

# 《含能材料》2011年(第19卷)总目次

## 第1期

### ◆ 特约来稿

- 关于兵器学科建设若干问题的探讨 ..... 许毅达 (1)

### ◆ 研究论文

- 硝基甲烷爆轰区热作用下铝、铝热剂和含铝炸药颗粒的温度响应 ..... 胡荣祖, 高红旭, 赵凤起, 徐司雨, 张海, 马海霞 (5)  
 以环状硝胺为基的几种塑料黏结炸药的初步研究(英) ..... Svatopluk Zeman, Ahmed Elbeih, Zbyněk Akštejn (8)  
 3,4-双(3'-硝基苯-1'-基)氧化呋咱的热分解机理及量子化学研究 ..... 薛云娜, 杨建明, 王晓红, 余秦伟, 廉鹏, 李亚妮, 来蔚鹏, 吕剑, 薛永强 (13)  
 二茂铁氮杂环衍生物的合成及对高氯酸铵热分解的催化作用 ..... 高勇, 柯成峰, 李恒东, 谢莉莉, 袁耀锋 (19)  
 纳米铅盐对双基推进剂的催化热分解 ..... 谢明召, 冯小琼, 衡淑云, 王晓红, 陈智群, 潘清, 王明, 刘子如 (23)  
 可用于乳化炸药的 Gemini 表面活性剂水溶液聚集形态模拟研究 ..... 杜栓丽, 王晶禹, 何爽, 朱佳平, 任君, 胡志勇, 曹端林 (28)  
 硝酸铵自敏化结构与爆轰性能 ..... 梅震华, 曾贵玉, 钱华, 吕春绪 (33)  
 配方参数对镁基水反应金属燃料/水蒸汽反应特性的影响 ..... 周星, 张炜, 柳先玮 (37)  
 三氟化氯与碳氢燃料反应放能试验研究 ..... 高洪泉, 卢芳云, 王少龙, 罗永锋, 闫华, 刘志勇 (42)  
 团聚硼颗粒表面粗糙度和粒径分布对富燃料推进剂药浆流变性能的影响 ..... 庞维强, 樊学忠 (46)  
 HTPB 推进剂交变温度加速老化与自然贮存相关性 ..... 丁彪, 张旭东, 刘著卿, 李高春 (50)  
 高能推进剂火焰传播过程实验研究 ..... 肖波, 刘佩进 (55)  
 长药室装药中多点点火技术试验研究 ..... 季晓松, 王浩, 冯国增 (60)  
 热塑性弹性体对硝胺发射药力学性能和燃烧性能的影响 ..... 贺孝军, 徐霞, 杜兰平, 赵良友, 吕麟 (65)  
 药型对层状发射药燃烧渐增性的影响 ..... 鲁坤, 马忠亮, 萧忠良 (69)  
 发射药的火焰燃烧温度计算与测定分析 ..... 廖静林, 江劲勇, 路桂娥, 常文平, 翟宏昌 (74)  
 发射药膛内两种燃速测试方法的比较 ..... 张江波, 张玉成, 李强, 严文荣, 闫光虎, 赵晓梅 (78)  
 掺杂膨胀石墨的红外遮蔽性能 ..... 豆正伟, 李晓霞, 赵纪金 (82)  
 喷射沉淀法制备纳米  $\alpha$ -Al<sub>2</sub>O<sub>3</sub> 粉体 ..... 齐海涛, 潘军杰, 张景林, 王瑞浩 (86)  
 爆炸法制备纳米氧化锆及其表征 ..... 侯毅峰, 刘玉存, 王作山, 刘锋, 张美静 (89)  
 油气井用隔板起爆器的起爆能力 ..... 彭加斌, 杨学贵, 章松桥, 李哲雨 (94)  
 HNS 与 NQ 的表面能研究 ..... 田宏远, 周文静, 马亚南, 周诚, 商黎鹏, 王琳 (98)  
 电容法火药水分在线检测技术 ..... 韩民园, 郑建利, 宋文爱, 杨顺民 (102)  
 复合固体推进剂高效燃速仪技术构想 ..... 江英武 (106)

### ◆ 综述

- NIMMO 及其聚合物的合成、性能及应用研究进展 ..... 廖林泉, 郑亚, 李吉祯 (113)

### ◆ 研究快报

- 新型富氮含能配合物——高氯酸·四氨·双(5-硝基四唑)(合钴)(Ⅲ)二水合物的结构研究(英) ..... 李志敏, 殷明, 张建国, 张同来, 舒远杰, 杨利, 武碧栋 (119)

## ◆ 读者·作者·编者

沉痛悼念董海山院士 深切缅怀 Manfred Held 博士 《含能材料安全评价专辑》征稿(32)  
第三届固体推进剂安全技术研讨会征文通知(第一轮)(54)

## 第2期

### ◆ 研究论文

- M(NTO)<sub>n</sub>·mH<sub>2</sub>O 在水中的溶解行为(英) ..... 胡荣祖, 赵凤起, 高红旭, 邢晓玲, 孟子晖 (121)  
 1,1'-二甲基-5,5'-偶氮四唑一水合物和 2,2'-二甲基-5,5'-偶氮四唑的热安全性 ..... 胡荣祖, 高红旭, 赵凤起, 赵宏安, 王喜军, 张海, 马海霞 (126)  
 小药量含能材料热安全性判据总标准偏差的分析(英) ..... 胡荣祖, 赵凤起, 高红旭, 仪建华, 徐司雨 (132)  
 聚氨酯原位结晶包覆 HMX 的研究 ..... 曾贵玉, 聂福德, 刘 兰, 陈 瑾, 黄 辉 (138)  
 VNS 法合成 TATB ..... 王友兵, 王伯周, 叶志虎, 尚 雁, 卿 辉, 李亚南 (142)  
 超临界 RESS 法包覆超细 RDX 工艺 ..... 张 俊, 张景林, 王保国, 刘树浩, 张 涛, 周得才 (147)  
 聚甲基乙烯四唑的合成与性能研究 ..... 哈恒欣, 曹一林, 孙忠祥, 黄浩南 (152)  
 3,6-二硝基吡唑[4,3-c]并吡唑的合成工艺改进 ..... 易文斌, 朱春琳, 王金星, 张 怡, 蔡 春 (156)  
 二硝基脲的合成、表征及热力学的理论研究 ..... 杨建明, 余秦伟, 薛云娜, 李亚妮, 葛忠学, 吕 剑 (160)  
 晶形控制剂对 ε-HNIW 晶体形貌的影响 ..... 孟 征, 卫宏远 (165)  
 NH<sub>3</sub>、ClO<sub>3</sub> 对 β-HMX 初始热解的影响 ..... 丁 黎, 衡淑云, 翟高红, 张 皋, 姜富灵, 索兵兵, 文振翼 (170)  
 一种烟花用微烟发射药的设计及其性能 ..... 刘国生, 关 华, 宋东明, 刘代雨 (176)  
 硼/超细硝酸钾点火药配方设计及工艺 ..... 齐海涛, 张景林, 潘军杰, 王瑞浩 (180)  
 新型耐热钝感传爆药 2,5-二苦基-1,3,4-噁二唑性能研究 ..... 盛涤伦, 陈利魁, 杨 斌, 朱雅红, 徐珉昊 (184)  
 9-乙炔基-9-羟基蒽酮结构和荧光性能的理论研究 ..... 熊 鹰, 刘 勇, 刘学涌, 钟发春, 张 勇, 舒远杰 (189)  
 三种 PBX 炸药的动态拉伸力学性能 ..... 赵玉刚, 傅 华, 李俊玲, 陈 荣, 文尚刚 (194)  
 TATB 基 PBX 纳米孔隙的正电子湮没寿命谱 ..... 杨仍才, 田 勇, 张伟斌, 杜 宇 (200)  
 温压炸药爆炸过程的瞬态温度 ..... 仲 倩, 王伯良, 王凤丹, 惠君明 (204)  
 模拟跌落撞击下 PBX-2 炸药的响应 ..... 代晓淦, 申春迎, 文玉史 (209)  
 RDX 基高聚物黏结炸药 JWL 状态方程 ..... 陈清畴, 蒋小华, 李 敏, 卢校军 (213)  
 PBX-9502 炸药爆轰约束三明治试验的数值模拟研究 ..... 陈 军, 田占东, 张震宇 (217)  
 某隔板起爆器冲击起爆过程的数值模拟与实验研究 ..... 杨正才, 廖 昕, 李晓刚, 赵 亮, 徐 薇 (221)  
 硝酸羟胺水凝胶的贮存性能 ..... 何利明, 萧忠良, 刘幼平, 张金明 (226)  
 密封性对 GATo-3 推进剂贮存安全影响 ..... 常文平, 江劲勇, 路桂娥, 杜仕国, 廖静林 (229)  
 纳米金属粉在火炸药中应用进展 ..... 胥会祥, 李兴文, 赵凤起, 庞维强, 贾申利, 莫红军 (232)

