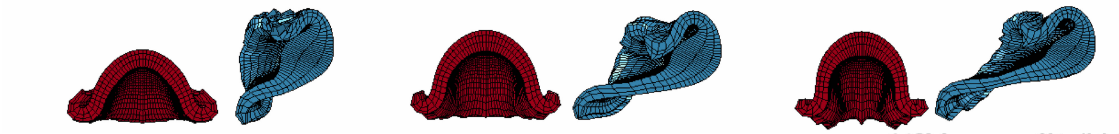
Effect of Charge Parameters on Formation of Integral Multiple Explosively Formed Projectiles

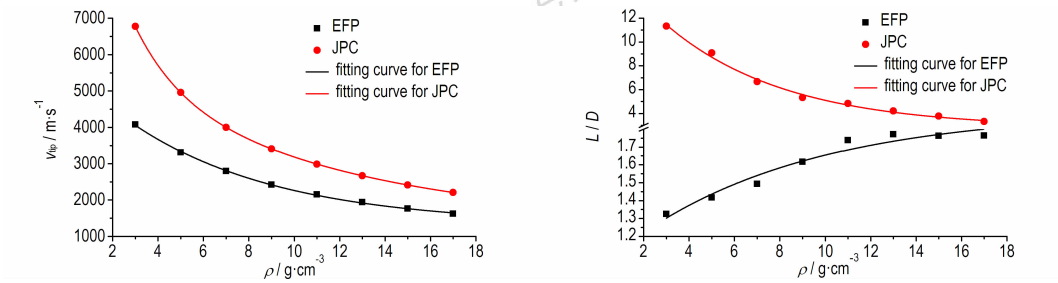


ZHAO Chang-xiao, RAN Dong-yue, LIU Kai, CAO Hong-an, XU Jian-guo, ZHAO Dong-hua, QIN Xiang-sheng

Chinese Journal of Energetic Materials,2017,25(11):882-887

To improve the damage ability of integral multiple explosively formed projectiles(MEFP), the effect of configuration parameters of charge on projectile formation was studied using LS-DYNA code.

Effects of Liner's Material Properties on the Forming of Dual Mode Damage Elements

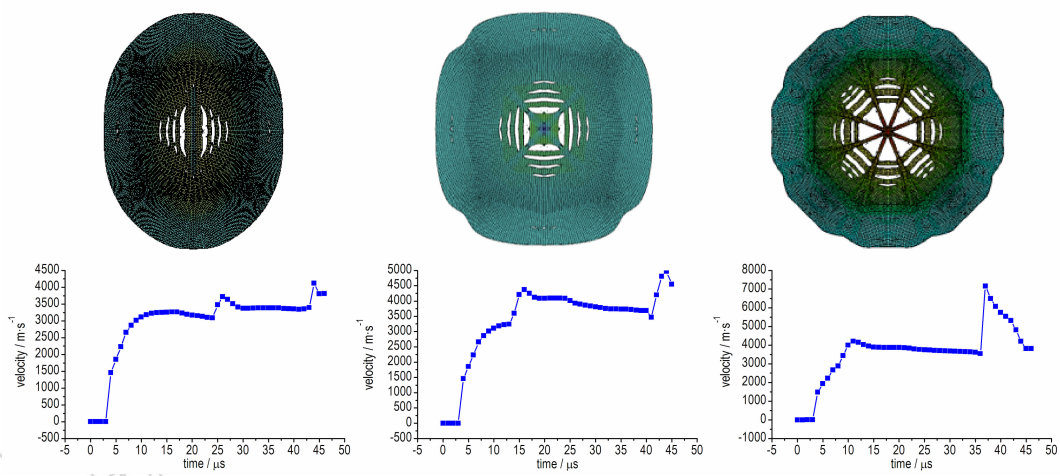


FAN Xue-Fei, LI Wei-bing, WANG Xiao-ming, LI Jun-bao, WANG Ya-jun

Chinese Journal of Energetic Materials,2017,25(11):888-895

In order to use different liner materials in the multimode warhead, the effects of the material parameters on the explosively formed penetrator (EFP) and jetting projectile charge (JPC) formed by dual mode damage elements were studied. The tip velocity and length-diameter ratio formula of the dual mode damage elements considering the influence of material properties were presented by fitting, and X-ray imaging verification test of three kinds of liner materials including aluminum, iron and copper was performed.

