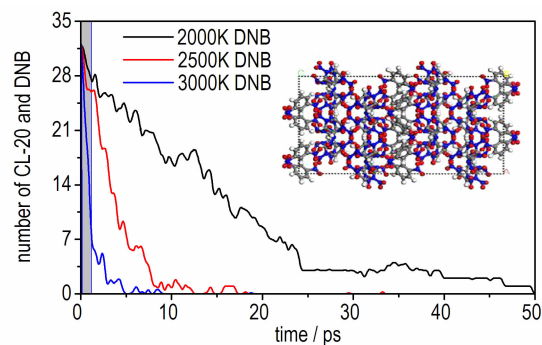


ReaxFF Reactive Molecular Dynamics Simulations of Thermal Decomposition under High Temperature for CL-20/DNB Cocrystal

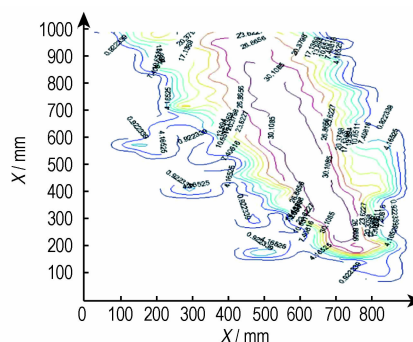
MIAO Rui-zhen, LIU Wei-shuai, WANG Jian, KANG Zhi-peng, YANG Lu-xia, JING Xing-bin, FU Yi-zheng, LIU Ya-qing
Chinese Journal of Energetic Materials, 2016, 24(2): 111–117



The initial thermal decomposition pathways as well as some important products generating mechanism of hexanitrohexaazaisowurtzitan (CL-20)/1,3-dinitrobenzene (DNB) cocrystal at high temperatures (2000, 2500 K and 3000 K) were studied by reactive molecular dynamics simulations using ReaxFF force field.

Experimental Research on Flow Field and Mathematical Model for Burning Particles of Pyrotechnic Composition

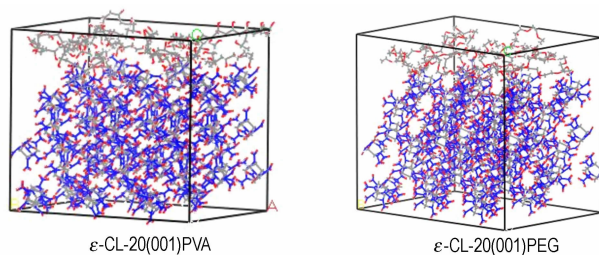
XUE Rui, XU Hou-qian, LI Yan, ZHU Chen-guang
Chinese Journal of Energetic Materials, 2016, 24(2): 118–123



Taking into account the gravity, buoyancy, drag force, a trajectory model was established, and the velocity distribution of the burning particles in the pyrotechnic flame was mapped.

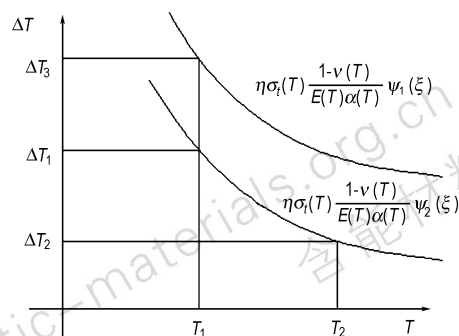
Molecular Dynamics Simulations of Composites Formed with ϵ -CL-20 and PVA, PEG on Different Crystalline Surfaces

YUAN Lin-lin, XIAO Ji-jun, ZHAO Feng, XIAO He-ming
Chinese Journal of Energetic Materials, 2016, 24(2): 124–128



The stability and mechanical properties of ϵ -CL-20 (001)/PVA and ϵ -CL-20 (001)/PEG composites were comparatively studied by molecular dynamics (MD) simulations.

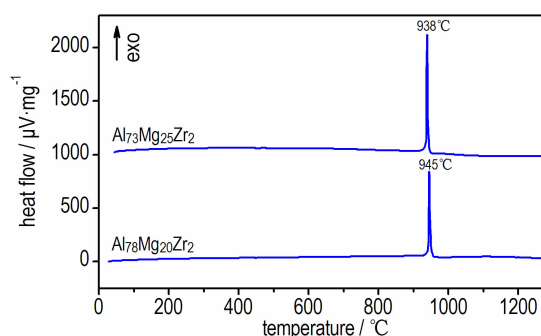
Failure Damage Analysis of HMX Based PBX Thick Wall Structure under Thermoelastic Environment



A thermoelastic deformation analysis of polymer bonded explosive (PBX) thick wall spherical shell structure in steady temperature field was launched and the failure damage status of the structure under the action of thermal stress was discussed. The temperature difference carrying capacity and first failure point position of thick wall spherical shell structure were analyzed by strength criterions. The rule of the temperature difference carrying capacity of ordinary PBX structure was obtained via related structure shape and size parameters factors.