### ◆ 研究快报

- 六硝基联苯的制备工艺及性能 ..... 黄靖伦, 程碧波, 马 卿, 聂福德 (240)

### ◆ 人物

- 含能材料热分析专家——胡荣祖教授 ..... (241)

### ◆ 读者·作者·编者

- 中国化学会第五届全国化学推进剂学术交流会通知(141) 中国航天科工集团公司固体推进剂安全技术研究中心首届学术会议暨安全生产技术交流会征文通知(151) EUROPYRO 2011(159) 中国兵工学会火工烟火专业第十六届学术年会征文通知(169) 北京理工大学“GTX 起爆药技术及在民用爆炸物品中的应用研究”成果通过技术鉴定和生产定型(183) 广西金建华民爆器材有限公司“GTX 起爆药及其系列雷管生产线”通过验收(199) 2011 中国材料研讨会(208) 中国化学会第三屆全国热分析动力学与热力学学术会议通知(220)

中国化学会第十五届全国化学热力学和热分析学术会议通知(225) 绿色能源与绿色制造技术发展论坛暨成都绿色能源与绿色制造技术研发中心成立揭牌仪式隆重举行(后插一)

## 第3期

### ◆ 研究论文

- 1-氯-1,1-二硝基-2-(N-氯脒基)乙烷的合成、表征和晶体结构 … 周 诚, 周彦水, 霍 欢, 毕福强, 王伯周, 马亚南 (243)  
 二硝基脲含能离子盐的合成及表征 ……………… 李亚妮, 杨建明, 余秦伟, 薛云娜, 吕 剑 (247)  
 离子液体对乌洛托品硝解反应的影响 ……………… 王 霸, 石 煜, 杨红伟, 程广斌, 吕春绪 (252)  
 丙烯酸偕二硝基丙酯与苯乙烯的共聚合及其聚物性质 ……………… 张公正, 向 星, 房永曦, 王晓川 (258)  
 3,4-二(3',5'-二硝基苯-1'-基)氧化呋咱的合成及热分解机理 ……………… 李亚南, 张志忠, 周彦水, 王伯周, 葛忠学 (262)  
 新法合成5-氨基四唑 ……………… 胡 奎, 杨红伟, 程广斌, 吕春绪 (269)  
 含CL-20改性双基推进剂的性能 ……………… 郑 伟, 王江宁, 谢 波, 宋秀锋, 田 军, 袁志锋 (272)  
 RDX-CMDB推进剂激光点火特性 ……………… 郝海霞, 裴 庆, 南宝江, 张 衡, 肖立柏, 赵凤起 (276)  
 DNTF/RDX-CMDB推进剂动态力学性能 ……………… 李亮亮, 王江宁, 孔军利 (282)  
 改性双基推进剂组合装药界面力学性能 ……………… 王 墓, 张晓宏, 陈雪莉, 谢五喜, 付小龙 (287)  
 HTPB/N100体系的聚合反应动力学和粘度变化 ……………… 郑申声, 关立峰, 董 兰, 吴奎先 (291)  
 ETPE黏结剂对RDX-AI体系的包覆研究 ……………… 董 军, 赵省向, 韩 涛, 甘孝贤, 周文静, 郑 林, 封雪松, 王彩玲 (295)  
 HNS-IV的制备及粒径、形貌控制 ……………… 尚 雁, 叶志虎, 王友兵, 李亚南, 王伯周 (299)  
 超细微球形低感度HMX的制备 ……………… 韵 胜, 刘玉存, 于雁武, 王建华, 高 森 (305)  
 液体灭火弹动态抛撒区域工程计算方法 ……………… 韩宝成, 雷红飞, 徐豫新, 王树山 (310)  
 泡沫铝壳对水下爆炸冲击波衰减的影响 ……………… 倪小军, 沈兆武, 杨昌德 (315)  
 炸药爆炸驱动壳体破裂及液体喷射过程试验研究 ……………… 蒋治海, 龙新平, 韩 勇, 蒋红彬 (321)  
 高聚物黏结粉末橡胶等静压净成型技术 ……………… 梁华琼, 韩 超, 雍 炼, 陈学平, 杨永林 (325)  
 邻苯二甲酸二丁酯含量与发射药燃烧游离碳生成量的关系 ……………… 郑文芳, 潘仁明, 蔺向阳, 郭长平, 傅晓莉 (330)  
 新型有机硅降蚀剂在小口径武器装药中的应用 ……………… 郑 双, 刘 波, 刘少武, 王 锋, 张远波, 于慧芳, 韩 冰, 李 达 (335)  
 用傅立叶变换拉曼光谱定量分析HNIW的 $\beta$ -和 $\epsilon$ -晶型混合物 ……………… 孟 征, 卫宏远 (339)  
 气相色谱-质谱法分析火箭煤油的组成 ……………… 盛 涛, 彭清涛, 夏本立, 张光友 (343)  
 气相色谱法测定钝感发射药中聚酯含量 ……………… 樊永惠, 赵铁柱, 杨彩宁, 王琼林, 于慧芳 (349)

### ◆ 综述

- 夹层装药的超压爆轰研究综述 ……………… 张先锋, 赵晓宁 (352)

### ◆ 研究快报

- 5,5'-肼基-双四唑的合成与性能 ……………… 周小清, 马 娴, 张晓玉, 程碧波, 黄靖伦, 廖龙渝, 王 军 (361)

### ◆ 读者·作者·编者

- 中国智能化弹药——末敏弹技术跨入世界先进水平行列(251) 第三届固体推进剂安全技术研讨会征文通知(第三轮通知)(281)

- 中国化学会第五届全国化学推进剂学术交流会通知(290) 技术介绍(314) 新书介绍——《炸药的绿色制造技术》(329)

- 会讯(334) 《含能材料安全评价专辑》征稿(338) 中国兵工学会火工烟火专业第十六届学术年会征文通知(348)

- 美国科学家:研制成功高效存储氢的纳米复合材料(360) 会讯(362)

## 第4期

### ◆ 研究论文

- 黑索今基含硼炸药的爆热性能 ……………… 黄亚峰, 王晓峰, 冯晓军 (363)

