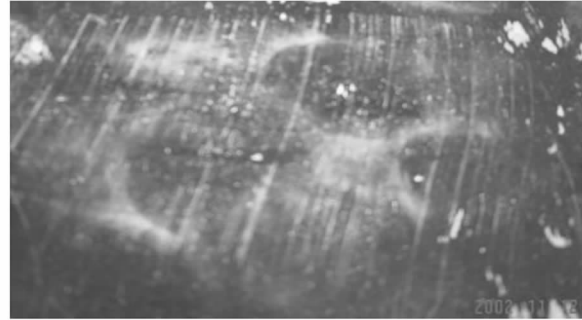


Experimental Studies on the Cellular Structure of Detonation Waves of Hydrocarbon Fuels

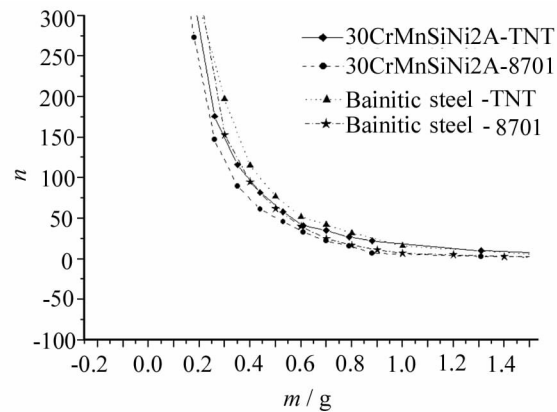
XU Xiao-feng, XIE Li-feng, PENG Jin-hua,
HE Zhi-guang, HUI Jun-ming
Hanneng Cailiao, 2003, 11(2) : 57



Cell size increases slightly with the increase of initial temperature while cell size decreases significantly with higher initial pressure. Inert gas diluents, such as nitrogen, will enlarge cell size but not contribute to the cell size when the concentration of diluent reaches the certain value. More complex detonation cell structure will be observed when initiating energy is high enough.

Experimental Analysis and Exploration on the Coupling of Shell-steels to Explosion Performances of Explosive Loadings

CHEN Xue-lian, ZHANG Bao-ping,
ZHANG Qing-ming, LIU Chang-lin, LIN Jiang
Hanneng Cailiao, 2003, 11(2) : 61



The fragmentation behavior of Bainitic steel shell and 30CrMnSiNi2A steel shell has been studied under the explosive loading. The results show that the initial velocity of the fragments with Bainitic steel shell is higher than that of 30CrMnSiNi2A steel and the fragment number with bigger mass formed from Bainitic is more than that of 30CrMnSiNi2A. Bainitic steel is a better ammunition material coupling with explosive.

Numerical Simulation for Detonation Drive of Fragment Generators

QU Ming, QIAN Li-xin
Hanneng Cailiao, 2003, 11(2) : 66

The numerical simulation is an important method to get fragment ejection property and to guide the warhead parameter determination in the process of the directed warhead design. By using ANSYS/LSDYNA, the 2D and 3D numerical simulation of the directional warhead, which was used in the static blast test, are conducted. Through simulation, the process image of the warhead detonation and fragments driven by the detonation gas is reappeared, and the velocity, ejection angle and distribution of fragments are obtained. The numerical results are in a good agreement with the test.

Studies on the Application Techniques of Explosion-dispersed Composite Interfering Smoke Agents

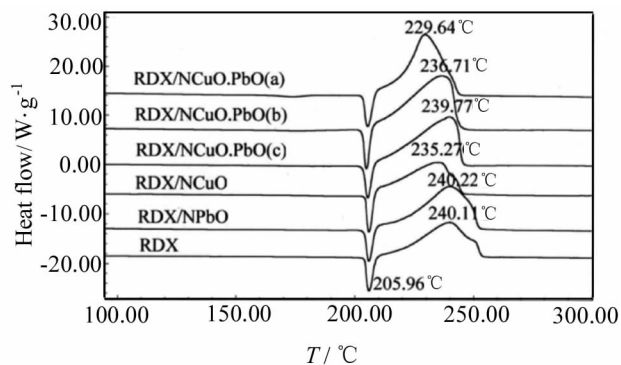
YIN Xi-feng, CHEN Yu-zhong, CHEN Hong-da, WU Yu
Hanneng Cailiao, 2003, 11(2) : 71