WANG Peng-fei, HUANG Xi-cheng, HE Ying-bo, GUO Hu
Chinese Journal of Energetic Materials, 2016, 24(2): 129–136

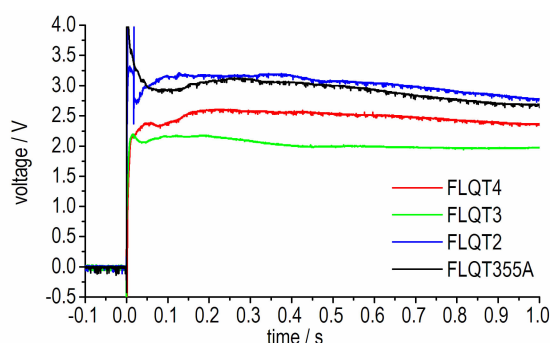
Preparation and Performance of High Reactive Al-Mg-Zr Alloy Fuels with Intensive Heat Release



Ternary Al-Mg-Zr alloy fuels with Mg content ranging from 5% to 30% were prepared by close-coupled gas atomization and the most reactive powder among the prepared alloy powders was identified

LI Lin-fu, CAI Shui-zhou, XU Chang-juan, FU Hao, ZOU Hui
Chinese Journal of Energetic Materials, 2016, 24(2): 137–143

Effect of Particle Size and Shape of Aluminum Powder on the Explosion Field Pressure and Temperature of RDX-based Explosive in Vacuum Environment

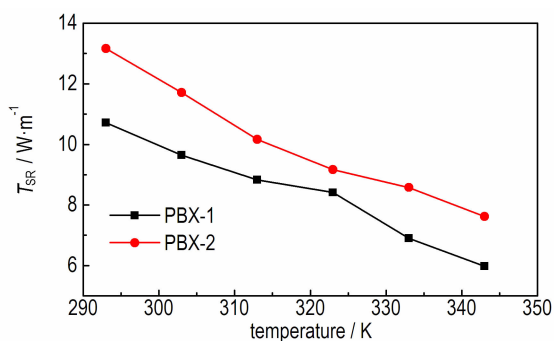


The explosion field pressure and temperature of four kinds of RDX-based aluminized explosives containing spherical aluminum powder with particle size of 4, 13 and 28 μm and slice aluminum powder with particle size of 130 μm were measured in a sealed explosion chamber.

HUANG Ya-feng, TIAN Xuan, FENG Bo, WANG Xiao-feng
Chinese Journal of Energetic Materials, 2016, 24(2): 144–148

Thermal Shock Resistance of Styrene Copolymer Modified TATB-based Polymer Bonded Explosive

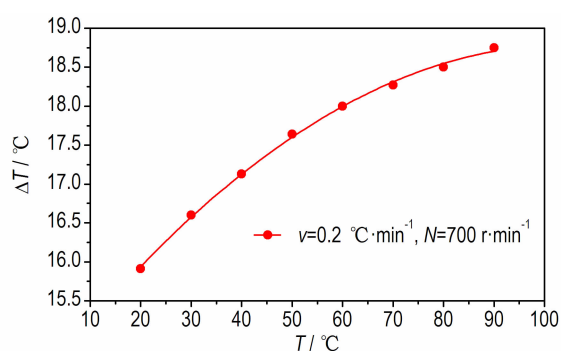
LIN Cong-mei, LIU Jia-hui, ZENG Gui-yu, GONG Fei-yan, HUANG Zhong, PAN Li-ping, ZHANG Jian-hu, LIU Shi-jun
Chinese Journal of Energetic Materials, 2016, 24(2): 149–154



Tensile mechanical properties and thermophysical properties of TATB-based PBX and its styrene copolymer modified formulation at different temperatures were investigated to explore the effects of styrene copolymer on the thermal shock resistance.