介电式 Al/CuO 复合薄膜点火桥的电爆性能	朱朋, 周翔, 沈瑞琪, 叶迎华, 胡艳	(366)
新型粉状铵油炸药实验研究	徐志祥, 刘大斌, 胡毅亭	(370)
草酸偏二甲肼的合成与稳定性研究	慕晓刚, 苟小莉, 刘祥萱, 张有智	(373)
3,4-二硝基吡唑合成与性能研究	汪营磊, 姬月萍, 陈斌, 汪伟, 高福磊	(377)
4-(2,4,6-三硝基苯胺基)苯甲酸(TABA)及铅、铜盐合成与表征	常佩, 黄新萍, 郑晓东, 王伯周, 李普瑞, 唐望, 姜俊	(380)
HPLC-TOFMS 测定 NG/TEGDN 中的丙三醇二硝酸酯	聂海英, 马新刚, 张劲民	(384)
1,1,1-三叠氮甲基乙烷合成与性能研究	姬月萍, 汪营磊, 刘卫孝, 陈斌, 李普瑞	(388)
叠氮侧链化 NC 的合成和表征	杨斐霏, 邵自强, 王飞俊, 王文俊, 张有德, 王慧庆	(391)
HMX 热分解动力学与热安全性研究	汤崭, 杨利, 乔小晶, 张同来, 郁卫飞	(396)
CNTs/KClO <sub>4</sub> 复合材料的形貌特征及热行为	张步允, 焦清介, 任慧, 贾永杰, 张阔, 武冠男, 刘国权	(401)
一种非铅双基推进剂燃烧性能调节	皮文丰, 宋秀铎, 张超, 谢波, 王江宁, 赵凤起	(405)
退役复合固体推进剂中 AP 提取的工艺研究	王军, 蔺向阳, 刘爱传, 李铎, 潘仁明	(410)
推进剂模拟液的室温快速胶凝化及其流变学性能	刘凯强, 赵珂如, 陈香李, 张荷兰, 房喻	(415)
高温老化后 HMX 基 PBX 的压缩与拉伸性能反向变化研究	温茂萍, 周红萍, 徐涛, 陈天娜, 庞海燕	(420)
小尺寸炸药平面波透镜界面曲线的设计	黄交虎, 尹锐, 黄辉, 魏智勇, 张丘	(425)
典型炸药柱的 400 kg 落锤撞击感度特性分析	高立龙, 牛余雷, 王浩, 王彩玲, 李媛媛, 郭昕	(428)
壳体厚度对 TNT 炸药快速烤燃响应的影响	孙培培, 南海, 牛余雷, 席鹏, 李巍, 卢富国	(432)
不同热通量下炸药烤燃的数值模拟	张晓立, 洪滔, 王金相, 贾宪振	(436)
粒度对硝胺类炸药烤燃感度的影响	周得才, 吕春玲, 李梅, 耿孝恒, 张俊	(442)
影响变燃速发射药尺寸波动因素数值计算	马忠亮, 朱林, 高可政, 肖忠良	(445)
含能破片战斗部毁伤效应研究	彭飞, 余道强, 阳世清, 蒋建平, 娄建, 王维明	(450)
柔性线型聚能切割器的应用研究	蒋耀港, 沈兆武, 龚志刚, 倪小军, 翁奉权	(454)
烟火切割热力学分析及药剂配方设计与实验	王鹏, 张靖	(459)
发射药及装药的清洁燃烧技术概述	堵平, 何卫东, 廖昕	(464)
1,3-偶极环加成反应在叠氮推进剂中的应用	陈炉洋, 唐承志, 李忠友, 陈中娥	(469)
绿色四唑类起爆药研究的最新进展	张光全	(473)

## ◆ 研究快报

软模板法制备二氧化硅纳米管	栾林栋, 邓建国, 黄辉, 纪兰香	(479)
UV 固化环氧大豆油己二烯酸酯的合成研究	张秀云, 邓建国, 黄奕刚	(481)

## ◆ 读者·作者·编者

《含能材料》被评为“RCCSE 中国核心学术期刊”(376)	第三届固体推进剂安全技术研讨会在武夷山风景区胜利召开(435)	42 届 ICT 国际年会会议(441)
第三届中俄青年“材料学-新型与先进材料”科技研讨会通知(468)	2011 欧洲烟火研讨会暨第 37 国际烟火研讨会在法国兰斯召开(478)	中国工程物理研究院机械工程 2011 年学术年会顺利召开(480)
		《含能材料安全评价专辑》征稿(482)

## 第 5 期

### ◆ 特约来稿

烟火药的创新与发展	潘功配	(483)
-----------	-----	-------

### ◆ 研究论文

高氯酸·四氨·双(5-硝基四唑)合钴(Ⅲ)分子和晶体结构与性能的理论研究	尚静, 张建国, 舒远杰, 殷明, 张同来, 周遵宁, 杨利	(491)
--------------------------------------	--------------------------------	-------

硝氧乙基硝胺系列化合物的合成与表征	高福磊, 姬月萍, 李普瑞, 刘卫孝, 汪营磊, 兰英, 刘亚静	(497)
1-甲基-3,5-二硝基-1,2,4-三唑的合成及表征	杨克明, 曹端林, 李永祥, 王建龙, 王鼎	(501)
端环氧基聚丁二烯的合成研究	李娜, 甘孝贤, 莫洪昌, 栗磊, 卢光明, 韩涛	(505)
高收率合成3-氨基-4-偕氨基肟基呋咱研究	周彦水, 周诚, 王伯周, 李建康, 霍欢, 张叶高, 王锡杰, 罗义芬	(509)
一种简易合成3,5-二氨基吡啶的方法	梁长玉, 胡炳成, 戴红升, 孙呈郭, 徐士超	(513)
HTPE的合成及弹性体的性能	汪存东, 罗运军, 夏敏	(518)
细颗粒LLM-105的制备及其热性能	王友兵, 葛忠学, 王伯周, 叶志虎, 李亚南, 尚雁	(523)
钝感炸药散心爆轰驱动平板飞片研究	赵峰, 虞德水, 彭其先, 文尚刚, 李平	(527)
激光速度干涉仪在大板实验中的应用研究	虞德水, 赵峰, 彭其先, 李平	(532)
5 GPa内JO-9159炸药的磁驱动准等熵压缩响应特性	蔡进涛, 赵峰, 王桂吉, 赵剑衡, 翁继东, 吴刚	(536)
金属配合物类炸药的爆轰性能计算及数值模拟	覃文志, 龙新平, 蒋小华, 何碧	(540)
混凝土靶爆破后靶体端面振动加速度的简便算法	宋浦, 王晓鸣, 顾晓辉, 梁安定, 赵向军	(544)
基于粒子群神经网络的含硼富燃料推进剂一次燃烧性能计算	吴婉娥, 朱左明, 帅领	(548)
影响PDSC特征量燃速关系方程的因素	衡淑云, 刘子如, 谢明召, 张腊莹, 任晓宁, 王晓红	(553)
新型燃烧稳定剂对双基固体推进剂燃烧性能的影响	张晓宏, 张佩, 王百成, 孙志刚, 王瑛, 陈雪莉	(557)
装填密度和燃烧压力对炮用发射装药附着性燃烧残渣的影响	乔丽洁, 塘平, 王泽山	(561)
一种低烧蚀高渐增性发射药的研究	刘波, 王琼林, 刘少武, 郑双, 于慧芳, 魏伦, 张远波	(565)
典型舞台焰火燃放时火焰温度分布特征	陈涛, 傅学成, 赵力增, 薛岗, 王鑫, 包志明	(569)
一种炮口火焰的测试方法研究	袁治雷, 贺增弟, 刘林林, 吕智星, 范雪坤, 邹秀梅	(575)
半楔角对星锥状药型罩成型的影响	姚志华, 王志军, 李德战	(580)
Ni-Cr桥膜换能元的制备	解瑞珍, 任小明, 王可煊, 薛艳, 彭志明, 卢斌	(584)

## ◆ 综述

一类重要含能材料:5-取代四唑含能金属配合物	舒远杰, 李华荣, 高晓敏, 殷明, 熊鹰, 李寅川	(588)
富勒烯制备与分离方法研究进展	魏贤凤, 龙新平, 韩勇	(597)

## ◆ 读者·作者·编者

人物介绍(前彩插页)	《燃烧实验诊断学》第2版出版(496)	中国化学会第五届全国化学推进剂学术交流会在滨城大连隆重召开(579)
------------	---------------------	------------------------------------

## 第6期

### ◆ 研究论文

Friction Sensitivity of Nitramines. Part I: Comparison with Impact Sensitivity and Heat of Fusion	Marcela Jungová, Svatopluk Zeman, Adéla Husarová	(603)
Friction Sensitivity of Nitramines. Part II: Comparison with Thermal Reactivity	Marcela Jungová, Svatopluk Zeman, Adéla Husarová	(607)
Friction Sensitivity of Nitramines. Part III: Comparison with Detonation Performance	Svatopluk Zeman, Marcela Jungová, Adéla Husarová	(610)
Friction Sensitivity of Nitramines. Part IV: Links to Surface Electrostatic Potentials	Zdeněk Friedl, Marcela Jungová, Svatopluk Zeman, Adéla Husarová	(613)
电性拓扑状态指数预测硝基类含能材料静电敏感度	周璐璐, 蒋军成, 潘勇, 王睿	(616)
高品质RDX的晶体特性及冲击波起爆特性	黄明, 李洪珍, 徐容, 周小清, 聂福德, 陈波	(621)
二茂铁种类对超细AP/二茂铁体系敏感度的影响	张炜, 杨军, 俞艳, 鲍桐, 柳先伟	(627)
HMX晶体内部孔隙率、缺陷类型及颗粒度对冲击波敏感度的影响	徐容, 李洪珍, 康彬, 李金山, 黄明, 卢校军	(632)
杂质晶型对AlH <sub>3</sub> 样品稳定性和安全性影响的研究	朱朝阳, 马煜, 张素敏, 王宏志, 曹一林	(637)
三叠氯化铝分子结构及爆炸性能理论研究	周雪松, 罗琼, 焦清介, 蒲洋	(641)
无硫黑火药的热分解动力学研究	俞进阳, 陈利平, 姜夕博, 彭金华	(646)
动态真空安定性试验方法研究(IV): HMX的热分解	刘芮, 尹艳丽, 张同来, 杨利, 张建国, 周遵宁, 乔小晶, 王文杰, 王丽琼	(650)

