

航天动力技术研究院 主办
中国宇航学会

ISSN 1006-2793
CN 61-1176/V
CODEN GHJIFL

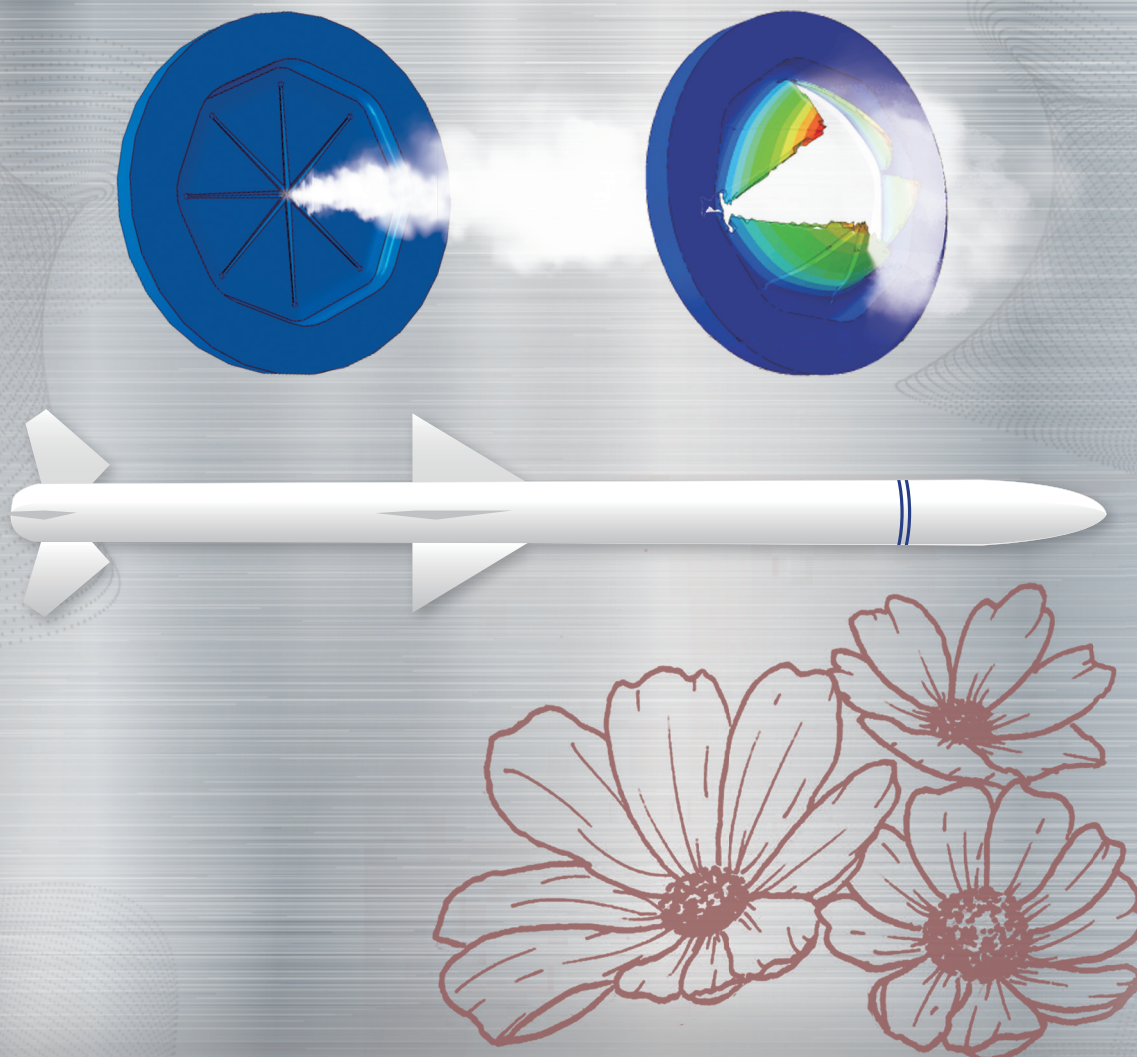
GUTI HUOJIAN JISHU

固体火箭技术

JOURNAL OF SOLID ROCKET TECHNOLOGY

3
2022

第45卷 第3期 2022年6月
Vol.45 No.3 Jun. 2022



双脉冲 SRM 隔舱 正八边形紫铜膜片 大角度翻转未破裂飞出 (P332)