Jet Formation Performance of Circular Shaped Charge of Cutting Inward

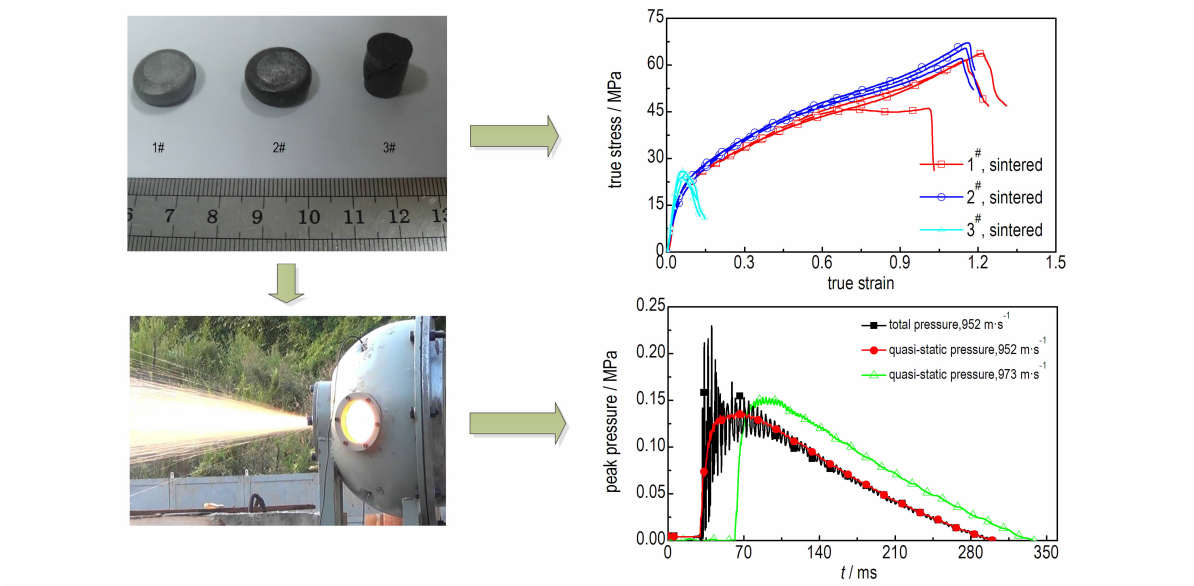


WU Shuang-zhang, GU Wen-bin, LI Yu-chun, GAO Zhen-ru, LIU Qiang, LIU Jian-qing, XU Jing-lin

Chinese Journal of Energetic Materials,2017,25(11):896-902

The tri-dimensional model of circular shaped charge of cutting inward was established with ANSYS/LS-DYNA program to obtain the jet formation characteristics and laws. The jet photographs and jet velocity gradient distribution curve and time history curve of maximum jet velocity of typical moment with different detonation form were obtained.

Quasi-static Compression Properties and Impact Energy Release Characteristics of Al/PTFE/W Reactive Materials

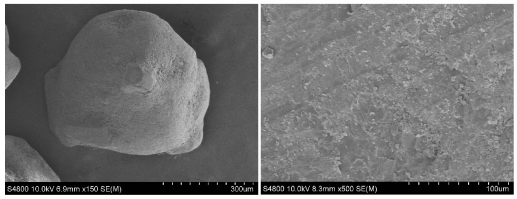


ZHOU Jie, HE Yong, HE Yuan, WANG Chuan-ting, YANG Xiang-li, JI Cheng

Chinese Journal of Energetic Materials, 2017, 25(11): 903–912

The quasi-static compression experiments and impact-induced energy release experiments were carried out. The mechanical properties and impact reaction pressure of the reactive materials (RMs) were obtained and the relationship between them was analyzed.

