

目 次

□序言

卷首语 《红外与毫米波学报》编辑部(1)

□题词

院士编委题词 (2)

□主编致辞

与红外发展同行——纪念《红外与毫米波学报》创刊40周年 褚君浩(11)

□40周年特邀

- 红外光电探测器的前沿热点与变革趋势 叶振华 李辉豪 王进东 陈 星 孙常鸿 等(15)
多维度红外光电探测器 郭家祥 谢润章 王 鹏 张 涛 张 坤 等(40)
基于超材料的自由电子辐射研究进展 朱娟峰 杜朝海(61)
月球及火星探测任务中光谱技术研究与应用 桂裕华 李津宁 王梅竹 何志平(74)
真空电子太赫兹器件研究进展 常少杰 吴振华 黄 杰 赵 陶 刘頤威 等(85)
太赫兹量子阱探测器研究进展 张真真 符张龙 王 长 曹俊诚(103)
航空红外光电遥感技术最新进展 王崇儒 杨利峰 曹 汛 王跃明(110)
面向高工作温度应用的带间级联红外光电器件 柴旭良 周 易 王芳芳 徐志成 梁钊铭 等(122)
短波红外 InGaAs 焦平面研究进展 李 雪 龚海梅 邵秀梅 李 淘 黄松垒 等(129)
nBn 红外探测器研究进展 石 倩 张书魁 王建禄 褚君浩(139)
亚波长薄膜堆栈超构材料:理论及应用 文政绩 李晓温 赵文超 孙 艳 郝加明 等(151)
太赫兹量子级联激光器中的光电调控:综述 黄嘉豪 徐刚毅(169)
近红外二区荧光宽场显微活体成像技术和应用 阙步军 彭士屹 耿伟航 崔 健 胡森虎 等(181)
基于光线追迹的长线列摆扫式热像仪在轨几何成像仿真方法 李潇雁 胡焯悦 江林逸 陈凡胜(199)
基于3D打印技术的任意曲面共形超表面隐身衣 王朝辉 许河秀 逢智超 王明照 王少杰(210)
太赫兹技术在绘画类文物上的应用与展望 杨 静 邱杰夫 姜 辉 胡 昱 刘盛纲 等(218)
辐射冷却材料的研究进展及应用 孙晓洁 高梦宇 郑玉祥 张荣君 王松有 等(230)

□红外材料与器件

- 基于多层薄膜的长波红外 InAs/GaSb II类超晶格焦平面光响应调控研究
..... 史 睿 周 建 白治中 徐志成 周 易 等(248)
采用 Ga(In,As)P 异变缓冲层的 GaP/Si 衬底上 InAs 量子阱 黄卫国 顾 溢 金宇航 刘博文 龚 谦 等(253)
平面型 InGaAs 探测结构中 p 型杂质的二维扩散行为研究 张帅君 李天信 王文静 李菊柱 邵秀梅 等(262)
一种可用于化学传感的对角对称光子晶体光纤设计 赵丽娟 赵海英 徐志纽 梁若愚(269)
氧分压对脉冲激光沉积 β -Ga₂O_{3- δ} 薄膜光学性能的影响 李留猛 周 斌 高立宸 姜 凯 朱亮清 等(279)



本刊支持开放获取(Open Access)

彩色电子版内容获取

请扫描左侧二维码关注学报公众号

□太赫兹与毫米波技术

- 基于立方星辐射计直接检波系统的毫米波零偏置肖特基二极管检波器设计 陈 峥 张升伟(285)
一端固定的双站SAR体制下基于距离补偿的毫米波快速成像算法 陈 旭 杨 琪 曾 晟 王宏强 邓 彬(294)
基于0.18- μm 锗硅BiCMOS工艺的60 GHz匹配型高隔离小型化变压器巴伦
..... 张大为 徐 鑫 李 斌 徐 辉 于洪喜 等(299)
W波段双带状电子注新型平面慢波结构行波管 董 洋 郭靖宇 王禾欣 王战亮 路志刚 等(305)
高效率曲折槽波导毫米波行波管设计、制造和冷测 田艳艳 王禾欣 石先宝 李新义 宫玉彬 等(311)

□红外光谱与光谱分析

- 阱内δ掺杂GaSbBi单量子阱红外发光效率的光致发光光谱研究 马 楠 窦 程 王 曼 朱亮清 陈熙仁 等(317)
.....