绝热加速量热仪表征含能材料热敏感度的探讨	刘 颖, 杨 茜, 陈利平, 何中其, 陆 燕, 陈网桦	(656)
HMX 基 PBX 试件的热安全性及与高分子材料的相容性	陈 捷, 彭 强, 钱 文, 王丽燕, 左玉芬, 池 钰	(661)
密封状态下 HNS 的热烤试验研究	都振华, 张 慈, 同红海, 李 芳, 付东晓	(664)
固体推进剂慢速烤燃特性的影响因素研究	赵孝彬, 李 军, 程立国, 王 宁, 王 握, 陈中娥, 王晨雪, 秦 超, 程新丽	(669)
加速老化对炸药件安全性能的影响研究	高大元, 申春迎, 文尚刚, 黄毅民, 李敬明	(673)
高聚物粘结炸药老化模型比较分析	张国辉, 韦兴文, 陈 捷, 舒远杰, 宋绵新	(679)
PBX 一维动态拉伸性能实验研究	蓝林钢, 温茂萍, 李 明, 庞海燕, 敬仕明	(684)
发射药冲击波敏感度的试验研究	陈晓明, 金鹏刚, 张 衡, 刘来东, 宋长文, 张邹邹, 赵 瑛	(689)
叠氮硝胺安全性能参数的实验测定	王建灵, 姬月萍, 高福磊, 郭 炜, 任松涛	(693)
高密度压装炸药燃烧转爆轰研究	陈 朗, 王 飞, 伍俊英, 王 晨, 鲁 峰, 黄毅民, 代晓淦, 文玉史	(697)
压制密度及密度均匀性对装药撞击安全性的影响	王淑萍, 王晓峰, 金大勇	(705)
高超音速侵彻混凝土过程中侵彻弹体装药塑性安定性分析	张 旭, 曹仁义, 谭多望	(709)
子弹撞击对发射药易损性响应影响研究	张邹邹, 杨丽侠, 刘来东, 张 衡	(715)
火箭发动机残余装药对战斗部毁伤效果影响的模拟研究	王 宁, 赵孝彬, 王晨雪, 田 军	(720)
一种 RDX-CMDB 推进剂危险性能研究	秦 能, 裴江峰, 王明星	(725)
膨化硝铵炸药生产专用碾混机安全性研究	罗海滔, 胡炳成, 吕春绪, 刘祖亮	(730)
新型钝感含能增塑剂 3-硝基呋咱-4-甲醚的合成与性能研究	沈华平, 卢艳华, 曹一林, 何金选	(735)
纳米复合 $\text{Fe}_2\text{O}_3/\text{Al}/\text{RDX}$ 的制备与性能测试	王瑞浩, 张景林, 王金英, 潘军杰, 张 俊	(739)

### ◆ 研究快报

2-硝基-4, 5-二氰基-1H-咪唑的一锅法合成(英)	许 诚, 毕福强, 樊学忠, 李吉祯, 王伯周, 葛忠学, 刘 庆, 张国防	(743)
RDX 单晶的生长及加工	李洪珍, 周小清, 徐 容, 黄 明, 王述存	(745)
一种高能量密度材料 DNTF 的低成本制备技术	王 军, 周小清, 张晓玉, 李金山, 黄奕刚	(747)

### ◆ 人物

Prof. Svatopluk ZEMAN	(前插一)
-----------------------	-------

### ◆ 读者·作者·编者

向审稿人致谢(606)	向作者致谢(626)	《含能材料》征订启事(631)	2011 年中国兵工学会学术年会在苏州举行(660)	化工材料研究所承办第三届中俄青年学术研讨会(683)	《含能材料及相关物手册》出版(692)	《热分析动力学》、《量热学基础与应用》出版(744)
《含能材料的研究与发展》专辑征稿——纪念董海山院士诞辰 80 周年(748)	全国危险物质与安全应急技术研讨会在渝召开(前插二)					
材料化学实验室(后插一)	灵巧雷管简介(后插二)					

2011 年(第 19 卷)总目次	(· 1 ·)
-------------------	---------

# ANNUAL CUMULATIVE CONTENTS OF CHINESE JOURNAL OF ENERGETIC MATERIALS (Vol. 19, 2011)

## No. 1

### Invited Review

- 1 XU Yi-da Some Issues on Discipline Construction of Ordnance Science and Technology

### Article

5	HU Rong-zu, GAO Hong-xu, ZHAO Feng-qi, XU Si-yu, ZHANG Hai, MA Hai-xia	Temperature Response of Aluminum, Thermit and Aluminized Explosive Particles under Thermal Effects in Nitromethane Detonation Region
8	Svatopluk Zeman, Ahmed Elbeih, Zbyněk Akštein	Preliminary Study on Several Plastic Bonded Explosives Based on Cyclic Nitramines
13	XUE Yun-na, YANG Jian-ming, WANG Xiao-hong, YU Qin-wei, LIAN Peng, LI Ya-ni, LAI Wei-peng, Lü Jian, XUE Yong-qiang	Thermal Decomposition Mechanism and Quantum Chemistry Study on 3,4-Bis (3'-nitrophenyl-1'-yl) furoxan
19	GAO Yong, KE Chen-feng, LI Heng-dong, XIE Li-li, YUAN Yao-feng	Synthesis of Ferrocenyl Dihydropyrazole Derivatives and their Catalysis on Thermal Decomposition of AP
23	XIE Ming-zhao, FENG Xiao-qiong, HENG Shu-yun, WANG Xiao-hong, CHEN Zhi-qun, PAN Qing, WANG Ming, LIU Zi-ru	Effect of Nano Lead Salt on Catalytic Thermal Decomposition of Double-based Propellants
28	DU Shuan-li, WANG Jing-yu, HE Shuang, ZHU Jia-ping, REN Jun, HU Zhi-yong, CAO Duan-lin	Simulation on Aggregation Morphology of Gemini Surfactants for Emulsion Explosive in Aqueous Solution
33	MEI Zhen-hua, ZENG Gui-yu, QIAN Hua, Lü Chun-xu	Self-sensitizing Characteristics and Detonation Performance of Ammonium Nitrate
37	ZHOU Xing, ZHANG Wei, LIU Xian-wei	Effects of Formulation Parameters on Reaction Characteristics of Magnesium-based Hydroreactive Fuel with Water Vapor
42	GAO Hong-quan, LU Fang-yun, WANG Shao-long, LUO Yong-feng, YAN Hua, LIU Zhi-yong	Experimental Study on Reaction Energy Release Characteristics of Hydrocarbon and Chlorine Trifluoride
46	PANG Wei-qiang, FAN Xue-zhong	Fractal Dimension Calculation on Roughness and Size Distribution of Agglomerated Boron Particles and Its Relationship with Rheological Properties for Fuel-rich Propellant
50	DING Biao, ZHANG Xu-dong, LIU Zhu-qing, LI Gao-chun	Correlation between Alternating Temperature Accelerated Aging and Real World Storage of HTPB Propellant
55	XIAO Bo, LIU Pei-jin	Experimental Study on Flame-Spreading of High Energy Propellant
60	JI Xiao-song, WANG Hao, FENG Guo-zeng	Experimental Study on Technology of Multi-point Ignition in Long-Chamber Charge
65	HE Xiao-jun, XU Xia, DU Lan-ping, ZHAO Liang-you, Lü Lin	Effect of Thermoplastic Elastomer on Mechanical Properties and Combustion Performance of Nitroamine Propellant