Effects of Nano/Micrometer HMX Particle Gradation on PBX Properties

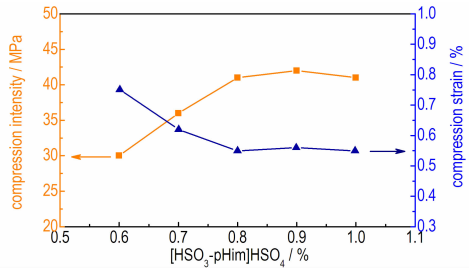


JIN Cheng-su, XIAO Lei, WANG Qing-hua, LIU Jie, HAO Ga-zi, RONG Yuan-bo, JIANG Wei, LIU Qiao-e, XU Zi-shuai

Chinese Journal of Energetic Materials, 2017, 25(11): 913–919

By solution-water slurry method, the HMX based PBX were successfully prepared. The JO-1 are the molding powders of single coarse HMX. The JO-2, JO-3 and JO-4 are the molding powders including different proportions coarse HMX (d_{50} = 100 μm), ultrafine HMX (d_{50} = 1 μm) and nano-HMX (d_{50} = 100 nm). The surface microstructures of JO-1, JO-2, JO-3 and JO-4 samples were observed and the component contents, impact sensitivities, friction sensitivities, thermal decomposition characteristics, compression properties and detonation velocities were measured.

Curing Kinetics and Mechanical Properties of Aldol Resin Cured by Ionic Liquid

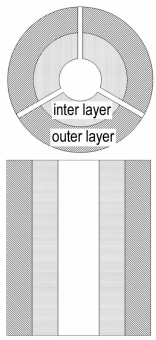


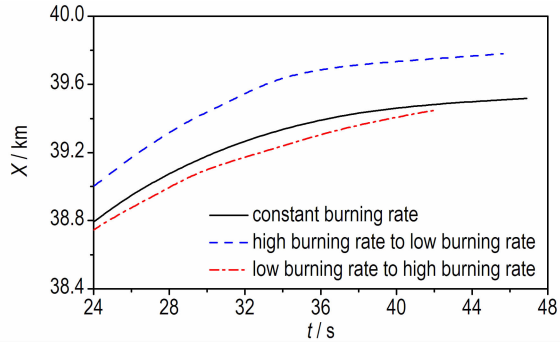
CAI Jia-lin, LUO Guan, SHI Yuan-tong

Chinese Journal of Energetic Materials, 2017, 25(11): 920–924

The ionic liquid [HSO_3-pHim]HSO_4 was applied to cure aldol resin, and the curing kinetics of aldol resin were studied. The mechanical properties of aldol resin based PBXs cured by [HSO_3-pHim]HSO_4 were tested.

Method of Drag Reduction and Extend Range Based on Variable Burning Rate of Base Bleed Propellant



