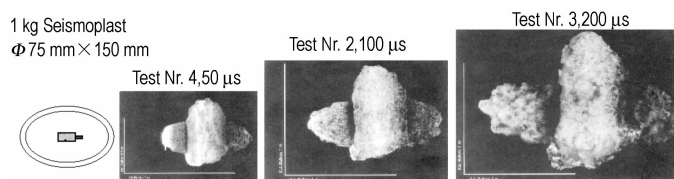


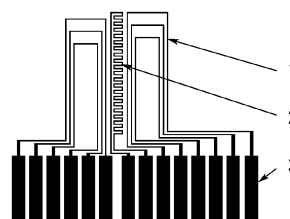
### Expansion of the Reaction Products of Detonating Explosives

HELD Manfred

*Hanneng Cailiao*, 2005, 13(6): 355

The expansion of the reaction products of detonating cylindrical charges are presented and analysed with regard to the radial and axial mean velocities and the real expansion velocities as a function of time and distance.

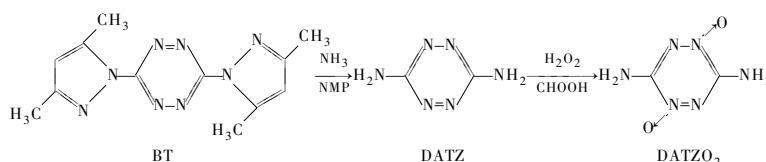
### Study and Application of the Multiple Electromagnetic Particle Velocity Gauge Technique

LI Zhi-peng, LONG Xin-ping, HUANG Yi-min,  
HE Bi, WANG Rong, HE Song-wei*Hanneng Cailiao*, 2005, 13(6): 359

The multiple electromagnetic particle velocity gauge was designed to study the shock initiation processes of HMX and TATB based high explosives.

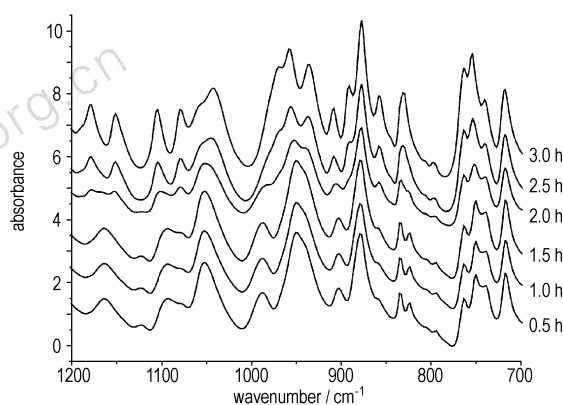
### Synthesis and Characterization of 3,6-Diamino-1,2,4,5-tetrazine-1,4-dioxide

YANG Shi-qing, XU Song-lin

*Hanneng Cailiao*, 2005, 13(6): 362

3,6-Diamino-1,2,4,5-tetrazine-1,4-dioxide (DATZO<sub>2</sub>) was synthesized. The structures of the title compound and its intermediate were identified by IR, NMR, MS and elemental analysis. The effects of reaction conditions on the yield of DATZO<sub>2</sub> were also studied.

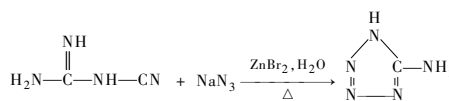
### Crystal Transformation Process of HNIW Prepared from TADBIW

LIU Jin-quan, MENG Zheng, OU Yu-xiang,  
WANG Yan-fei*Hanneng Cailiao*, 2005, 13(6): 365

The process of crystal transformation of HNIW during nitrolysis was studied.

### Synthesis of 5-Aminotetrazole Catalyzed by Zinc Bromide

WANG Hong-she, DU Zhi-ming

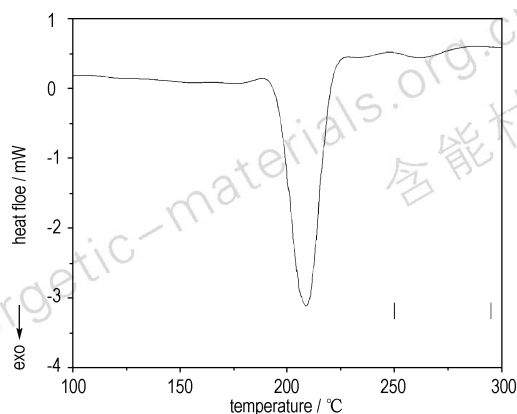
*Hanneng Cailiao*, 2005, 13(6): 368

5-Aminotetrazole was synthesized from dicyandiamide and sodium azide in water with zinc bromide as a catalyst. Factors affecting on the reaction were discussed.

