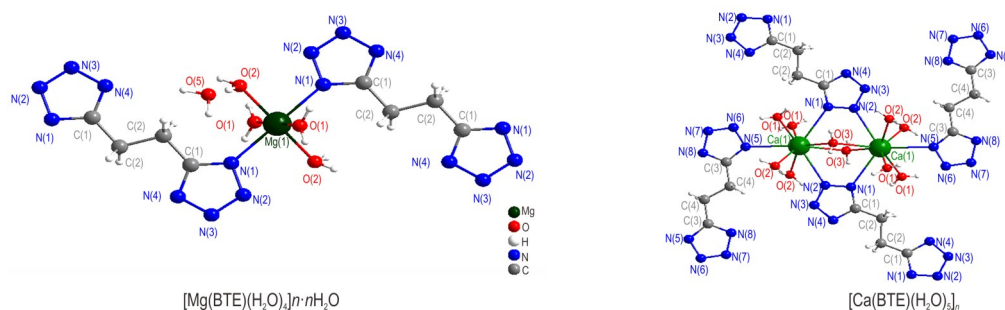


Magnesium and Calcium Salts of 1,2-Bis(tetrazol-5-yl)ethane: Synthesis, Crystal Structures and Thermal Analysis



LI Xin-rui, YANG Xiao-ming, LI Hai-bo, LI Zhi-min, WANG Lin, ZHANG Tong-lai

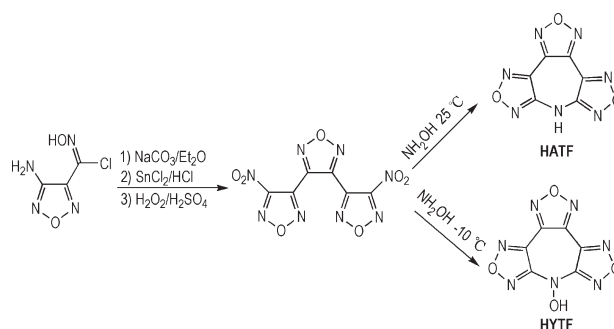
Chinese Journal of Energetic Materials (Hanneng Cailiao), 2020,28(11):1036–1042

Two new tetrazole energetic compounds, magnesium and calcium salts of 1, 2-bis(tetrazol-5-yl)ethane ($[\text{Mg}(\text{BTE})(\text{H}_2\text{O})_n] \cdot n\text{H}_2\text{O}$ and $[\text{Ca}(\text{BTE})(\text{H}_2\text{O})_5]_n$) are herein reported. The structures, thermal decomposition temperatures and sensitivity were measured for further application.

Synthesis and Properties of 7-Hydroxytrifurazano[3,4-b:3',4'-f:3'',4''-d]azepine

ZHAI Lian-jie, HUO Huan, WU Min-jie, ZHANG Jia-rong, BI Fu-qiang, WANG Bo-zhou

Chinese Journal of Energetic Materials (Hanneng Cailiao), 2020,28(11):1043–1047

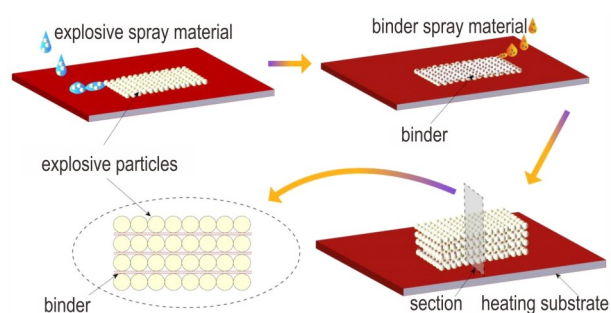


A new seven-membered cyclic compound 7-hydroxytrifurazano[3,4-b:3',4'-f:3'',4''-d]azepine was synthesized, and its NMR spectra, thermal stability, and detonation parameters were also discussed.

