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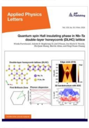

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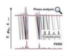

Physics-constrained machine learning for powder x-ray diffraction

Nathan J. Szymanski

Appl. Phys. Lett. 129, 190501 (2026) https://doi.org/10.1063/5.0357179

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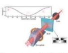
OPTICS, PHOTONICS, AND ELECTROMAGNETISM



Measurement of rotation angle variation using conjugate vortex beams

Bohao Chen; Jiadian Yan; Jun Yao; Lu Peng; Zixian Ma; Xuanbin Chen; Zhihan Zhu; Yuanjie Yang

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3-photon targeted patching (3PTP) of neurons in mouse hippocampus *in vivo* excited at the 1700-nm window

Zhenhui Li; Xiaoyang Ye; Jie Huang; Yingxian Zhang; Chi Zhang; Sijia Tang; Jiemei Yan; Yuhuan Li; Ping Qiu; Ke Wang

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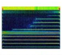

AC streamer discharge propagation assisted by femtosecond laser filamentation in a long air gap

Leonid Arantchouk; Thomas Clark; Magali Lozano; Aurelien Houard

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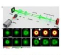

Refractive-index-selective longitudinal trapping and polarization conversion with a radially polarized Schell-model vortex beam

Changsheng Wang; Leixin Liu; Lin Liu; Haiyun Wang; Chunhao Liang; Jidong Wu; Qian Chen; Yangjian Cai; Xiaofeng Peng

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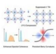
PHYSICS OF SURFACES AND INTERFACES



Decoupling electron correlation and band topology in a Hund's metal via (111) strain engineering

Junzhou Wang; Zhaoqing Ding; Zeguo Lin; Yuelong Xiong; Mingyu Yang; Boyin Huang; Fang Yang; Jiandong Guo; Xiaoran Liu

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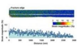
MATERIALS PHYSICS



Quantification of inhomogeneous residual strain in fractured amorphous silica via nano-beam electron diffraction

Suhyun Kim; Sung Jun Woo; Juhee Lee; Seunga Shin

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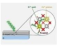

Optical decoherence in Er^{3+}-doped CeO_2 spin qubit platforms

Vrindaa Somjit; Ignas Masiulionis; Gregory D. Grant; Weiguo Jing; Matteo Giantomassi; Supratik Guha; Gian-Marco Rignanese; F. Joseph Heremans; Jiefei Zhang; Giulia Galli

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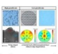

Effective suppression of wedge-shaped defects in growing 6-in. (100) β-Ga_2O_3 homoepitaxial thick film via MOCVD

Jiyuan Liu; Xuan Sun; Cheng Li; Defan Wu; Zhu Jin; Ning Xia; Yuchao Yan; Hui Zhang; Deren Yang

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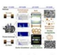

Nanomaterial synthesis via plasma ablation in suppressed electrical explosions of porous materials

Xinxuan Xian; Jinhao Wu; Ruoyu Han; Yuliang Ma; Nianhan Xu; Jiaqi Yan; Yanan Wang

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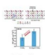

Synergistically optimizing thermoelectric power factor and stability in GeI_2-doped $CsSnI_3$ thin film

Xianfeng Xiao; Qixi Mi; Qin Yao; Lidong Chen

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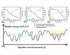
PHYSICS OF SEMICONDUCTORS



Revealing luminescence mechanisms in red InGaN micro-LEDs via spatially resolved, temperature- and current-dependent electroluminescence

Hao Wang; Jiaming Zhao; Qi Zhang; Jianhong Zhang; Zhuangpeng Guo; Yugang Zhou; Rongrong Dou; Zhe Zhuang; Bin Liu; Rong Zhang; Youdou Zheng

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Field-tunable Schottky-to-ohmic contact transition and visible-light absorption enhancement in a newly predicted 2D B_3S/graphene van der Waals heterostructure

Xiangjiu Zhu; Yukai Zhang; Jinbao Wang; Xin Qu; Pinwen Zhu

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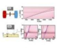
MAGNETISM AND SPINTRONICS



Direction-dependent coherent-dissipative indirect coupling in cavity magnonics

Zhenhui Hao; Kang An; Xu Zhang; Chi Zhang; Guozhi Chai

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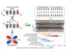

Altermagnetism in Mn_2SeX ($X = O$, S, Te) for magnetic tunnel junctions

Han Li; Xiao Liu; Keqian He; Xiaoran Du; Chuan Xie; Sicong Zhu

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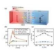

Colossal spin–orbit torques in gradient oxidation of platinum/hafnium heterostructures

Yuanjing Qu; Guangduo Lu; Zhiyong Zhong; Huaiwu Zhang; Lichuan Jin

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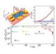

Room-temperature nonlinear Hall effect in symmetry-engineered van der Waals ferromagnetic $(Fe_{0.74}Co_{0.26})_3GeTe_2$ nanodevices

Zhenqi Wu; Shuo Wang; Rongshun Sun; Jiepeng Jiao; Leyan Huang; Kaifei Liu; Kai Gu; Jiacheng Gao; Yequan Chen; Lujun Wei; Ping Liu; Wei Niu; Xiaoqian Zhang; Yong Pu

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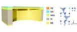
DIELECTRICS, FERROELECTRICS, AND MULTIFERROICS



A novel micromachined ultrasonic transducer based on single-crystal piezoelectric silicon carbide thin film

Jialin Long; Junfeng Zhou; Ningyuan Hu; Fuhong Lin; Han Qiu; Juan Wang; Zhongbin Dai; Chengjie Zuo

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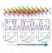
LOW-DIMENSIONAL AND TOPOLOGICAL PHYSICS