### Synthesis, Structural Analysis and Sensitivity Properties of RbDNBF

WANG Shao-zong, ZHANG Tong-lai, SUN Yuan-hua,  
ZHANG Jian-guo

*Hanneng Cailiao*, 2005, 13(6): 371

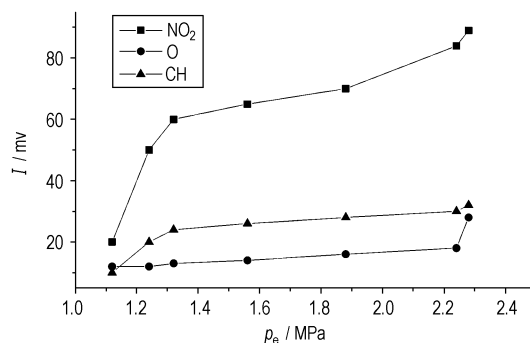


The RbDNBF (rubidium 7-hydroxy-4, 6-dihydrobenzofuroxanide) was synthesized by reacting sodium salt of DNBF with rubidium nitrate solution. The molecule structure has been characterized by IR and the thermal decomposition process has been studied by DSC and TG-DTG. The sensitivity properties of RbDNBF have been tested by various sensitivity apparatuses.

### Spectral Studies on Shock Ignition of Propyl-nitrate

HU Dong, WU Jing-he, YAN Zheng-xin,  
CHENG Xin-lu, LIU Jin-chao, YUAN Chang-ying,  
LI Ping, SUN Zhu-mei

*Hanneng Cailiao*, 2005, 13(6): 375

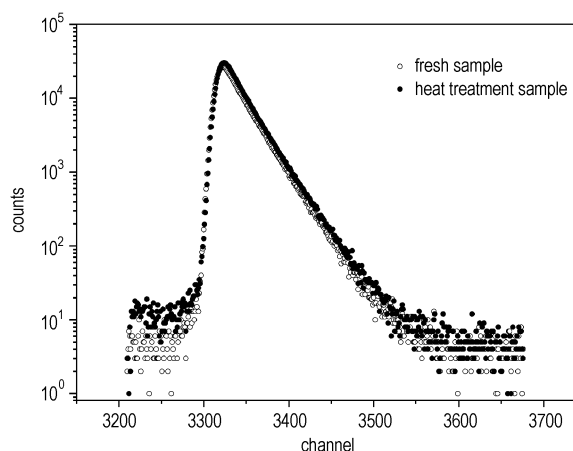


The delay time of propyl-nitrate shock ignition was determined by using the method of spectrograph techniques. The emergence of intermediate product of NO<sub>2</sub> for propyl-nitrate after shock ignition is always the most early.

### Effect of Heat Treatment on the Microstructure of TATB Based PBX by PALS

LI Jing-ming, TIAN Yong, HAO Xiao-peng,  
WANG Bao-yi

*Hanneng Cailiao*, 2005, 13(6): 378



Positron annihilation lifetime spectrums (PALS) of TATB based polymer bonded explosive (PBX) were tested before and after heat treatment.

**Factors Affecting Coating RDX with Polymer**

LI Yong-xiang, MA Jian-fu, LIU Tian-sheng,  
WANG Feng-ying

*Hanneng Cailiao*, 2005, 13(6) : 382

RDX molding powder was prepared by water slurry. The effect of technical process on the coating RDX with polymer solution was studied. The affecting factors were demonstrated by the sensitivity and particle grade analysis results.

**Desensitizing Technique of Ammonium Nitrate**

LI Yong-xiang, YAN Yong-yong, CAO Duan-lin,  
WANG Jian-long

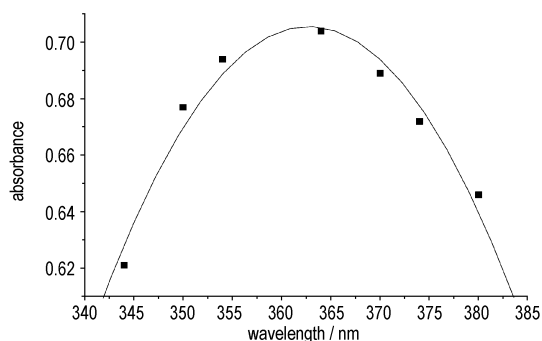
*Hanneng Cailiao*, 2005, 13(6) : 385

Six chemical materials were selected as desensitizers. Modified AN were prepared by adding these chemical materials to formulate industrial explosives.

**Determination of Potassium Picrate (KP) in KP-KClO<sub>4</sub> Ignition Composition by Spectrophotometry Analysis**

CHEN Chun-chun, ZHANG Tong-lai, ZHANG Jian-guo,  
CHEN Hong-yan

*Hanneng Cailiao*, 2005, 13(6) : 387



The absorbance of KP standard solution was measured, using water as reference. The absorbance vs. wavelength curve was obtained, irrespective of the effect of pH and the existence of KClO<sub>4</sub>.