Double-nozzle Microjet Direct Writing and Properties of CL-20 Based Energetic Film

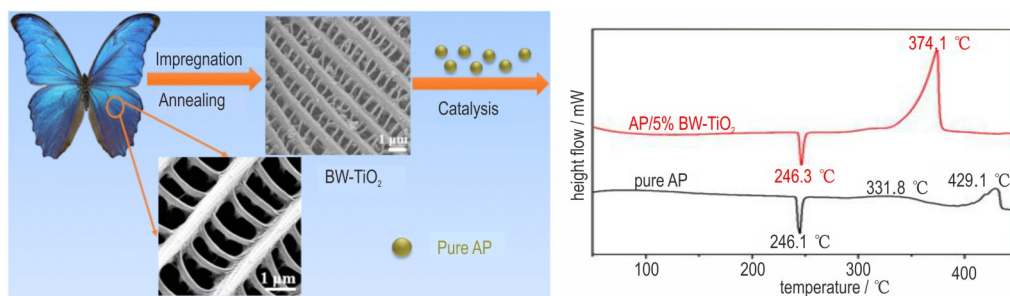
KONG Sheng, AN Chong-wei, XU Chuan-hao, GUO Hao, YE Bao-yun, WU Bi-dong, WANG Jing-yu, DONG Jun

Chinese Journal of Energetic Materials (Hanneng Cailiao), 2020,28(11):1048–1053



In this work, hexanitrohexaazaisowurtzitanate(CL-20) was applied as the main explosive, and ethyl cellulose(EC) and polyazidebinder(GAP) were used as the binder, ethyl acetate and acetone were chosen as solvents to prepare two spray materials. Energetic films have been prepared by micro-double-spray direct-write process in the alternating layer-by-layer stacking mode.

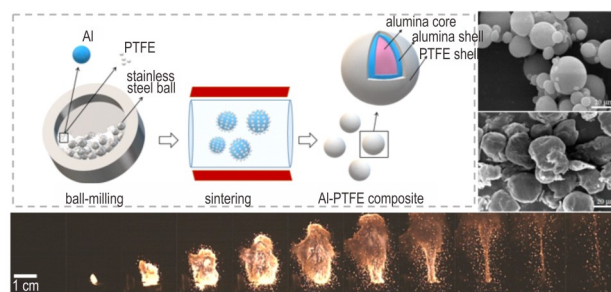
Preparation of Butterfly Wing-shaped TiO_2 and Its Catalytic Effects on the Thermal Decomposition of Ammonium Perchlorate



ZHOU Ting-ting, CAI Fu-lin, WU Bo, Duan Xiao-hui
Chinese Journal of Energetic Materials (Hanneng Cailiao),
 2020,28(11):1054–1060

Taking natural Morpho butterfly wing as template, the butterfly wing-shaped TiO_2 (BW- TiO_2) was prepared by impregnation-calcination method, and its catalytic effects on the AP thermal decomposition was studied.

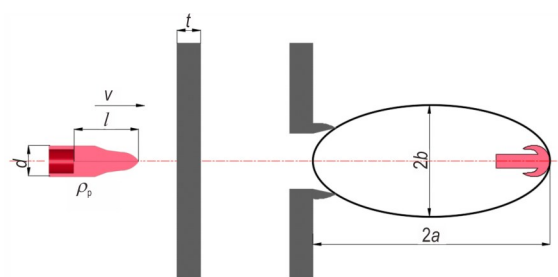
Effects of PTFE Content and Sintering Temperature on the Morphology and Combustion Performances of Al/PTFE Composites



XU Wen-ting, HANG Si-yu, LI Ya-ning, HAN Zhi-wei,
 WANG Bo-liang
Chinese Journal of Energetic Materials (Hanneng Cailiao),
 2020,28(11):1061–1067

In the process of aluminum powder coating, the influence of PTFE content and sintering temperature on the morphology and combustion performance of aluminum powder (Al)/polytetrafluoroethylene (PTFE) composites

