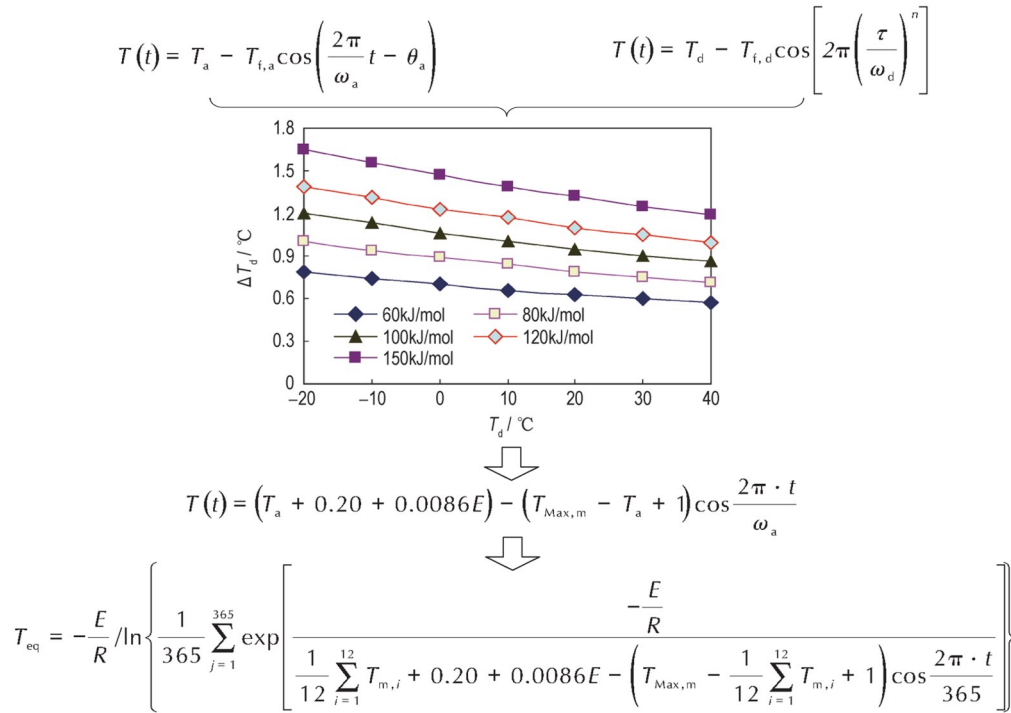


Research on Aging Equivalent Temperature of Solid Propellants Stored at Natural Cycle Temperature

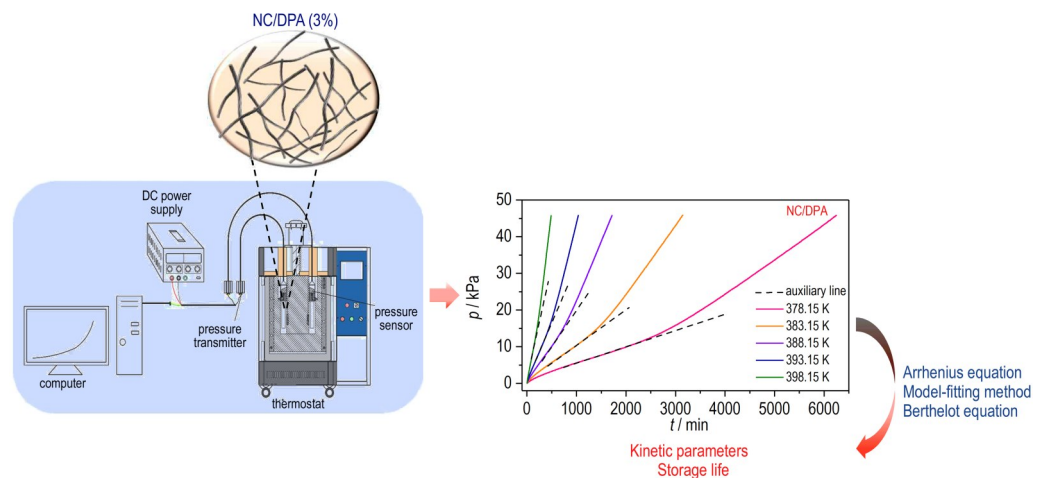


A novel method for evaluating aging effects of solid propellants stored at natural temperature was established. The method is based on the monthly average temperature data, which can be easily obtained through public ways. Aging equivalent temperatures of typical solid propellants have been calculated.