**Study on Charcoal-free Black Powder**

CUI Qing-zhong, JIAO Qing-jie, REN Hui

*Hanneng Cailiao*, 2005, 13(6) : 389

Differences of thermal decomposition process between ordinary black powder and charcoal-free black powder are compared by TG and DTG curve, decomposition temperature of charcoal-free black powder is higher than that of ordinary black powder, but its output consistency is better.

**Relationship between Slow Cook-off Behaviour and Thermal Decomposition Characteristics of Solid Propellant**

CHEN Zhong-e, TANG Cheng-zhi, ZHAO Xiao-bin

*Hanneng Cailiao*, 2005, 13(6) : 393

The relationship between slow cook-off behaviour and thermal decomposition characteristics of NEPE propellant and HTPB propellant was analyzed by simultaneous differential scanning calorimeter and thermogravimetry (DSC-TG), scanning electronic microscope (SEM) and slow cook-off test.

**Combustion Characteristics and Thermal Decomposition Behavior of Ammonium Dinitramide Catalyzed by Lead Carbonate**

ZHAI Jin-xian, YANG Rong-jie, LI Jian-min, LI Xiao-dong

*Hanneng Cailiao*, 2005, 13(6) : 397

The effect of lead carbonate (PbCO<sub>3</sub>) on the combustion characteristic and thermal decomposition behavior of ammonium dinitramide (ADN) is investigated by burning rate measurement, DSC, and TG techniques.

### Calculation and Analysis on Energy Characteristics of AN-based Propellants

ZHANG Jie, HE Jun

*Hanneng Cailiao*, 2005, 13(6): 401

Effect of oxidizer, such as HNIW, AP and HMX, binders, such as BAMO, GAP, PET and HTPB on energy of the AN-based propellants are investigated by CAD software system.

### Equipment for Purifying Wastewater Containing Hydrazine and Recovering Hydrazine

WANG Xuan-jun, WU Li-gang, LIU Jian-cai,  
HUANG Xian-xiang

*Hanneng Cailiao*, 2005, 13(6): 405

The chemical method of recycling the sulfuric hydrazine with a form of salt from the high concentration wastewater and purifying the low concentration wastewater by  $\text{Cu}^{2+}$ - $\text{H}_2\text{O}_2$  catalytic oxidizing are proposed.

### Study on the IR Interfering Smoke Agent Used in Bomb

YIN Xi-feng, WU Yu, WU Pai, JIN Qing-jun

*Hanneng Cailiao*, 2005, 13(6): 408

The formulation and the influence factors to the property of copper-base IR interfering smoke agent as well as measurement results on the property are described in this paper.

### Final Sedimentation Velocity of Smoke Particle

ZHU Chen-guang, PAN Gong-pei

*Hanneng Cailiao*, 2005, 13(6): 412

In this paper, through outfield experimental research and theory analysis, the Stokes final sedimentation velocity formula is not demonstrated to adapt for analyzing performance of smoke.

### Appraisal of Capability of Flame Arrest by Multi-layer Wire Mesh Structure

YU Jian-liang, MENG Wei, WANG Ya-jie

*Hanneng Cailiao*, 2005, 13(6): 416

The suppressive effect of multi-layer wire mesh structure on the combustible gas explosion is studied. Two new important concepts, critical quenching value and critical quenching pressure difference are put forward. Both flame propagating speed and pressure difference are considered synthetically to describe the explosion suppression result.

### The Inclusion Complexes of $\beta$ -cyclodextrin with Nitro-compounds by HPLC

ZHANG Min, SHI Zhen

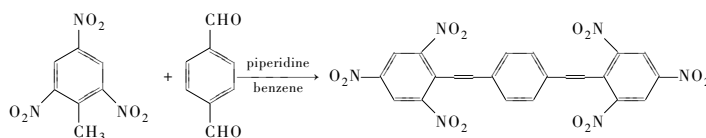
*Hanneng Cailiao*, 2005, 13(6): 421

The different molar ratio of RDX and  $\beta$ -CD inclusion complexes was analyzed by HPLC. The inclusion behavior was obtained according to the liquid chromatography.

### Synthesis and Characterization of 2,2',4,4',6,6'-hexanitro-diphenyl-styrene

LIU Yan-hong, ZHANG Tong-lai, YANG Li,  
ZHANG Jian-guo, QIAO Xiao-jing

*Hanneng Cailiao*, 2005, 13(6): 422



The title compound was synthesized through Knoevenagel Condensation of terephthalaldehyde and 2,4,6-trinitrobenzaldehyde by using pyridine as a base catalyst. The crystal structure was characterized by FT-IR,  $^1\text{H}$  NMR,  $^{13}\text{C}$  NMR and MS spectroscopy.