Application techniques of composite interfering smoke agent were studied and its smoke screening properties were tested in this paper. The results show that the composite possesses not only screening effects on visible lights but also interfering functions to laser, mid-IR and far-IR lights.

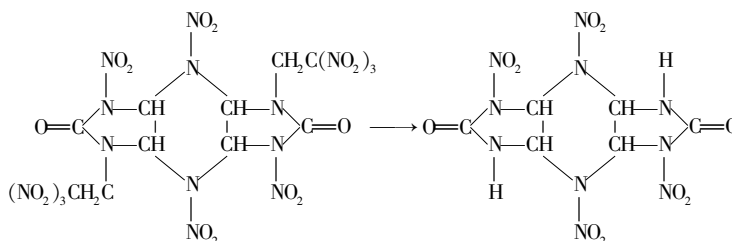
Preparation of Nanocomposite CuO · PbO and its Catalysis on Thermal Decomposition of RDX

HONG Wei-liang, LIU Jian-hong, ZHAO Feng-qi,
 TIAN De-yu, ZHANG Pei-xin, LUO Zhong-kuan
Hanneng Cailiao, 2003, 11(2) : 76



Nanocomposite CuO · PbO was synthesized by solid-state reaction method at room temperature. Average particle size of samples is about 15 nm. The catalytic performance of nanocomposite CuO · PbO on the thermal decomposition of RDX was investigated by DSC. It can markedly catalyze the thermal decomposition of RDX.

Kinetics and Mechanism of the First-stage Exothermic Decomposition Reaction for 2,6,8,12-Tetranitro-4,10-bis (2,2,2-trinitroethyl)-2,4,6,8,10,12-hexaazatricyclo [7 · 3 · 0 · 0^{3.7}]-dodecane-5,11-dione

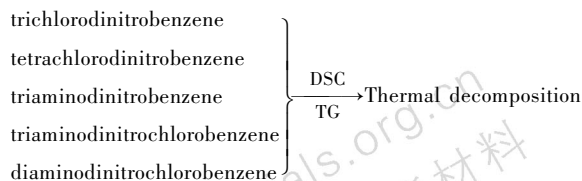


HU Rong-zu, YANG De-suo, GAO Sheng-li,
 ZHAO Hong-an, SHI Qi-zhen
Hanneng Cailiao, 2003, 11(2) : 81

The thermal behavior, mechanism and kinetic parameters of the exothermic first-stage decomposition reaction of the title compound in a temperature-programmed mode have been investigated by means of DSC, TG-DTG and IR. The reaction mechanism was proposed.

Thermal Properties of Main By-products in TATB

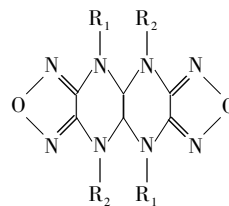
LI Bo-tao, DONG Hai-shan, ZHANG Jin-yun

Hanneng Cailiao, 2003, 11(2) : 85

By means of DSC and TG thermal decomposition of above compounds was studied.