CHI Xu-hui

Chinese Journal of Energetic Materials (Hanneng Cailiao), 2019,27(12):984-990

Effects of Diphenylamine on Isothermal Thermal Decomposition Kinetics of Nitrocellulose

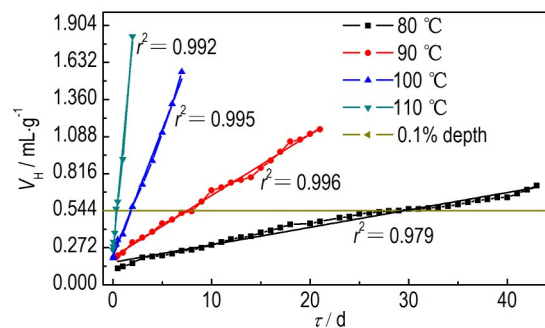


LUO Li-qiong, CHAI Zuo-hu, JIN Bo, HUANG Qiong, CHU Shi-jin, PENG Ru-fang

Chinese Journal of Energetic Materials (Hanneng Cailiao), 2019,27(12):991-997

The influence of DPA on the thermal stability of NC was investigated by an isothermal decomposition kinetic method.

Explosive Life Evaluation Criterion by Burdon Method



CHEN Jie, XIONG Ying, SUI He-liang, YU Qian, CHI Yu, SUN Jie,
XU Rui-juan, CHEN Jian-bo

Chinese Journal of Energetic Materials (Hanneng Cailiao),
2019,27(12):998–1003

The explosive life evaluation criterion by Burdon method was studied. The study showed that taking the decomposition depth of explosives in the isokinetic period as the end point criterion of shelf life would have more scientific significance.

Review on Key Technologies for Missile Storage and Life-Extension Test

WANG Hao-wei, TENG Ke-nan, LÜ Wei-min

Chinese Journal of Energetic Materials (Hanneng Cailiao),
2019,27(12):1004–1016

This paper proposes the fundamental flow and key technologies of missile storage and life-extension test, summarizes the research status and development trend.

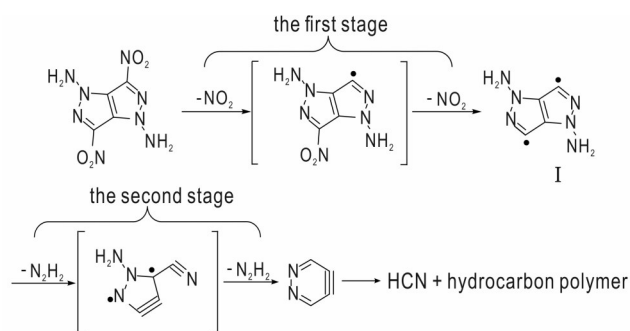
Application of LF-NMR in Aging Property Evaluation of Explosives and Propellants

DU Jiao-jiao, JIA Lin, WANG Fang-fang, YU Si-long, WANG-Qing,
CHANG Hai, ZHANG Lin-jun

Chinese Journal of Energetic Materials (Hanneng Cailiao),
2019,27(12):1017–1024

The application status and existing problems of low field nuclear magnetic resonance (LF-NMR) in the curing monitoring and aging assessment of explosives and propellants were summarized and analyzed. The potential research directions and prospects were put forward.

Preparation and Thermal Decomposition Mechanism of 1,4-Diamino-3,6-dinitropyrazolo[4,3-c]pyrazole

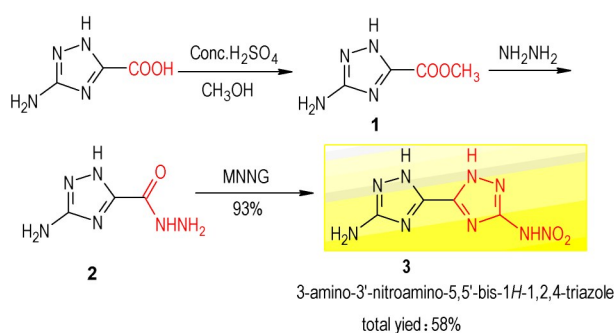


1,4-Diamino-3,6-dinitropyrazolo[4,3-c]pyrazole (DADNP) was synthesized by N-amination reaction. The thermal decomposition kinetics and mechanism were studied by means of different heating rate differential scanning calorimetry (DSC), rapid-scan Fourier transform infrared spectroscopy (RSFTIR) and thermogravimetry-mass spectrometer (TG-MS).