69	LU Kun, MA Zhong-liang, XIAO Zhong-liang	<b>Model Effects on Progressive Combustion Property of Layered Propellant</b>
74	LIAO Jing-lin, JIANG Jin-yong, LU Gui-e, CHANG Wen-ping, ZHAI Hong-chang	<b>Calculation and Measurement Analysis of Propellant Burning Temperature</b>
78	ZHANG Jiang-bo, ZHANG Yu-cheng, LI Qiang, YAN Wen-rong, YAN Guang-hu, ZHAO Xiao-mei	<b>Two Methods to Test Gun Propellant Burning Rate in Gun Chamber</b>
82	DOU Zheng-wei, LI Xiao-xia, ZHAO Ji-jin	<b>IR Screening Characteristics of Doped Exfoliated Graphite</b>
86	QI Hai-tao, PAN Jun-jie, ZHANG Jing-lin, WANG Rui-hao	<b>Preparation of Nanometer <math>\alpha</math>-Al<sub>2</sub>O<sub>3</sub> Powder by Spray-Precipitation Method</b>
89	HOU Yi-feng, LIU Yu-cun, WANG Zuo-shan, LIU Feng, ZHANG Mei-jing	<b>Preparation and Characterization of Nanometer Zirconia via Explosive Detonation Technique</b>
94	PENG Jia-bin, YANG Xue-gui, ZHANG Song-qiao, LI Zhe-yu	<b>Initiating Ability of Through Bulkhead Explosive Initiator for Oil Well Usage</b>
98	TIAN Hong-yuan, ZHOU Wen-jing, MA Ya-nan, ZHOU Cheng, SHANG Li-peng, WANG Lin	<b>Surface Energy of HNS and NQ</b>
102	HAN Min-yuan, ZHENG Jian-li, SONG Wen-ai, YANG Shun-min	<b>On-line Testing Technique for Moisture-bearing Powder by Capacitor Method</b>
106	JIANG Ying-wu	<b>Solution of a New Instrument towards Measuring Burning Rate and Pressure Function of Propellants</b>

## Review

113	LIAO Lin-quan, ZHENG Ya, LI Ji-zhen	<b>Review on Synthesis, Properties and Applications of NIMMO and its Polymer</b>
-----	-------------------------------------	--

## Letter

119	LI Zhi-min, YIN Ming, ZHANG Jian-guo, ZHANG Tong-lai, SHU Yuan-jie, YANG Li, WU Bi-dong	<b>Structure Investigation of a Novel Nitrogen-rich Energetic Complex: Tetrammine-<i>cis</i>-bis(5-nitro-2<i>H</i>-tetrazole-<i>N</i><sup>2</sup>) Cobalt(III) Perchlorate Dihydrate</b>
-----	---	--

## No. 2

### Article

121	HU Rong-zu, ZHAO Feng-qi, GAO Hong-xu, XING Xiao-ling, MENG Zi-hui	<b>Dissolution Properties of M(NTO)<sub>n</sub> · mH<sub>2</sub>O in Water</b>
126	HU Rong-zu, GAO Hong-xu, ZHAO Feng-qi, ZHAO Hong-an, WANG Xi-jun, ZHANG Hai, MA Hai-xia	<b>Thermal Safety of 1, 1'-Dimethyl-5, 5'-azotetrazole and 2, 2'-Dimethyl-5, 5'-azotetrazole</b>
132	HU Rong-zu, ZHAO Feng-qi, GAO Hong-xu, YI Jian-hua, XU Si-yu	<b>Analysis of Overall Standard Deviation of Thermal Safety Criteria for Small-scale Energetic Materials</b>
138	ZENG Gui-yu, NIE Fu-de, LIU Lan, CHEN Jin, HUANG Hui	<b>In-situ Crystallization Coating HMX by Polyurethane</b>

142	WANG You-bing, WANG Bo-zhou, YE Zhi-hu, SHANG Yan, QIN Hui, LI Ya-nan	<b>Synthesis of TATB by VNS Method</b>
147	ZHANG Jun, ZHANG Jing-lin, WANG Bao-guo, LIU Shu-hao, ZHANG Tao, ZHOU De-cai	<b>Technology of Ultra-fine RDX Coating with Rapid Expansion of Supercritical Solution Method</b>
152	HA Heng-xin, CAO Yi-lin, SUN Zhong-xiang, HUANG Hao-nan	<b>Synthesis and Properties of Poly(<i>N</i>-methyl-5-vinyltetrazole)s</b>
156	YI Wen-bin, ZHU Chun-lin, WANG Jin-xing, ZHANG Yi, CAI Chun	<b>Improved Synthesis of 1<i>H</i>,4<i>H</i>-3,6-dinitropyrazolo[4,3-C]pyrazole</b>
160	YANG Jian-ming, YU Qin-wei, XUE Yun-na, LI Ya-ni, GE Zhong-xue, LÜ Jian	<b>Synthesis, Characterization and Theoretical Research of Thermodynamics on Dinitrourea</b>
165	MENG Zheng, WEI Hong-yuan	<b>Effect of Crystal Modifier on Crystal Morphology of <math>\varepsilon</math>-HNIW</b>
170	DING Li, HENG Shu-yun, ZHAI Gao-hong, ZHANG Gao, JIANG Fu-ling, SUO Bing-bing, WEN Zhen-yi	<b>Effects of NH<sub>3</sub> and ClO<sub>3</sub> on Initial Pyrolysis of <math>\beta</math>-HMX</b>
176	LIU Guo-sheng, GUAN Hua, SONG Dong-ming, LIU Dai-yu	<b>Formula and Performance of a Smokeless Propellant Used in Fireworks</b>
180	QI Hai-tao, ZHANG Jing-lin, PAN Jun-jie, WANG Rui-hao	<b>Processing Technology and Formulation Design of Ignition Composition of Boron/Ultra-fine Potassium Nitrate</b>
184	SHENG Di-lun, CHENG Li-kui, YNAG Bing, ZHU Yan-hang, XU Ming-hao	<b>Performances of New Heat-resistant Insensitive Booster Explosive 2, 5-Dipicryl-1,3,4-oxadiazole</b>
189	XIONG Ying, LIU Yong, LIU Xue-yong, ZHONG Fa-chun, ZHANG Yong, SHU Yuan-jie	<b>Theoretical Study on Structure and Fluorescence Properties of 9-Ethynyl-9-hydroxyanthrone</b>
194	ZHAO Yu-gang, FU Hua, LI Jun-ling, CHEN Rong, WEN Shang-gang	<b>Dynamic Tensile Mechanical Properties of Three Types of PBX</b>
200	YANG Reng-cai, TIAN Yong, ZHANG Wei-bin, DU Yu	<b>Study on Positron Lifetime of Nano-void of TATB-based PBX</b>
204	ZHONG Qian, WANG Bo-liang, WANG Feng-dan, HUI Jun-ming	<b>Explosion Temperature of Thermobaric Explosive</b>
209	DAI Xiao-gan, SHEN Chun-ying, WEN Yu-shi	<b>Reaction of PBX-2 Explosive under Simulated Drop Impact</b>
213	CHEN Qing-chou, JIANG Xiao-hua, LI Min, LU Xiao-jun	<b>JWL Equation of State for RDX-based PBX</b>
217	CHEN Jun, TIAN Zhan-dong, ZHANG Zhen-yu	<b>Numerical Simulation of Detonation-confinement Sandwich Test of PBX-9502</b>
221	YANG Zheng-cai, LIAO Xin, LI Xiao-gang, ZHAO Liang, XU Wei	<b>Numerical Simulation and Experimental Investigation for Shock Initiation of Bulkhead Initiator</b>
226	HE Li-ming, XIAO Zhong-liang, LI You-ping, ZHANG Jin-ming	<b>Storage Performance of HAN Hydrogel</b>
229	CHANG Wen-ping, JIANG Jin-yong, LU Gui-e, DU Shi-guo, LIAO Jing-lin	<b>Influence of Tightness on Storage Stability of GATo-3 Propellant</b>
232	XU Hui-xiang, LI Xing-wen, ZHAO Feng-qi, PANG Wei-qiang, JIA Shen-li, MO Hong-jun	<b>Review on Application of Nano-metal Powders in Explosive and Propellants</b>