□遥感技术与应用

- 基于人工神经网络的高分五号高光谱影像悬浮泥沙浓度反演方法
..... 刘一鸣 张 磊 周 梅 梁 建 王 妍 等(323)
直线型和同轴型脉管制冷机在90 K的对比分析 赵 鹏 蒋珍华 陆 志 曲晓萍 吴亦农(337)
海洋B星水色仪辐射基准异常分析及修复算法研究 范文龙 黄小仙 傅雨田(342)

□红外及光电技术与应用

- 2.79 μm 中红外激光对PbS探测器的损伤实验研究 王 垚 叶 庆 董 晓 雷武虎 吕桐林 等(354)
77K下碲镉汞APD探测器的高精度时间数字转换电路 章琪文 陈洪雷 丁瑞军(362)

□编辑部回忆录

- 跨越40年红外发展:前进中的《红外与毫米波学报》 张曼浩 李朝霞 刘 霞 周颖圆 沈 宏(370)

CONTENTS

Recent hotspots and innovative trends of infrared photon detectors	YE Zhen-Hua, LI Hui-Hao, WANG Jin-Dong, CHEN Xing, SUN Chang-Hong, LIAO Qing-Jun, HUANG Ai-Bo, LI Hui, ZHOU Song-Min, LIN Jia-Mu, PAN Jian-Zhen, WANG Chen-Fei, CHEN Hong-Lei, CHEN Lu, WEI Yan-Feng, LIN Chun, HU Xiao-Ning, DING Rui-Jun, CHEN Jian-Xin, HE Li	(15)
Infrared photodetectors for multidimensional optical information acquisition	GUO Jia-Xiang, XIE Run-Zhang, WANG Peng, ZHANG Tao, ZHANG Kun, WANG Hai-Lu, HE Ting, LI Qing, WANG Fang, CHEN Xiao-Shuang, LU Wei, HU Wei-Da	(40)
Research progress of free-electron radiation based on metamaterials	ZHU Juan-Feng, DU Chao-Hai	(61)
Research and application of spectroscopic techniques in lunar and Mars exploration missions	GUI Yu-Hua, LI Jin-Ning, WANG Mei-Zhu, HE Zhi-Ping	(74)
The research progress of vacuum electron device in terahertz band	CHANG Shao-Jie, WU Zhen-Hua, HUANG Jie, ZHAO Tao, LIU Di-Wei, HU Min, WEI Yan-Yu, GONG Yu-Bin, LIU Sheng-Gang	(85)
Research on terahertz quantum well photodetector	ZHANG Zhen-Zhen, FU Zhang-Long, WANG Chang, CAO Jun-Cheng	(103)
Recent progress of airborne infrared remote sensing technology in SITP	WANG Chong-Ru, YANG Li-Feng, CAO Xun, WANG Yue-Ming	(110)
Interband cascaded infrared optoelectronic devices for high operating temperature applications	CHAI Xu-Liang, ZHOU Yi, WANG Fang-Fang, XU Zhi-Cheng, LIANG Zhao-Ming, ZHU Yi-Hong, ZHOU Jian, ZHENG Lu-Lu, HUANG Min, BAI Zhi-Zhong, HUANG Ai-Bo, CHEN Hong-Lei, DING Rui-Jun, CHEN Jian-Xin	(122)
Recent advances in short wavelength infrared InGaAs focal plane arrays	LI Xue, GONG Hai-Mei, SHAO Xiu-Mei, LI Tao, HUANG Song-Lei, MA Ying-Jie, YANG Bo, ZHU Xian-Liang, GU Yi, FANG Jia-Xiong	(129)
Progress on nBn infrared detectors	SHI Qian, ZHANG Shu-Kui, WANG Jian-Lu, CHU Jun-Hao	(139)
Subwavelength thin-film stack metamaterials: theory and applications	WEN Zheng-Ji, LI Xiao-Wen, ZHAO Wen-Chao, SUN Yan, HAO Jia-Ming, DAI Ning, CHU Jun-Hao	(151)
Photonic and electric control in terahertz quantum cascade lasers: Review	HUANG Jia-Hao, XU Gang-Yi	(169)
The fluorescence in vivo wide-field microscopic imaging technology and application in the second near-infrared region	QUE Bu-Jun, PENG Shi-Yi, GENG Wei-Hang, CUI Jian, HU Sen-Hu, FENG Zhe, QIAN Jun	(181)
In-orbit geometric imaging simulation based on ray-tracing for long-linear-array and whisk-broom thermal infrared imager	LI Xiao-Yan, HU Zhuo-Yue, JIANG Lin-Yi, CHEN Fan-Sheng	(199)
3D-printed conformal metasurface invisibility cloak with arbitrary boundary	WANG Chao-Hui, XU He-Xiu, PANG Zhi-Chao, WANG Ming-Zhao, WANG Shao-Jie	(210)
The application of terahertz technology in paintings		