LI Ya-nan, HU Jian-jian, CHEN Tao, ZHANG Yi-ying, WANG Bin, CHANG Pei, WANG Bo-zhou

Chinese Journal of Energetic Materials (Hanneng Cailiao), 2019,27(12):1025–1030

Synthesis and Characterization of 3-Amino-3'-nitroamino-5,5'-bis-1H-1,2,4-triazole

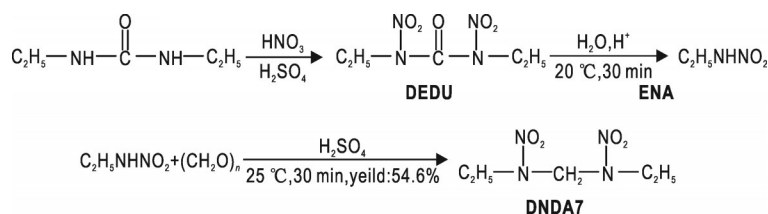


Amino-3'-nitroamino-5,5'-bis-1H-1,2,4-triazole was synthesized via esterification, carbohydrazide reaction and cyclization reaction using 3-amino-1H-1,2,4-triazole-5-carboxylic acid as raw material. Its structure was confirmed by IR, ¹³C NMR and MS. Its thermal stability and decomposition process were investigated by TG-DSC. Its detonation properties were predicted.

WANG Ting-wei, LI Yan, CHEN Dong, ZHANG Qi, ZHU Shun-guan

Chinese Journal of Energetic Materials (Hanneng Cailiao), 2019,27(12):1031–1035

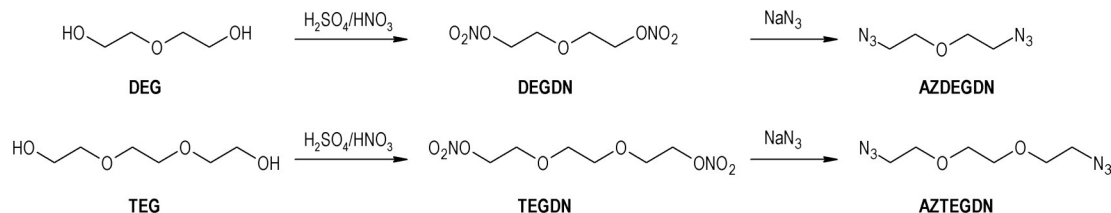
Synthesis and Properties of 3,5-Dinitro-3,5-diazaheptane



3,5-Dinitro-3,5-diazaheptane (DNDA7) was synthesized via nitration, hydrolysis and condensation by using 1,3-diethylurea as the raw material. The structure and properties of DNDA7 were fully characterized.

CHEN Bin, LIU Ya-jing, GAO Fu-lei, WANG Ying-lei, LU Ting-ting
Chinese Journal of Energetic Materials (Hanneng Cailiao), 2019,27(12):1036–1042

Synthesis and Properties of Diazido Linear Ether Plasticizers

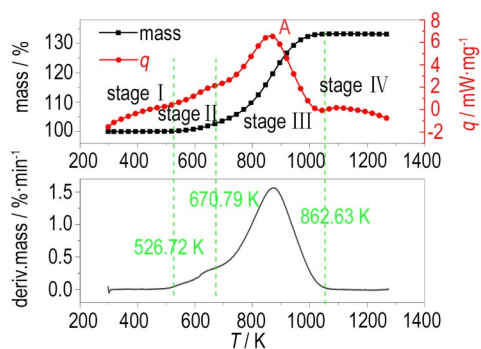


DING Feng, WANG Wei, ZHAO Bao-dong, WANG Ying-lei,
GAO Fu-lei, CHEN Bin, LIU Wei-xiao

Chinese Journal of Energetic Materials (Hanneng Cailiao),
2019,27(12):1043–1049

Using diethylene glycol (DEG) and triethylene glycol (TEG) as starting materials, novel energetic plasticizers 1, 5-diazido-3-oxopentane (AZDEGDN) and 1, 8-diazido-3, 6-dioxooctane (AZTEGDN) were synthesized via nitration and azidation reaction, and their structures were characterized by IR, NMR and element analysis.