固体火箭技术

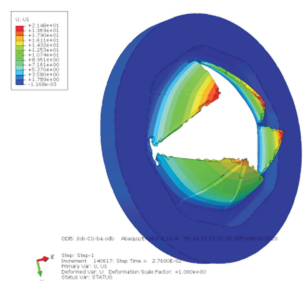
2022年6月 第3期

第45卷 总第210期

目次

新闻热点	
吸气式高速飞行器内外流耦合设计与多学科设计优化	黄伟,张天天,颜力,李世斌,安凯,沈洋,孟玉珊,冷俊学(329)
发动机工程	
某隔舱式双脉冲固体火箭发动机堵膜打开性能研究	周鑫鑫,孟红磊,罗一智,刘鏊(332)
多工况下变推力固体发动机喉栓喷管型面一体化优化设计	王鹏宇,王政涛,武泽平,张锡,张为华(337)
固体发动机挂机滑块与壳体连接结构优化	杨琨,李青频,孙展鹏,李毅,张毅铭(343)
内弹道学	
基于卷积神经网络的固体火箭发动机内弹道参数辨识	孙瑞阳,姜毅,牛钰森,张曼曼,强新伟(351)
实测燃速处理误差对内弹道性能预示的影响分析	刘杨,丁森,白彦军,李卓然(361)
药柱完整性	
基于三维八节点内聚单元的固体火箭发动机粘接界面结构分析	崔辉如,王佳奇,吕轩,许玉荣(366)
推进剂 燃料 燃烧	
一种新型含能化合物 2,3,5,6-四硝基-4H,9H-吡唑并[1,5-a;5',1'-d][1,3,5]三嗪钾盐	霍欢,张俊林,毕福强,李祥志,栾洁玉,王伯周(378)
GAP/硝胺推进剂燃烧效率实验研究	周梦圆,王艳萍,唐根,宋会彬,庞爱民(385)
BDNPF/A 增塑 PET 推进剂界面组分迁移及影响	王晓倩,李洋,胡晓亮,喻尧,张习龙,牛草坪(392)
用于 3D 打印的光固化聚醚改性 HTPB 固体推进剂配方研究	吕硕,强洪夫,陈辉,王璐,张利军,胡润芝(399)
结构材料 结构力学	
柔性喷管用弹性件材料动态力学性能试验与数值模拟	李定机,毛成立,郑庆,童悦,马超(407)
缠绕工艺关键参数对 T800 碳纤维复合材料壳体强度的影响	杨正伟,冯婧婧,张炜,任碧云(416)
弯曲载荷作用下舱段连接螺栓组载荷数值研究	姚琪,尤军峰,吴敏(424)
变刚度 CFRP 层合板在低速冲击下的分层失效分析	牛雪娟,李辰阳,刘江雨(431)
防热材料 绝热材料	
C/C-SiC-ZrC-Al ₂ O ₃ 复合材料的制备及抗烧蚀性能研究	董继杰,李翠艳,欧阳海波,刘雪,张晨皓(438)
液态超支化聚碳硅烷的热重分析及固化行为研究	赵晓冉,季铁正,牛帅,马旭涛,王文涛,冯喜平,侯晓,马晓燕(446)
测试 试验 安全性	
人工脱粘结构界面脱粘原位高频振动检测方法	叶子航,张守诚,肖黎,屈文忠,沙宝林(453)
基于光纤光栅传感器的湿法缠绕包覆工艺中固体推进剂药柱动态应变测试技术	李宝星,舒慧明,朱佳佳,王中,李宏岩(460)
基于 Voigt 线型拟合的 Bi ³⁺ 与 Eu ³⁺ 共掺荧光材料光谱温度特性研究	倪虎,张亮,王瑶,王文松,郭宁,王继,杨斌(467)
超高温环境下基于数字图像的测量技术研究	何新党,周润,王龙,张朵,董思辰(473)
运载火箭 导弹技术	
空心阴极与霍尔推力器放电振荡关系实验研究	谢侃,衣晓龙,梁福文,田丰,苗龙,王宁飞(484)

封面文章导读



某隔舱式双脉冲固体火箭发动机堵膜打开性能研究

周鑫鑫,孟红磊,罗一智,刘鏊

对于脉冲隔舱装置(PSD)的工作可靠性而言,有一个关键要求,即当 PSD 打开时,不应产生可能损坏封头或喷管等部件的喷射物。工程设计人员研究表明,最优的材料结构组合设计是正八边形紫铜膜片,在打开时可以实现大角度翻转,而无破裂物飞出!