## Letter

- 240 HUANG Jing-lun, CHENG Bi-bo, MA Qing, NIE Fu-de **Preparation of Hexanitrobiphenyl and Its Sensitivity Performance**

## EM People

- 241 **Expert in Thermal Analysis—Professor HU Rong-zu**

# No. 3

## Article

- 243 ZHOU Cheng, ZHOU Yan-shui, HUO Huan, BI Fu-qiang, WANG Bo-zhou, MA Ya-nan **Synthesis and Crystal Structure of 1-Chloro-1,1-dinitro-2-(*N*-chloroamidino)-ethane**
- 247 LI Ya-ni, YANG Jian-ming, YU Qin-wei, XUE Yun-na, Lü Jian **Preparation and Characterization of Energetic Ionic Salts of *N,N*-Dinitrourea**
- 252 WANG Nai, SHI Yu, YANG Hong-wei, CHENG Guang-bin, Lü Chun-xu **Nitrolysis of Hexamethylenetetramine in Presence of Ionic Liquids**
- 258 ZHANG Gong-zheng, XIANG Xing, FANG Yong-xi, WANG Xiao-chuan **Copolymerization of 2,2-Dinitropropyl Acrylate with Styrene and Property of Copolymer**
- 262 LI Ya-nan, ZHANG Zhi-zhong, ZHOU Yan-shui, WANG Bo-zhou, GE Zhong-xue **Synthesis and Thermal Decomposition Mechanism of 3,4-Bis(3',5'-dinitrobenzene-1'-yl)furoxan**
- 269 HU Huan, YANG Hong-wei, CHENG Guang-bin, Lü Chun-xu **New Synthetic Route of 5-Aminotetrazole**
- 272 ZHENG Wei, WANG Jiang-ning, XIE Bo, SONG Xiu-duo, TIAN Jun, YUAN Zhi-feng **Properties of Composite Modified Double-based Propellant Containing CL-20**
- 276 HAO Hai-xia, PEI Qing, NAN Bao-jiang, ZHANG Heng, XIAO Li-bai, ZHAO Feng-qi **Laser Ignition Characteristics of RDX-CMDB Propellants**
- 282 LI Liang-liang, WANG Jiang-ning, KONG Jun-li **Dynamic Mechanical Properties of DNTF/RDX-CMDB Propellant**
- 287 WANG Ying, ZHANG Xiao-hong, CHEN Xue-li, XIE Wu-xi, FU Xiao-long **Interfacial Mechanical Properties of Single-chamber Dual Thrust Grain for Modified Double-based Propellant**
- 291 ZHENG Shen-sheng, GUAN Li-feng, DONG Lan, WU Kui-xian **Reaction Kinetics and Viscosity Variation of HTPB/N100 Polymerization System**
- 295 DONG Jun, ZHAO Sheng-xiang, HAN Tao, GAN Xiao-xian, ZHOU Wen-jing, ZHENG Lin, FENG Xue-song, WANG Cai-ling **RDX-Al system Coated with ETPE Binder**
- 299 SHANG Yan, YE Zhi-hu, WANG You-bing, LI Ya-nan, WANG Bo-zhou **Preparation, Particle Size and Crystal Control of HNS-IV**
- 305 YUN Sheng, LIU Yu-cun, YU Yan-wu, WANG Jian-hua, GAO Sen **Preparation of Microspherical and Desensitized HMX**

310	HAN Bao-cheng, LEI Hong-fei, XU Yu-xin, WANG Shu-shan	<b>Computational Model of Dynamic Dispersed Area of Liquid Fire-Extinguishing Ammunition</b>
315	NI Xiao-jun, SHEN Zhao-wu, YANG Chang-de	<b>Influence of Aluminum Foams Shell on Shock Attenuation Underwater Explosions</b>
321	JIANG Zhi-hai, LONG Xin-ping, HAN Yong, JIANG Hong-bin	<b>Experimental Studies on Shell Fracturing and Jet Forming and Developing Process Driven by Detonation</b>
325	LIANG Hua-qiong, HAN Chao, YONG Lian, CHEN Xue-ping, YANG Yong-lin	<b>Net Shaping Technology of Polymer-bonded Powder by Rubber Isostatic Pressing</b>
330	ZHENG Wen-fang, PAN Ren-ming, LIN Xiang-yang, GUO Chang-ping, FU Xiao-li	<b>Effect of Dibutyl Phthalate on Combustion Carbon Residue of Double-based Propellant</b>
335	ZHENG Shuang, LIU Bo, LIU shao-wu, WANG Feng, ZHANG Yuan-bo, YU Hui-fang, HAN Bing, LI Da	<b>Application of a New Agent of Low Erosion in the Small Caliber Weapon</b>
339	MENG Zheng, WEI Hong-yuan	<b>Quantitative Analysis of Mixtures of <math>\beta</math>-HNIW and <math>\epsilon</math>-HNIW by Fourier Transform Raman Spectroscopy</b>
343	SHENG Tao, PENG Qing-tao, XIA Ben-li, ZHANG Guang-you	<b>Determination of Components in Rocket Kerosene by GC-MS</b>
349	FAN Yong-hui, ZHAO Tie-zhu, YANG Cai-ning, WANG Qiong-lin, YU Hui-fang	<b>Determination of Polyester in Desensitized Gun Propellant by Gas Chromatography</b>

**Review**

352	ZHANG Xian-feng, ZHAO Xiao-ning	<b>Review on Overdriven Detonation of Double Layer High Explosive Charge</b>
-----	---------------------------------	--

**Letter**

361	ZHOU Xiao-qing, MA Qing, ZHANG Xiao-yu, CHENG Bi-bo, HUANG Jing-lun, LIAO Long-yu, WANG Jun	<b>Synthesis and Properties of 5,5'-Hydrazinebistetrazole</b>
-----	---	---

**No. 4****Article**

363	HUANG Ya-feng, WANG Xiao-feng, FENG Xiao-jun	<b>Detonation Heat of Boron-contained Explosive Based on RDX</b>
366	ZHU Peng, ZHOU Xiang, SHEN Rui-qi, YE Ying-hua, HU Yan	<b>Electrical-explosion Performance of Dielectric Structure Pyrotechnic Initiators Prepared by Al/CuO Reactive Multilayer Films</b>
370	XU Zhi-xiang, LIU Da-bin, HU Yi-ting	<b>Experimental Investigation of a New ANFO Explosive</b>
373	MU Xiao-gang, GOU Xiao-li, LIU Xiang-xuan, ZHANG You-zhi	<b>Synthesis and Stability of UDMH Oxalate</b>
377	WANG Ying-lei, JI Yue-ping, CHEN Bin, WANG Wei, GAO Fu-lei	<b>Improved Synthesis of 3,4-Dinitropyrazole</b>