Study on Metastable Zone of HMX in γ -Butyrolactone

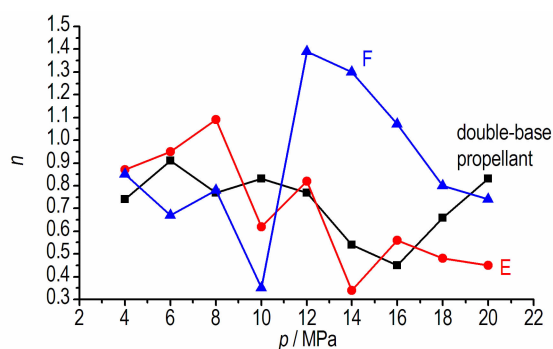
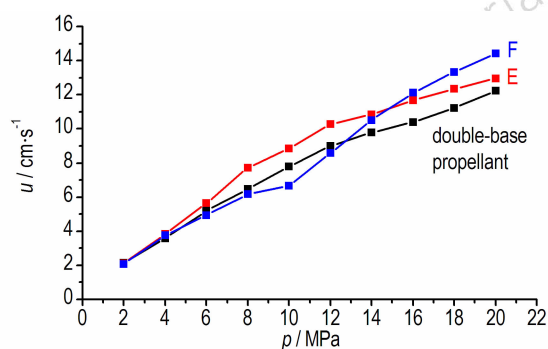
LI Wen-peng, LIAO Ning, DUAN Xiao-hui, CHENG Min-min
Chinese Journal of Energetic Materials, 2016, 24(2): 155–160



The solubility of HMX in γ -butyrolactone was measured by a laser-monitoring observation method. The relation of the solubility vs. temperature were established. The effects of saturation temperature, stirring speed and cooling rate on metastable zone width were studied. The nucleation series effected by cooling rate and stirring speed were calculated.

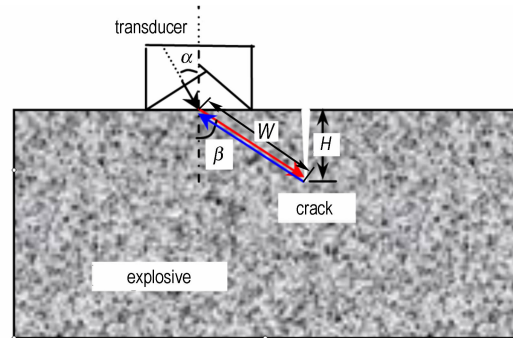
Combustion Catalytic Performance of Energetic Fe(III) and Complexes Derived From 2,6-Diamino-3,5-dinitropyridine-1-oxide

LIU Jin-jian, LIU Zu-liang, CHENG Jian
Chinese Journal of Energetic Materials, 2016, 24(2): 161–165



The feasibility of Fe(III) and Co(III) energetic complexes of 2,6-diamino-3,5-dinitropyridine-1-oxide (ANPyO) as combustion catalysts was tested by closed bomb test and target lines experiment.

Crack Depth Detection of PBX Section by Ultrasonic Edge Peak Echo Method

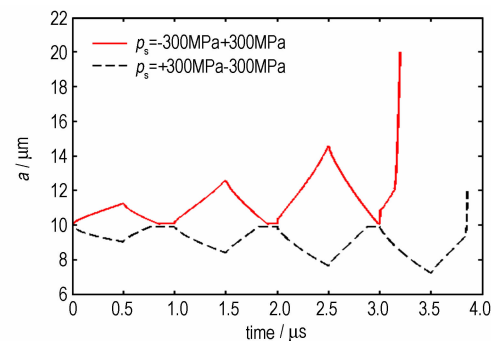


ZONG He-hou, ZHANG Wei-bin, XIAO Li, ZHOU Hai-qiang, YANG Zhan-feng

Chinese Journal of Energetic Materials, 2016, 24(2): 166–170

The crack depth of PBX surface was measured with an ultrasonic tip echo method. The accuracy of method applied in explosive was verified by simulation test blocks and validated with X- μ CT technique.

Hot-spot Forming Mechanism of Holes Collapse in Heterogeneous Solid Explosives under Complicated Stress Environment

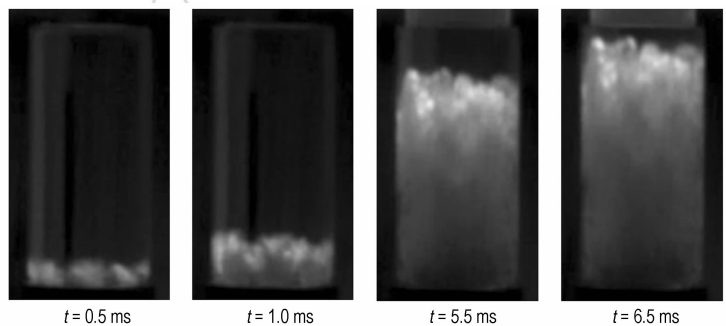


CHENG Li-rong, SHI Hui-ji, HE Yuan-ji, ZHAO Sheng

Chinese Journal of Energetic Materials, 2016, 24(2): 171–176

The new “hot-spot” model under the complex impact environment was established based on the one-dimensional elastic-viscoplastic collapse model. The effects of temperature and damage on the mechanical properties of the explosives were taken into account in the formation of hot-spot.