Synthesis of the Derivatives of 1,4,5,8-Tetrazanaphthano(2,3,-6,7) bisfurazan

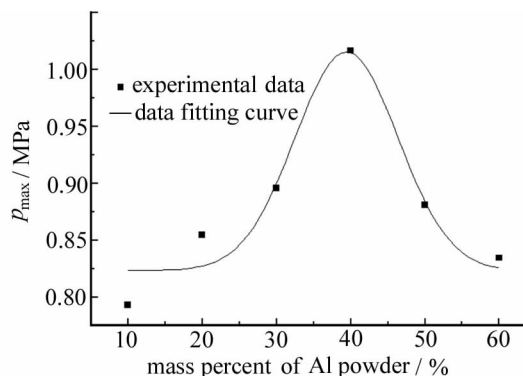
LI Zhan-xiong, TANG Song-qing, LIU Jin-tao, ZHOU Hai-yan

Hanneng Cailiao, 2003, 11(2) : 88 $R_1 = \text{COCH}_2\text{N}_3, \text{CH}_2\text{OH}$ $R_2 = \text{H}$ $R_1 = \text{COCH}_3, \text{COC}_2\text{H}_5, \text{COCH}_2\text{Cl}, \text{COCH}_2\text{Br}$ $R_2 = \text{NO}_2$

Some derivatives of 1,4,5,8-tetrazanaphthano(2,3,-6,7) bisfurazan with poly nitro, azido groups were synthesized.

Studies on the Behaviors of Dust Explosion of Aluminum and RDX Powders

CHEN Wang-hua, SONG Shu-zong, HU Yi-ting, LIU Rong-hai, WANG Cheng, ZHANG Zheng-cai

Hanneng Cailiao, 2003, 11(2) : 91

To the mixture dust of Al and RDX powders, a synergistic effect to the maximum pressure seems to exist between the two powders in a proper ratio.

Progress in Applications of Nanocomposites to Propellants

XU Hui-xiang, FAN Xue-zhong, LIU Guan-li

Hanneng Cailiao, 2003, 11(2) : 94

The applications of nanocomposites, including catalysts, metal powder and high energy oxidants, to propellants are reviewed. The dispersion and protection methods of nanometer materials are summarized. And the prospect of applying nanocomposites to propellants is also discussed.

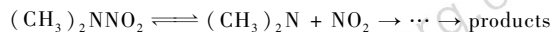
The Research and Development on Energetic Binders for Propellants Abroad

HE Li-ming, XIAO Zhong-liang, ZHANG Xu-zhu, JING De-qi

Hanneng Cailiao, 2003, 11(2) : 99

This paper summarized the researches on energetic binders in propellant recently, and synthesis and applications of some thermoplastic elastomers which showed good foreground as binder in propellants were briefly introduced.

A Review on the Gas Phase Thermal Decomposition of Dimethylnitramine (DMNA)



SHU Yuan-jie

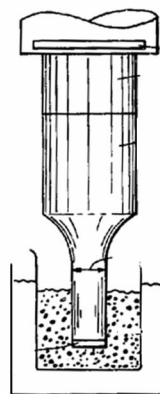
Hanneng Cailiao, 2003, 11(2): 103

Experimental and theoretical studies in literature on thermal decomposition of DMNA in gas phase were systematically reviewed, and the correctness and creditability of these data and conclusions were analysed. Based on the initial step of dissociation of N—NO₂, the detailed thermal decomposition mechanism of DMNA in gas phase were proposed.

Applications of Ultrasonic Technique in the Preparation of Ultrafine Explosives

WANG Ping, QIN De-xin, XIN Fang,
CAI Hua-qiang

Hanneng Cailiao, 2003, 11(2): 107



Ultrasonic wave has relatively good effect on the fragmentation of HNS explosive and the dispersion of ultrafine HNS explosive. It can also be used to destroy the conglomeration of HNS particles and to lower the void space. Ultrasonic radiation can prevent the crystal growth and can be applied to prepare fine TATB.

New Developments of Pyrotechnic Automatic Controlling

JIN Shao-hua, TIAN Ye, SONG Quan-cai
Hanneng Cailiao, 2003, 11(2): 110

Several compositions and elements for automatic controlling purpose have been given in this paper, at the same time, an example for protection controlling of chemical process has been given.

Executive editor: ZHENG Xue; Computer typesetter: LI Shao-hui