380	CHANG Pei, HUANG Xin-ping, ZHENG Xiao-dong, WANG Bo-zhou, LI Pu-rui, TANG Wang, JIANG Jun	<b>Synthesis and Characterization of 4-(2,4,6-trinitroanilino) Benzoic Acid and Its Lead and Copper Salts</b>
384	NIE Hai-ying, MA Xin-gang, ZHANG Jin-min	<b>Determination of Propanetriol Dinitrate in NG/TEGDN by HPLC-TOFMS</b>
388	JI Yue-ping, WANG Ying-lei, LIU Wei-xiao, CHEN Bin, LI Pu-rui	<b>Synthesis and Properties of 1,1,1-Tris(azidomethyl)ethane</b>
391	YANG Fei-fei, SHAO Zi-qiang, WANG Fei-jun, WANG Wen-jun, ZHANG You-de, WANG Hui-qing	<b>Synthesis and Properties of Azido-sidechain Branched NC</b>
396	TANG Zhan, YANG Li, QIAO Xiao-jing, ZHANG Tong-lai, YU Wei-fei	<b>On Thermal Decomposition Kinetics and Thermal Safety of HMX</b>
401	ZHANG Bu-yun, JIAO Qing-jie, REN Hui, JIA Yong-jie, ZHANG Kuo, WU Guan-nan, LIU Guo-quan	<b>Morphology Character and Thermal Behavior of CNTs/KClO<sub>4</sub></b>
405	PI Wen-feng, SONG Xiu-duo, ZHANG Chao, XIE Bo, WANG Jiang-ning, ZHAO Feng-qi	<b>Combustion Performance of Double-based Propellant with a Lead-free Catalyst Gal-BiCu</b>
410	WANG Jun, LIN Xiang-yang, LIU Ai-zhuan, LI Duo, PAN Ren-ming	<b>Extraction Technology of AP from Expired Composite Solid Propellants</b>
415	LIU Kai-qiang, ZHAO Ke-ru, CHEN Xiang-li, ZHANG He-lan, FANG Yu	<b>Instant Gelation of a Simulated Agent for Liquid Propellants at Room Temperature and Rheological Property Studies of Relevant Gels</b>
420	WEN Mao-ping, ZHOU Hong-ping, XU Tao, CHEN Tian-na, PANG Hai-yan	<b>Reverse Change of Compressive and Tensile Properties of PBX Based on HMX Aged at High Temperature</b>
425	HUANG Jiao-hu, YIN Rui, HUANG hui, WEI Zhi-yong, ZHANG Qiu	<b>Design of Interfacial Curve of Small-sized Explosive Planar Wave Lens</b>
428	GAO Li-long, NIU Yu-lei, WANG Hao, WANG Cai-ling, LI Yuan-yuan, GUO Xi	<b>Analysis of Impact Sensitivity Characteristics for Typical Explosive Cylinder</b>
432	SUN Pei-pei, NAN Hai, NIU Yu-lei, XI Peng, LI Wei, LU Fu-guo	<b>Effect of Shell Thickness on Response Level of Confined TNT in Fast Cook-off</b>
436	ZHANG Xiao-li, HONG Tao, WANG Jin-xiang, JIA Xian-zhen	<b>Numerical Simulation of Cook-off for Explosive at Different Heat Fluxes</b>
442	ZHOU Dei-cai, Lü Chun-ling, LI Mei, GENG Xiao-heng, ZHANG Jun	<b>Effect of Particle Size of Nitroamine Explosives on Cook-off Sensitivity</b>
445	MA Zhong-liang, ZHU Lin, GAO Ke-zheng, XIAO Zhong-liang	<b>Numerical Calculation on the Fluctuation Factors of Grain Size for Variable-burning Rate Propellant</b>
450	PENG Fei, YU Dao-qiang, YANG Shi-qing, JIANG Jian-ping, LOU Jian, WANG Wei-ming	<b>Damage Effects of Energetic Fragment Warhead</b>
454	JIANG Yao-gang, SHEN Zhao-wu, GONG Zhi-gang, NI Xiao-jun, WENG Feng-quan	<b>Application Study of Flexible and Linear Shaped Charge Cutter</b>
459	WANG Peng, ZHANG Jing	<b>Thermo Dynamic Analysis, Composition Design and Experimental Study on Metal-Cutting Pyrotechnic Composition</b>
464	DU Ping, HE Wei-dong, LIAO Xin	<b>A Brief Summary about Clean Burning Technology of Gun Propellant and Charge</b>
469	CHEN Lu-yang, TANG Cheng-zhi, LI Zhong-you, CHEN Zhong-e	<b>Application of 1,3-Dipolar Cycloaddition in Azide Propellants</b>

473 ZHANG Guang-quan

**Recent Progress in Green Tetrazoles Primary Explosives****Letter**479 LUAN Lin-dong, DENG Jian-guo, HUANG Hui,  
JI Lan-xiang**The Synthesis of Silica Nanotubes Using Soft Templates**

481 ZHANG Xiu-yun, DENG Jian-guo, HUANG Yi-gang

**Synthesis of UV Curing Epoxidized Soybean Oil Ester-hexadiene****No. 5****Special Contribution**

483 PAN Gong-pei

**Innovation and Development of Pyrotechnic Composition****Article**491 SHANG Jing, ZHANG Jian-Guo, SHU Yuan-jie,  
YIN Ming, ZHANG Tong-lai, ZHOU Zun-ning, YANG Li**Theoretical Studies on Structure and Properties of Bis-(5-nitro-tetrazolato) Tetraammine Cobalt (III) Perchlorate Molecule and Crystal**497 GAO Fu-lei, JI Yue-ping, LI Pu-rui, LIU Wei-xiao,  
WANG Ying-lei, LAN Ying, LIU Ya-jing**Synthesis and Characterization of *N*-(2-Nitroxyethyl) alkynitrarnines**501 YANG Ke-ming, CAO Duan-lin, LI Yong-xiang,  
WANG Jian-long, WANG Ding**Synthesis and Characterization of 1-Methyl-3,5-dininitro-1,2,4-triazole**505 LI Na, GAN Xiao-xian, MO Hong-chang,  
LI Lei, LU Xian-ming, HAN Tao**Synthesis of Epoxy Terminated Polybutadiene**509 ZHOU Yan-shui, ZHOU Cheng, WANG Bo-zhou,  
LI Jian-kang, HUO Huan, ZHANG Ye-gao,  
WANG Xi-jie, LUO Yi-fen**Synthesis of 3-Amino-4-amidoximinofurazan with High Yield**513 LIAO Chang-yu, HU Bing-cheng, DAI Hong-sheng,  
SUN Cheng-guo, XU Shi-chao**A Simple Method for Preparing 3,5-Diaminopyridine**

518 WANG Cun-dong, LUO Yun-jun, XIA Min

**Synthesis of HTPE and Properties of HTPE Elastomers**523 WANG You-bing, GE Zhong-xue, WANG Bo-zhou,  
YE Zhi-hu, LI Ya-nan, SHANG Yan**Preparation and Thermal Properties of Fine LLM-105 with Different Crystal Form**527 ZHAO Feng, YU De-shui, PENG Qi-xian,  
WEN Shang-gang, LI Ping**Research on Flyer Acceleration of Divergent Detonation of Insensitive Explosive**

532 YU De-shui, ZHAO Feng, PENG Qi-xian, LI Ping

**Application of VISAR in Bigplate Experiment**536 CAI Jin-tao, ZHAO Feng, WANG Gui-ji,  
ZHAO Jian-heng, WENG Ji-dong, WU Gang**Response of JO-9159 under Magnetically Driven Quasi-Isentropic Compression to 5 GPa**540 QIN Wen-zhi, LONG Xin-ping,  
JIANG Xiao-hua, HE Bi**Calculation of Detonation Parameters of Metal Compounds Explosives**

544	SONG Pu, WANG Xiao-ming, GU Xiao-hui, LIANG An-ding, ZHAO Xiang-jun	Simplified Calculation Method of Blast Vibration Acceleration in Concrete Target Head Face
548	WU Wan-e, ZHU Zuo-ming, SHUAI Ling	Calculation for Primary Combustion Characteristics of Boron-based Fuel-rich Propellant based on PSO-BP Neural Network
553	HENG Shu-yun, LIU Zi-ru, XIE Ming-zhao, ZHANG La-ying, REN Xiao-ning, WANG Xiao-hong	Effect Factors on PDSC Characteristics Equation of the Burning Rate
557	ZHANG Xiao-hong, ZHANG Pei, WANG Bai-cheng, SUN Zhi-gang, WANG Ying, CHEN Xue-li	Effects of New Combustion Stabilizers on Combustion Performances of Double-based Propellant
561	QIAO Li-jie, DU Ping, WANG Ze-shan	Effect of Charge Density and Combustion Pressure on Adhesiveness Combustion Residue of Gun Propellant Charges
565	LIU Bo, WANG Qiong-lin, LIU Shao-wu, ZHENG Shuang, YU Hui-fang, WEI Lun, ZHANG Yuan-bo	A Study of Propellant with Low Erosion and High Combustion Progressivity
569	CHEN Tao, FU Xue-cheng, ZHAO Li-zeng, XUE Gang, WANG Xin, BAO Zhi-ming	Flame Temperature Distribution Characteristics of Typical Stage Fireworks
575	YUAN Zhi-lei, HE Zeng-di, LIU Lin-lin, Lü Zhi-xing, FAN Xue-kun, ZOU Xiu-mei	A Method to Measuring Muzzle Flash of Gun Propellants
580	YAO Zhi-hua, WANG Zhi-jun, LI De-zhan	Effects of Star Shaped Liner of Different Half a Wedge on Jet Formation
584	XIE Rui-zhen, REN Xiao-ming, WANG Ke-xuan, XUE Yan, PENG Zhi-ming, LU Bin	Fabrication of Ni-Cr Film Igniting Resistor