CONTENTS

NEWS & HIGHLIGHTS

Internal/external flow coupling design and multidisciplinary design optimization of airbreathing hypersonic vehicle
..... HUANG Wei, ZHANG Tiantian, YAN Li, LI Shibin, AN Kai, SHEN Yang, MENG Yushan, LENG Junxue (329)

SOLID ROCKET MOTOR ENGINEERING

Research on the opening performance of metal diaphragm in compartment double-pulse SRM
..... ZHOU Xinxin, MENG Honglei, LUO Yizhi, LIU Liu (332)

Optimization design for contour of pintle nozzle for variable thrust solid rocket motor under multiple working conditions
..... WANG Pengyu, WANG Zhengtao, WU Zeping, ZHANG Xi, ZHANG Weihua (337)

Optimization of connecting structure between sliders and case of solid rocket motor
..... YANG Kun, LI Qingpin, SUN Zhanpeng, LI Yi, ZHANG Yiming (343)

INTERNAL BALLISTICS

Internal ballistic parameter identification of solid rocket motor based on convolutional neural network
..... SUN Ruiyang, JIANG Yi, NIU Yusen, ZHANG Manman, QIANG Xinwei (351)

Effects of processing error of the measured burning rate on prediction of internal ballistic property
..... LIU Yang, DING Miao, BAI Yanjun, LI Zhuoran (361)

STRUCTURAL INTEGRITY

Structural analysis on bonding interface of solid rocket motor based on 3D 8-node cohesive element
..... CUI Huiru, WANG Jiaqi, LYU Xuan, XU Yurong (366)

PROPELLANT, FUEL AND COMBUSTION

A novel energetic potassium salt of 2,3,5,6-tetranitro-4H,9H-dipyrzolo[1,5-a:5',1'-d][1,3,5]triazinane: Synthesis, crystal structure and performance
..... HUO Huan, ZHANG Junlin, BI Fuqiang, LI Xiangzhi, LUAN Jieyu, WANG Bozhou (378)

Research on combustion efficiency of GAP/nitramine propellant
..... ZHOU Mengyuan, WANG Yanping, TANG Gen, SONG Huibin, PANG Aimin (385)

Interfacial component migration and influence factors of PET propellant plasticized with BDNPF/A
..... WANG Xiaoqian, LI Yang, HU Xiaoliang, YU Yao, ZHANG Xilong, NIU Caoping (392)

Formulation research on UV-curable polyether modified HTPB solid propellant for 3D printing
..... LYU Shuo, QIANG Hongfu, CHEN Hui, WANG Lu, ZHANG Lijun, HU Runzhi (399)

STRUCTURAL MATERIALS AND MECHANICS

Experiment and numerical simulation of dynamic mechanical properties of elastomer material on flexible nozzle
..... LI Dingji, MAO Chengli, ZHENG Qing, TONG Yue, MA Chao (407)

Influence of critical winding parameters on the strength of T800 carbon fiber composite case
..... YANG Zhengwei, FENG Jingjing, ZHANG Wei, REN Biyun (416)

Numerical investigation on connecting bolt-set loads between cabins under bending moment
..... YAO Qi, YOU Junfeng, WU Min (424)

Delamination failure analysis of variable stiffness CFRP laminates under low-velocity impact
..... NIU Xuejuan, LI Chenyang, LIU Jianguy (431)

THERMAL PROTECTIVE AND INSULATING MATERIALS

Preparation and ablation resistance of C/C-SiC-ZrC-Al₂O₃ composites
..... DONG Jijie, LI Cuiyan, OUYANG Haibo, LIU Xue, ZHANG Chengge (438)

Thermogravimetric analysis and curing behavior of liquid hyperbranched polycarbosilane
..... ZHAO Xiaoran, JI Tiezhen, NIU Shuai, MA Xutao, WANG Wentao, FENG Xiping, HOU Xiao, MA Xiaoyan (446)

MEASURING, TESTING AND SAFETY EVALUATION

In-situ high-frequency vibration monitoring method for Interface debonding of stress release boot
..... YE Zihang, ZHANG Shoucheng, XIAO Li, QU Wenzhong, SHA Baolin (453)

FBG sensor-based dynamic strain measurement of solid propellant grain in wet-winding process
..... LI Baoxing, SHU Huming, ZHU Jiajia, WANG Zhong, LI Hongyan (460)

Study on temperature characteristics of Bi³⁺ and Eu³⁺ co-doped fluorescent materials spectral based on Voigt linear fitting
..... NI Hu, ZHANG Liang, WANG Yao, WANG Wensong, GUO Ning, WANG Ji, YANG Bin (467)

Research on measurement technology based on digital image correlation in ultra-high temperature environment
..... HE Xindang, ZHOU Run, WANG Longlong, ZHANG Duo, DONG Sichen (473)

LAUNCH VEHICLE AND MISSILE TECHNOLOGY

Experimental research on the relationship between discharge oscillation of hollow cathode and that of Hall thruster anode
..... XIE Kan, YI Xiaolong, LIANG Fuwen, TIAN Feng, MIAO Long, WANG Ningfei (484)