.....	YANG Jing, QIU Jie-Fu, JIANG Hui, HU Min, LIU Sheng-Gang, ZHANG Hui	(218)
Applications and recent development of radiative cooling materials	SUN Xiao-Jie, GAO Meng-Yu,	
ZHENG Yu-xiang, ZHANG Rong-Jun, WANG Song-you, LI Jing, CHEN Liang-Yao	(230)	
Tuning the optical response of long-wavelength InAs/GaSb Type-II superlattices infrared focal plane arrays with multi-coatings	SHI Rui, ZHOU Jian, BAI Zhi-Zhong, XU Zhi-Cheng, ZHOU Yi, LIAO Zhao-Ming,	
SHI Ying, XU Qing-Qing, CHEN Jian-Xin	(248)	
InAs quantum wells grown on GaP/Si substrate with Ga(In,As)P metamorphic buffers	HUANG Wei-Guo,	
GU Yi, JIN Yu-Hang, LIU Bo-Wen, GONG Qian, HUANG Hua, WANG Shu-Min, MA Ying-Jie,		
ZHANG Yong-Gang	(253)	
SCM study on the 2D diffusion behavior of p-type impurities in planar InGaAs detectors	ZHANG Shuai-Jun,	
LI Tian-Xin, WANG Wen-Jing, LI Ju-Zhu, SHAO Xiu-Mei, LI Xue, ZHENG Shi-You,		
PANG Yue-Peng, XIA Hui	(262)	
Design of a diagonally symmetrical photonic crystal fiber for chemical sensing	ZHAO Li-Juan, ZHAO Hai-Ying, XU Zhi-Niu, LIAO Ruo-Yu	(269)
Influence of oxygen partial pressure on the optical properties of β -Ga ₂ O _{3-δ} films deposited by pulsed laser deposition ...		
.....	LI Liu-Meng, ZHOU Bin, GAO Li-Chen, JIANG Kai, ZHU Liang-Qing, ZHANG Jin-Zhong,	
HU Zhi-Gao, CHU Jun-Hao	(279)	
Design of millimeter-wave detectors based on zero-bias Schottky diode for direct detection system of CubeSat radiometer	CHEN Yao, ZHANG Sheng-Wei	(285)
A millimeter-wave fast imaging algorithm with range compensation for one-stationary bistatic SAR		
.....	CHEN Xu, YANG Qi, ZENG Yang, WANG Hong-Qiang, DENG Bin	(294)
Miniaturized 60-GHz transformer-based balun splitter with isolation and matching performance in 0.18- μ m SiGe BiC-MOS	ZHANG Da-Wei, XU Xin, LI Bin, XU Hui, YU Hong-Xi, LI Jun, MA Kai-Xue,	
THANGARASU Bharatha Kumar, YEO Kiat Seng	(299)	
W-band dual-sheet beam traveling-wave tube with a novel planar slow-wave structure	DONG Yang, GUO Jing-Yu,	
WANG He-Xin, WANG Zhan-Liang, LU Zhi-Gang, GONG Hua-Rong, DUAN Zhao-Yun, GONG Yu-Bin,		
WANG Shao-Meng	(305)	
Design, fabrication and cold test of a high efficiency folded groove waveguide for w-band sheet beam TWT		
.....	TIAN Yan-Yan, WANG He-Xin, SHI Xian-Bao, LI Xin-Yi, GONG Yu-Bin, HE Wen-Long	(311)
Infrared emission efficiency of δ - doped GaSbBi single quantum well by photoluminescence spectroscopy		
.....	MA Nan, DOU Cheng, WANG Man, ZHU Liang-Qing, CHEN Xi-Ren, LIU Feng, SHAO Jun	(317)
A neural networks based method for suspended sediment concentration retrieval from GF-5 hyperspectral images		
.....	LIU Yi-Ming, ZHANG Lei, ZHOU Mei, LIAO Jian, WANG Yan, SUN Li, LI Qing-Li	(323)
Comparative analysis of in-line and coaxial pulse tube cryocoolers at 90 K		
.....	ZHAO Peng, JIANG Zhen-Hua, LU Zhi, QU Xiao-Ping, WU Yi-Nong	(337)
Analysis of radiation reference anomaly of HY-1B COCTS and research on the repair algorithm.....		
.....	FAN Wen-Long, HUANG Xiao-Xian, FU Yu-Tian	(342)
Experimental study of PbS detector irradiated by 2.79 μ m mid-infrared laser		
.....	WANG Xi, YE Qing, DONG Xiao, LEI Wu-Hu, LYU Tong-Lin, GUO Yan-Tin, HU Yi-Hua	(354)
High precision time-to-digital conversion circuit for mercury cadmium telluride APD detector at 77 K		
.....	ZHANG Qi-Wen, CHEN Hong-Lei, DING Rui-Jun	(362)