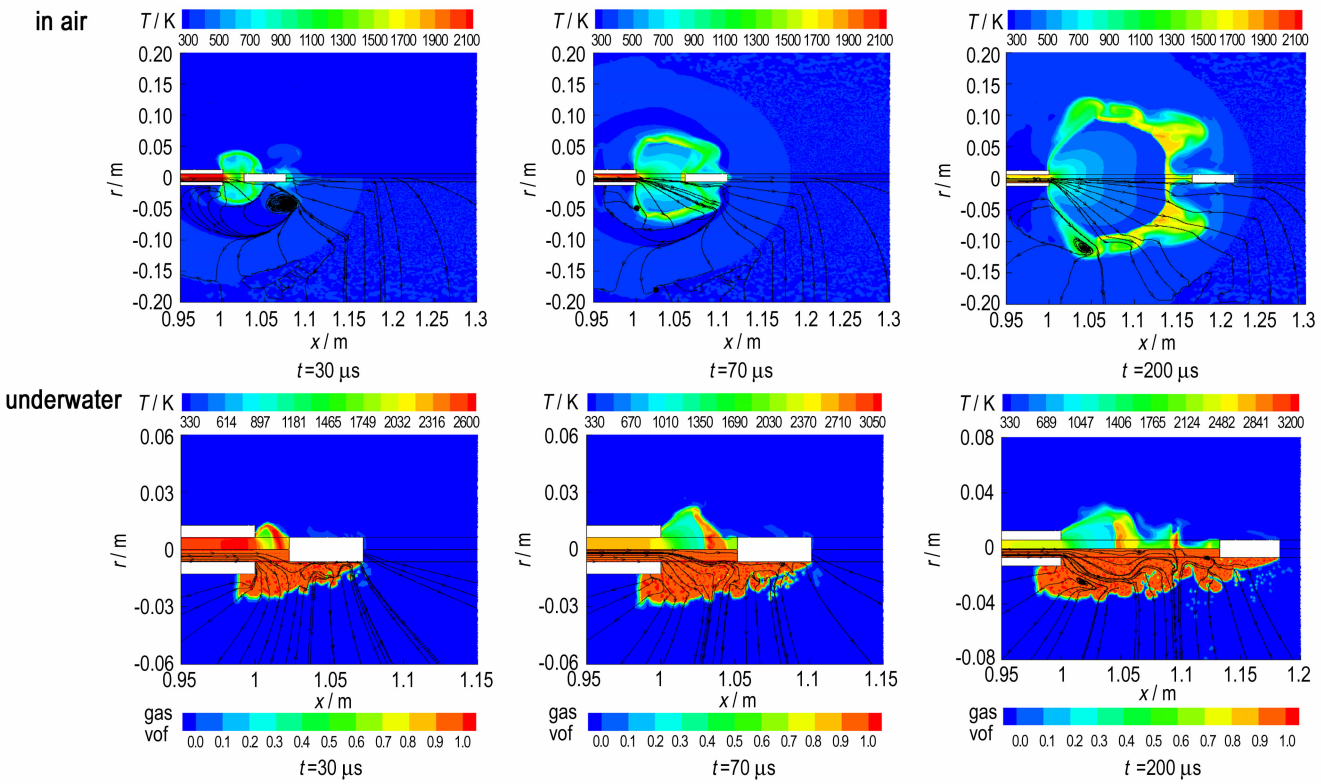


The firing range of base bleed projectile could be improved further by using variable burning rate propellant including the inner layer with high burning rate and the outer layer with low burning rate, the reduction drag and extend range method had universal applicability.

ZHANG Zhu-wei, ZHANG Ling-ke

Chinese Journal of Energetic Materials,2017,25(11):925–931

Numerical Analysis for the Effect of Underwater Launch on the Temperature Field of Machine Gun Muzzle

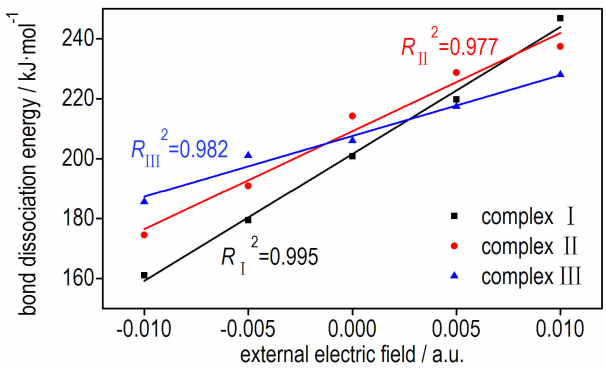


The mathematic-physical model for gun sealed launched underwater was established. Through the numerical simulation, the muzzle temperature distribution for gun sealed launched underwater was obtained. Then, the muzzle temperature field for gun launched underwater was compared with that for in air. The influence of underwater launch on the temperature distribution in the shock wave system, jet flow characteristics and formation of Mach disk were analyzed.

ZHANG Xin-wei, YU Yong-gang

Chinese Journal of Energetic Materials,2017,25(11):932–938

Theoretical Investigation into the Effects of External Electric Fields upon the Sensitivity of HMX/MDNI Complex



HAN Gang, GOU Rui-jun, ZHANG Shu-hai, WU Chun-lei, ZHU Shuang-fei

Chinese Journal of Energetic Materials, **2017**, **25**(**11**): **939–945**

Based on the density functional theory, the changes of trigger bond dissociation energy of HMX of three HMX/MDNI complexes were analyzed with different external electric fields to obtain the effects of external electric fields on the sensitivity of HMX/MDNI composites.