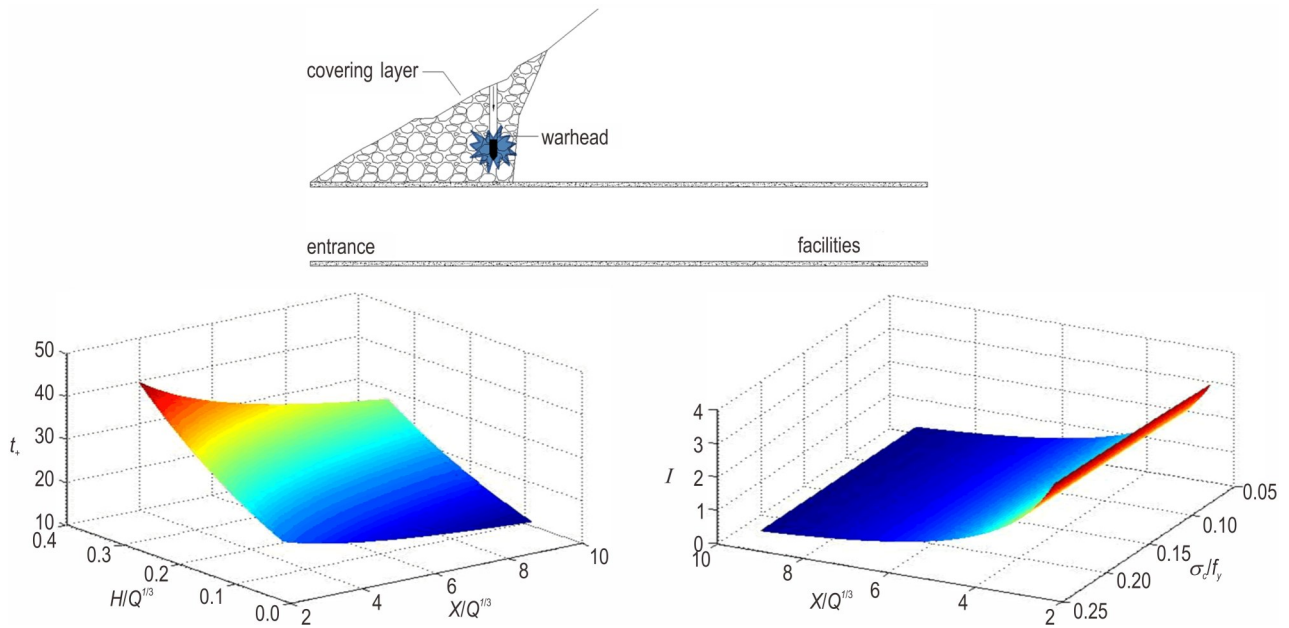
Shape Description of Behind-armor Debris Cloud from Vertical Penetration of Target Plate by EFP



HUANG Xuan-ning, LI Wei-bing, GUO Teng-fei, LI Wen-bin,
 WANG Xiao-ming
Chinese Journal of Energetic Materials (Hanneng Cailiao),
 2020,28(11):1068–1075

Based on the dimensional analysis and the theory of orthogonal design, the relationship between major semi-axis of behind-armor debris cloud from a vertical EFP penetration and EFP formation parameters, the material parameters of projectile and target plate were studied using SPH algorithm in AUTODYN software. Then, a mathematical description model of the debris cloud shape behind-armor was established.

Engineering Algorithm of Shock Wave Propagation Law in Underground Bunker at Various Depths of Explosion

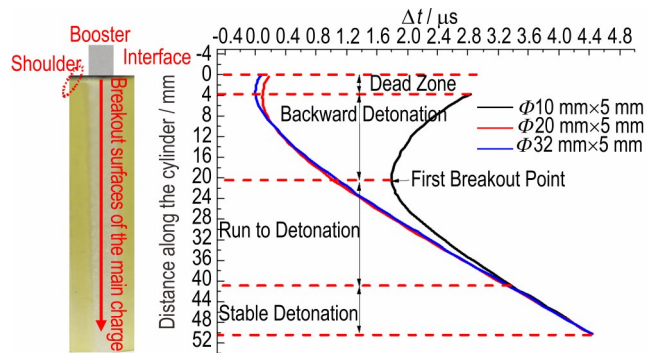


LIU Fei, REN Xin-jian, HE Xiang

Chinese Journal of Energetic Materials (Hanneng Cailiao), 2020,28(11):1076–1082

Blast tests at different buried depths were carried out using an underground engineering model that can be assembled by steel structural units. The distribution formulas on shock wave in the underground bunker under deep drilling blast conditions were studied.