Experimental Study on Expansion Characteristics of Multiple Wall Combustion-gas Jets in Cylindrical Filling Liquid Chamber

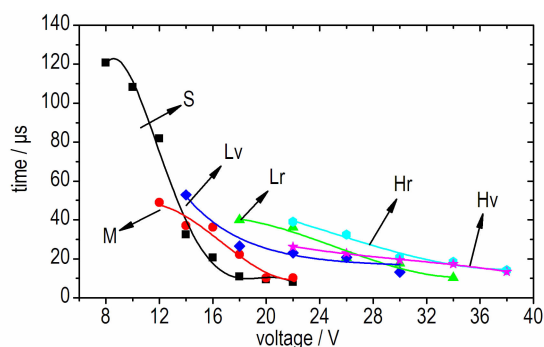


HU Zhi-tao, YU Yong-gang, CAO Yong-jie

Chinese Journal of Energetic Materials, 2016, 24(2): 177–181

The combustion gas generator and cylindrical filling liquid chamber were designed. The expansion processes of multiple wall jets were recorded by the means of high-speed digital photographic system. The average axial displacements of multiple wall jets at different time were obtained by disposing the expansion sequence diagrams. The effects of the number of orifices and the blasting injection pressure on expansion characteristics of multiple wall jets were discussed.

Ignition Performances of Energetic Igniters Integrated by Integrating Polysilicon with Al/CuO Multilayer Films



The ignition performances of energetic igniters with different shape and size of polysilicon bridges were experimentally investigated. Firing sensitivity, critical electro-exploding voltage and firing time were obtained. Comparative test for polysilicon igniter and energetic igniter was conducted to demonstrate the efficiency of Al/CuO multilayer films for improving the ignition ability.

LI Yong, WANG Jun, GAO Ze-zhi, ZHOU Bin, SHEN Rui-qi
Chinese Journal of Energetic Materials, 2016, 24(2): 182–187

Explosive Welding of Aluminum-steel of Dovetail Groove



The explosive welding of aluminum to steel of dovetail groove supplies a new way for the explosive welding of aluminum to steel. After explosive welding, the mechanical and bonding properties of the clad plate were further studied.

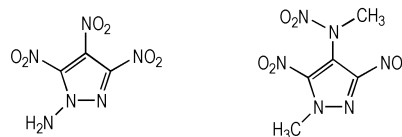
LI Xue-jiao, MA Hong-hao, SHEN Zhao-wu, MIU Guang-hong
Chinese Journal of Energetic Materials, 2016, 24(2): 188–193

Nanoscale Hydrogen-Storage Materials: Recent Progresses and Perspectives for Applications in Propellants

YANG Yan-jing, ZHAO Feng-qi, YI Jian-hua, LUO Yang
Chinese Journal of Energetic Materials, 2016, 24(2): 194–201

The effects on dehydrogenation thermodynamics and kinetics of various categories of hydrogen-storage materials are systematically summarized.

Molecular Design of Diazole Carriers for Melt-cast Explosives

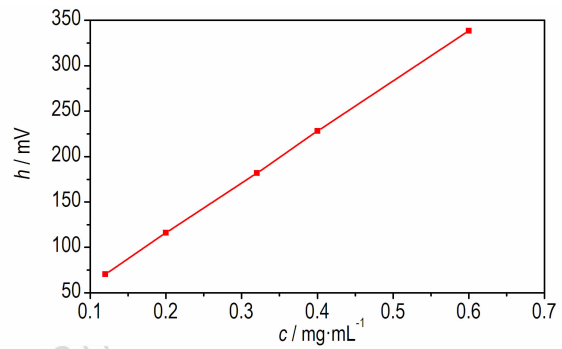


YAN Tao, WANG Jian-hua, LIU Yu-cun, ZHANG Xiao-yu, HUANG Ming, CHANG Shuang-jun, YU Yan-wu, JING Su-ming

Chinese Journal of Energetic Materials, 2016, 24(2): 202–208

Two novel carriers based on pyrazole with excellent detonation performance for melt-cast explosives were designed.

**Purity Analysis Method of 5, 5'-Bistetrazole-1, 1'-
dyhydroxy Dihydrate**



XIONG Shu-ling, CHEN Shu-sen, LI Li-jie, JIN Shao-hua,
SHU Qing-hai, TONG Zong-rui, LI Jing-lin

Chinese Journal of Energetic Materials, 2016, 24(2): 209–212

Analysis conditions of 5, 5'-bistetrazole-1, 1'-dyhydroxy dihydrate (BTO) by high performance liquid chromatography (HPLC) were built and external standard method was used to analyze the BTO standard solution.

Executive editor: ZHANG Qi WANG Yan-xiu JIANG Mei