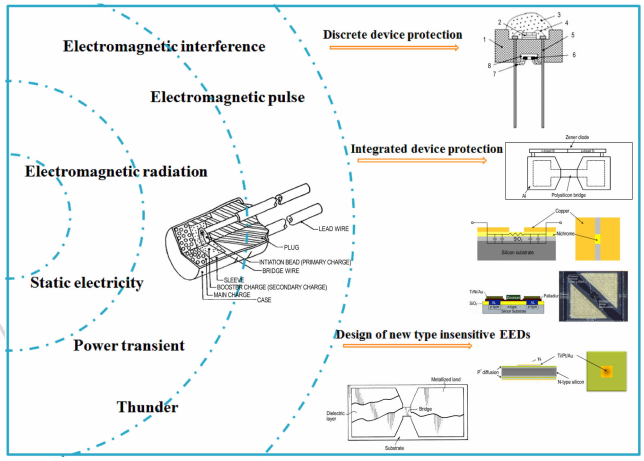
Identification and Evaluation of Suspected Hazardous Materials

SONG Qing-guan, LIU Qing-jie, JIA Lu-chuan, GAO Da-yuan, LÜ Zi-jian, XIANG Yong, CAO Wei, CAO Luo-xia

Chinese Journal of Energetic Materials, **2017**, **25**(**11**): **946–953**

The identification and evaluation test standards were systematically applied to identify and evaluate suspected hazardous materials from public security departments. The UN gap test 1(a), Koenen test 1(b) and time/pressure test 1(c) were applied to identify whether the hazardous materials were explosive or not. The cap sensitivity test 5(a) was applied to evaluate the sensitivity of hazardous materials on strong mechanical stimulation. The lead plate test was applied to identify whether the electric detonator, safety fuse and flash detonator were explosive or not.

Research Progress and Prospect of Electromagnetic Compatibility of Electro-explosive Device

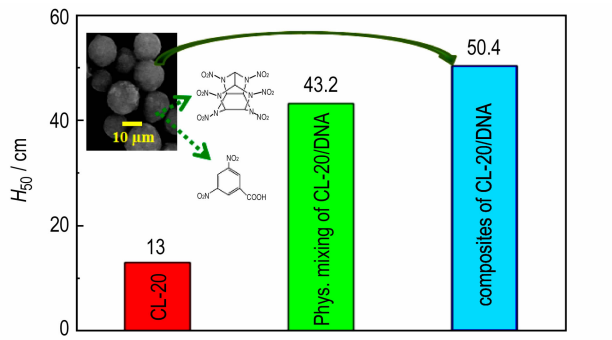


WANG Jun, LI Yong, ZHOU Bin, CHEN Hou-he, DU Wei-qiang, FAN Xiao-wei

Chinese Journal of Energetic Materials, 2017, 25(11): 954–963

The electromagnetic compatibility design methods of initiator are briefly reviewed. The type and protection principles of discrete devices added to EEDs are introduced. And the applications of integrated protective device in EEDs indicate its effectiveness and practicability.

Preparation and Performance of 2, 4, 6, 8, 10, 12-Hexanitro-2, 4, 6, 8, 10, 12-hexaazaisowurtzitane/3, 5-Dinitrobenzoic Acid (CL-20/DNBA) Spherical Composite



ZHU Yan-fang, LU Yue-wen, GAO Bing, TAN Shao-hua, WANG Qian, WANG Dun-jun, Wang Jun, YANG Guang-cheng, GUO Chang-ping

Chinese Journal of Energetic Materials, 2017, 25(11): 964–968

2, 4, 6, 8, 10, 12-Hexanitro-2, 4, 6, 8, 10, 12-hexaazaisowurtzitane (CL-20)/3, 5-dinitrobenzoic acid (DNBA) spherical composite was prepared by ultrasonic-assisted emulsion method under room temperature using ethyl acetate as solvent and gelatin as the surfactant. Its morphology and structure were characterized. The thermal decomposition performance and sensitivity were studied.