Effect on the Detonation Growth Characteristics of Main Charge from Booster Diameter

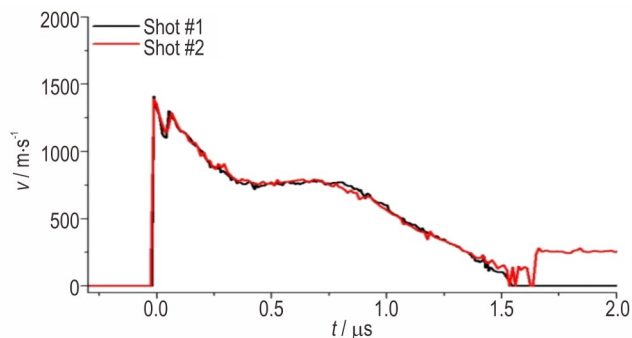


DUAN Ying-liang, HAN Yong, RAN Jian-long, LIU Qing-jie, ZAN Ji-chao, JIA Lu-chuan

Chinese Journal of Energetic Materials (Hanneng Cailiao), 2020,28(11):1083–1088

The high speed scanning camera was used to obtain the propagation process of the detonation wave along the lateral axis of the main charge shocked by different diameters of the RDX-based boosters, which can reflect the dead zones in the shoulder, corner turning process and the run distance to stable detonation region.

Evaluation of Detonator Output Pressure by Interface Particle Velocity Method

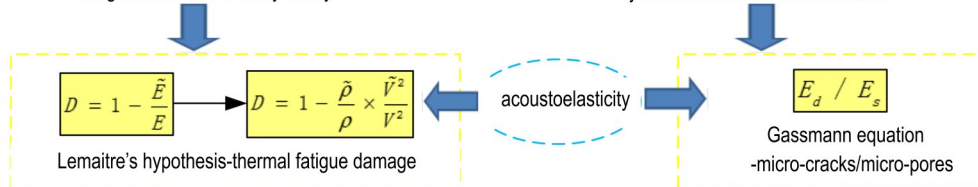
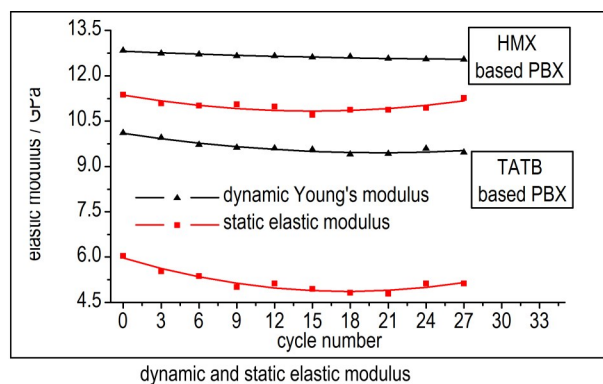
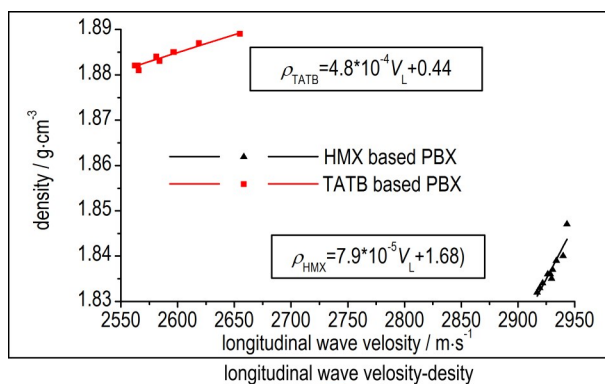


CHEN Qing-chou, LI Guang, LI Yi

Chinese Journal of Energetic Materials (Hanneng Cailiao),
2020,28(11):1089–1094

Using photonic doppler velocimetry (PDV) and impedance matching technique, a reliable measurement method for detonator output pressure was carried out.