Thermal Oxidation Process of Micron Zirconium Powder

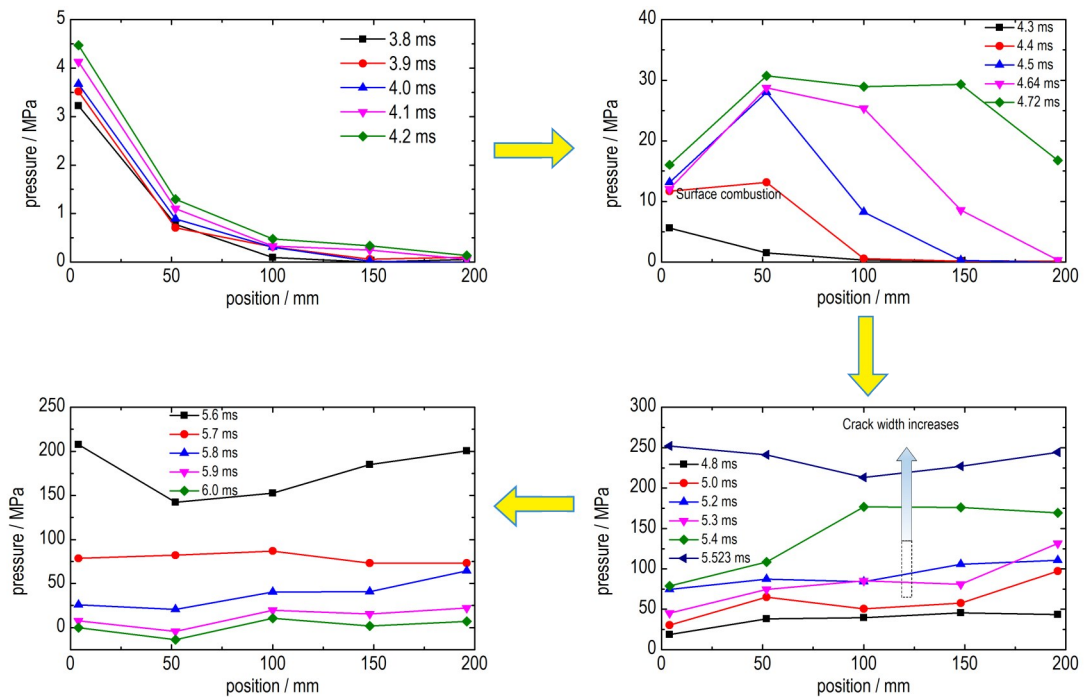


LIU Qing, CHEN Lin-quan, ZHOU Yu-nan, YUAN Ji-fei,
WANG Jian-ru, LIU Jian-zhong

Chinese Journal of Energetic Materials (Hanneng Cailiao),
2019,27(12):1050–1055

The thermal oxidation reaction process of micron zirconium powders was studied. According to the three characteristic temperatures in the oxidation process, it was divided into four stages. The thermal oxidation process of zirconium powder was analyzed by the Kissinger method, the FWO method and the Satava-Sestak method, and the corresponding reaction kinetic parameters were obtained.

Experimental Study on Burning Evolution in Confined HMX-based PBX Cracks

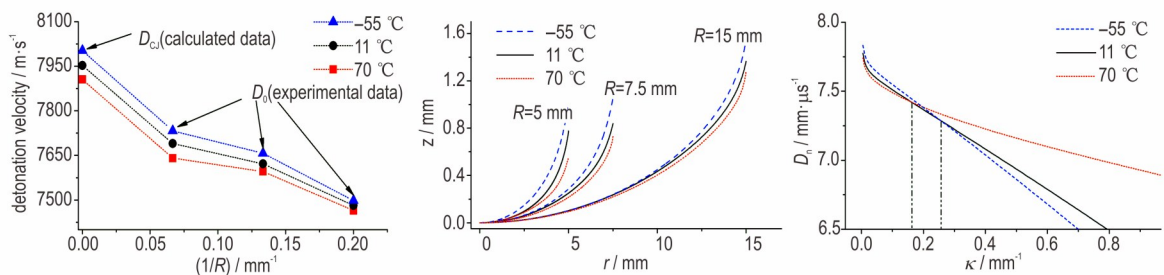


The convective burning process in cracks of pressed HMX-based PBX under thermal initiation was diagnosed by high-speed camera and pressure transducers. Different crack widths were selected to analyze the influence of crack width on burning evolution. Detailed analysis of experimental data reveals the multi-stage behavior of convective burning evolution in explosive cracks.

SHANG Hai-lin, YANG Jie, LI Tao, FU Hua, HU Hai-bo

Chinese Journal of Energetic Materials (Hanneng Cailiao),
2019,27(12):1056–1061

Front Curvature Rate Stick Experiment of JB-9014 over a Wide Temperature Range



Front curvature rate stick experiments of JB-9014 explosive were performed at -55 , 11 °C and 70 °C by using high speed streak camera technique and electric pins velocimetry. The temperature effect on the detonation propagation behavior and the $D_n(\kappa)$ relation of the detonation front were analyzed.

GUO Liu-wei, LIU Yu-si, HUANG Yu, ZHANG Xu, ZHENG Xian-xu

Chinese Journal of Energetic Materials (Hanneng Cailiao),
2019,27(12):1062–1068

Executive editor: WANG Yan-xiu GAO Yi JIANG Mei ZHANG Qi