## Review

588	SHU Yuan-jie, LI Hua-rong, GAO Xiao-min, YIN Ming, XIONG Ying, LI Yin-chuan	An Important Energetic Material: 5-Substituted Tetrazole Energetic Metal Complexes
597	WEI Xian-feng, LONG Xin-ping, HAN Yong	Review on Preparation and Separation Methods of Fullerenes

## No. 6

### Article

603	Marcela Jungová, Svatopluk Zeman, Adéla Husarová	Friction Sensitivity of Nitramines. Part I: Comparison with Impact Sensitivity and Heat of Fusion
607	Marcela Jungová, Svatopluk Zeman, Adéla Husarová	Friction Sensitivity of Nitramines. Part II: Comparison with Thermal Reactivity
610	Svatopluk Zeman, Marcela Jungová, Adéla Husarová	Friction Sensitivity of Nitramines. Part III: Comparison with Detonation Performance
613	Zdeněk Friedl, Marcela Jungová, Svatopluk Zeman, Adéla Husarová	Friction Sensitivity of Nitramines. Part IV: Links to Surface Electrostatic Potentials
616	ZHOU Lu-lu, JIANG Jun-cheng, PAN Yong, WANG Rui	Prediction of the Electrostatic Sensitivity of Nitro Compounds with Electrotopological State Indices

621	HUANG Ming, LI Hong-zhen, XU Rong, ZHOU Xiao-qing, NIE Fu-de, CHEN Bo	<b>Evaluation of Crystal Properties and Initiation Characteristics of Decreased Sensitivity RDX</b>
627	ZHANG Wei, YANG Jun, YU Yan, BAO Tong, LIU Xian-wei	<b>Type of Ferrocenes on Sensitivities of Ultra-fine AP and Ferrocene Mixture</b>
632	XU Rong, LI Hong-zhen, KANG Bin, LI Jin-shan, Huang Ming, LU Xiao-jun	<b>Effects of HMX Crystal Characteristics on Shock Sensitivities: Crystalline Inter Voids, Particle Size, Morphology</b>
637	ZHU Zhao-yang, MA Yu, ZHANG Su-min, WANG Hong-zhi, CAO Yi-lin	<b>Effects of Phase Impurity on Stability and Security of Aluminum Hydride</b>
641	ZHOU Xue-song, LUO Qiong, JIAO Qing-jie, PU Yang	<b>Theoretical Study on Structure and Explosion Performance for Aluminum Triazide</b>
646	YU Jin-yang, CHEN Li-ping, JIANG Xi-bo, PENG Jin-hua	<b>Thermal Kinetics of Sulphur-free Black Powder</b>
650	LIU Rui, YIN Yan-li, ZHANG Tong-lai, YANG Li, ZHANG Jian-guo, ZHOU Zun-ning, QIAO Xiao-jing, WANG Wen-jie, WANG Li-qiong	<b>Dynamic Vacuum Stability Test (DVST) Method (IV): Thermal Decomposition of HMX</b>
656	LIU YING, YANG Qian, CHEN Li-ping, HE Zhong-qi, LU Yan, CHEN Wang-hua	<b>Thermal Sensitivity of Energetic Materials Characterized by Accelerating Rate Calorimeter (ARC)</b>
661	CHEN Jie, PENG Qiang, QIAN Wen, WANG Li-yan, ZUO Yu-fen, CHI Yu	<b>Thermal Safety and Compatibilities with Silicone Rubber Cushion and Polyurethane Adhesive of PBX Specimen Based on HMX</b>
664	DU Zhen-hua, ZHANG Rui, TONG Hong-hai, LI Fang, FU Dong-xiao	<b>Cook-off Test of HNS under Sealed Condition</b>
669	ZHAO Xiao-bin, LI Jun, CHENG Li-guo, WANG Ning, WANG Zheng, CHEN Zhong-e, WANG Chen-xue, QIN Chao, CHENG Xin-li	<b>Influence Factors of Slow Cook-off Characteristic for Solid Propellant</b>
673	GAO Da-yuan, SHEN Chun-ying, WEN Shang-gang, HUANG Yi-min, LI Jing-ming	<b>Accelerated Aging on Effect of Safety for Explosive Parts</b>
679	ZHANG Guo-hui, WEI Xing-wen, CHEN Jie, SHU Yuan-jie, SONG Mian-xin	<b>Comparison of Aging Models of Polymer Bonded Explosives</b>
684	LAN Lin-gang, WEN Mao-ping, LI Ming, PANG Hai-yan, JING Shi-ming	<b>One-dimension Dynamic Tensile Properties of PBX</b>
689	CHEN Xiao-ming, JIN Peng-gang, ZHANG Heng, LIU Lai-dong, SONG Chang-wen, ZHANG Zou-zuo, ZHAO Ying	<b>Experimental study on the Shock Wave Sensitivity Response of Gun Propellant</b>
693	WANG Jian-ling, JI Yue-ping, GAO Fu-lei, GUO Wei, REN Song-tao	<b>Experimental Measurement of Safety Parameters of DIANP</b>
697	CHEN Lang, WANG Fei, WU Jun-ying, WANG Chen, LU Feng, HUANG Yi-min, DAI Xiao-gan, WEN Yu-shi	<b>Investigation of the Deflagration to Detonation Transition in Pressed High Density Explosives</b>
705	WANG Shu-ping, WANG Xiao-feng, JIN Da-yong	<b>Influence of Pressed Explosive Charges Density and its Distribution on Impact Safety</b>
709	ZHANG Xu, CAO Ren-yi, TAN Duo-wang	<b>Plastic Charge Stability Analysis of Supersonic Projectile During Penetration of Concrete Targets</b>
715	ZHANG Zou-zou, YANG Li-xia, LIU Lai-dong, ZHANG Heng	<b>Vulnerable Response of Gun Propellant by Bullet Impact Test</b>
720	WANG Ning, ZHAO Xiao-bin, WANG Chen-xue, TIAN Jun	<b>Simulation on Influence of Residual Rocket Motor Propellant on Warhead Damage Effect</b>

725 QIN Neng, PEI Jiang-feng, WANG Ming-xing

**Hazard Property of the RDX-CMDB Propellant**

730 LUO Hai-tao, HU Bing-cheng, Lü Chun-xu, LIU Zu-liang

**Safety of Continuous Grinding and Mixing Machine Used Specially for Exponded Ammonium Nitrate Explosive**

735 SHEN Hua-ping, LU Yan-hua, CAO Yi-lin, HE Jin-xuan

**Synthesis and Characterization of Novel Insensitive Energetic Plasticizer 3-Nitrofurazan-4-monomethyl Ether**

739 WANG Rui-hao, ZHANG Jing-lin, WANG Jin - ying, PAN Jun-jie, ZHANG Jun

**Preparation and Characterization of Nano-composite Energetic Materials  $\text{Fe}_2\text{O}_3/\text{Al}/\text{RDX}$**

**Letter**

743 XU Cheng, BI Fu-qiang, FAN Xue-zhong, LI Ji-zhen, WANG Bo-zhou, GE Zhong-xue, LIU Qing, ZHANG Guo-fang

**One-pot Synthesis of 2-Nitro-4 ,5-dicyano-1 *H*-imidazole**

745 LI Hong-zhen, ZHOU Xiao-qing, XU Rong, HUANG Ming, WANG Shu-cun

**Growth and Machining of RDX Single Crystal**

747 WANG Jun, ZHOU Xiao-qing, ZHANG Xiao-yu, LI Jin-shan, HUANG Yi-gang

**A Low-cost Preparation Technology of High Energy Density Material DNTF**

**EM People**

**Prof. Svatopluk ZEMAN**

• 1 • **Annual Cumulative Contents ( Vol. 19 ,2011 )**