Thermal Cycling Properties of HMX- and TATB- Based PBX on Ultrasonic Testing Method



CHENG Long, XU Yao, LI Li, XIAO Pan, PANG Hai-yan,
ZHANG Wei-bin

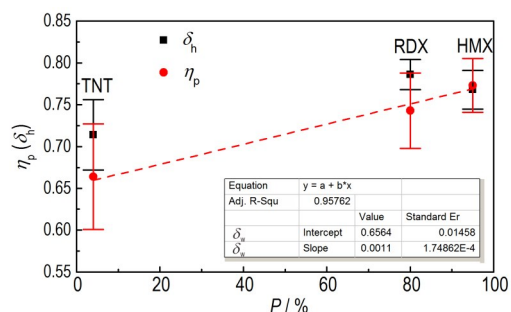
Chinese Journal of Energetic Materials (Hanneng Cailiao),
2020,28(11):1095–1101

The thermal cycling properties, such as thermal fatigue damage, internal micro-cracks and binder flow in micro-pores, of HMX- and TATB- based polymer bonded explosive(PBX) were studied by new ultrasonic nondestructive testing methods.

Linear Correlation between Micro-plastic Properties of TNT, RDX and HMX Explosives Crystals and Their Corresponding Impact Sensitivities

WEN Mao-ping, FU Tao, TANG Ming-feng, TAN Kai-yuan,
XU Rong, CHEN Tian-na

Chinese Journal of Energetic Materials (Hanneng Cailiao),
2020,28(11):1102–1108

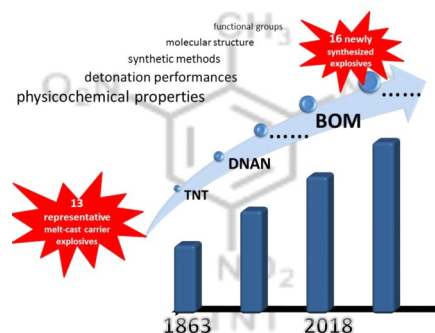


The test curves of “loading-holding-unloading” relationships of TNT, RDX and HMX explosives crystals were obtained by using the nano-indentation technique. A calculation method based on the ratio of plastic energy and indentation energy (δ_w) was proposed to quantify the micro-plastic properties of explosive crystals.

Review on Melt-cast Carrier Explosives

CHEN Fang, LIU Yu-cun, WANG Yi, ZHANG Qing-hua

Chinese Journal of Energetic Materials (Hanneng Cailiao),
2020,28(11):1109–1119

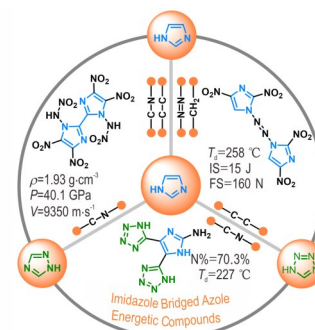


The current research advances of melt-cast explosives were reviewed.

Review on Synthesis and Properties of Energetic Imidazole-bridged Azoles

LIU Ya-jing, ZHAO Bao-dong, WANG Ying-lei, GAO Fu-lei,
LIU Wei-xiao, CHEN Bin

Chinese Journal of Energetic Materials (Hanneng Cailiao),
2020,28(11):1120–1130



Recent advances on imidazole bridged azole energetic compounds with the backbones of bisimidazoles, triazolyl imidazoles and tetrazolyl imidazoles were reviewed, the construction strategy for energetic imidazole-bridged azoles with good coordination of high nitrogen content, high energy and good security was proposed.

Executive editor: WANG Yan-xiu GAO Yi JIANG Mei