Multiple electronic phase transitions in room-temperature second-order topological insulator

Chaosheng Hao; Fei Wang; Li Deng; Hanghui Li; Xianmin Zhang

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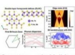

Quantum spin Hall insulating phase in Nb–Ta double-layer honeycomb (DLHC) lattice

Winda Purwitasari; Aniceto B. Maghirang, III; Joel D'Souza; Ina Marie R. Verzola; Zhi-Quan Huang; Marvin Albao; Feng-Chuan Chuang

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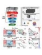
ELECTRONICS AND OPTOELECTRONICS



Gateless 1T-DRAM for cryogenic memory applications

Seung-Bum Yim; Ki-Nam Park; Hyun-Jun Kang; Jun-Young Park; Sihyun Kim; Jaeyong Jeong; Joon-Kyu Han

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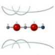

Temperature-dependent photoconductivity as an electrical probe of polaronic and band states in ferroelectrics for energy-selective photoresponse

Viktoria Kraft; Kimmo Sirkka; Jacob Akana; Frederick P Marlton; Tomokatsu Hayakawa; Kenichi Kakimoto; Neamul H. Khansur; Yang Bai

Appl. Phys. Lett. 129, 193302 (2026) https://doi.org/10.1063/5.0352658

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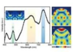

Enhancing the performance of perovskite photodetectors through template-imprinted biomimetic plasmonic nanostructures

Rui Gao; Chi Ma; Jun Dai

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Veronika Reisner, Sirri Batuhan Kalkan, et al.

Observation of quantum oscillations in triethylaluminum-enabled low-temperature MOCVD-grown β-$(Al_xGa_{1-x})_2O_3$/β-Ga_2O_3 2DEGs
Joshua T. Buontempo, Cameron A. Gorsak, et al.

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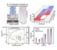

Engineering oxygen vacancies via Ar^+ ion implantation in single-layer HfO_2 self-rectifying memristors F ✓

Yunhui Yi; Wenbin Zuo; Zirui Li; Hengfeng Zhang; Yibai Xue; Xiao Fu; Renhui Jiang; Huajun Sun; Yi Li; Xiangshui Miao

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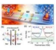

Thermal spin writing in a quantum-dot qubit via spin accumulation ✓

Zhengzhong Zhang; Hao Liu; Lubing Shao

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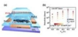

An opto-electrically decoupled phototransistor for solar-blind ultraviolet detection ✓

Xiaolu Xia; Zehao Zhao; Ying Yan; Qianxi Yang; Xitian Yin; Jiawen Wu; Tao Luo; Chunjun Liang; Maguang Zhu; Ying Wang

Appl. Phys. Lett. 129, 193503 (2026) https://doi.org/10.1063/5.0358241

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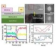

Impact of a process-induced interfacial layer on ferroelectric switching and reliability in $AlScN/\beta\text{-}Ga_2O_3$ MFS capacitors ✓

HyoJung Kim; SiSung Yoon; Hyeong-Yun Kim; Hyeongjun Joo; JongMin Park; Dae-Woo Jeon; Geonwook Yoo

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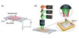
BIOIMAGING, BIOSENSORS, AND MEDICAL PHYSICS



In situ O-PTIR spectroscopy study on single-bacterium response to plasma ✓

Xu Zhang; Liyang Zhang; Chunmei Feng; Xinrong Li; Qun Zhou; Haiyun Luo

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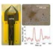

Functional micro-neuroimaging with a flux-guide-enhanced magnetic microscope 🔓

Young Jin Kim; Katie Davis-Anderson; Igor Savukov; Shaun Newman; Emilia Solomon

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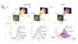

Multidirectional x-ray phase-contrast imaging with 1D modulators 🔓

Luca Brombal; Cristian David Tibambre Heredia; Ashkan Ajeer; Andrew L. Coathup; Paola Perion; Marco Endrizzi

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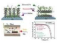
ENERGY CONVERSION AND STORAGE



Dynamic control of layered $MoSe_2$ crystallographic orientation for optimized CZTSSe/Mo interface contact in CZTSSe solar cells ✓

Jingqi Qiao; Ruijian Liu; Letu Siqin; Yuhao Zhang; Jiarui Ma; Hongmei Luan; Ningyu Ren; Yuze Sun; Yanchun Yang; Bin Yao; Chengjun Zhu

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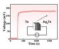

Ion-diode-driven hydrovoltaic generation in *in situ* grown Te/Ag_2Te nanowire networks ✓

Dongmei Liu; Zijun Kang; Yulin Cai; Liujia Liu; Dunren He; Yuan Zhou; Huihui Huang

Appl. Phys. Lett. 129, 193902 (2026) https://doi.org/10.1063/5.0347107

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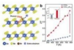

Boosting thermoelectric performance of hydrothermal $SnSe_2$ via Br doping-induced high carrier concentration and low thermal conductivity ✓

Chunlu Wu; Xinxin Wang; Zhuoming Xu; Ning Chen; Min Zhang; Zi-long Zhang; Yue-Xing Chen; Zhuang-Hao Zheng

Appl. Phys. Lett. 129, 193903 (2026) https://doi.org/10.1063/5.0356579

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EMERGING AND INTERDISCIPLINARY APPLIED PHYSICS

Atomistic understanding of hybrid bonding in Cu interfaces using multiscale microscopy ✓

Ihit Shukla; Karthick Gothandapani; Nicholas Polomoff; Baishakhi Mazumder

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ERRATA

Erratum: "Controlling the recovery time of the superconducting nanowire single-photon detector with a voltage-controlled cryogenic tunable resistor" [Appl. Phys. Lett. **127**, 212601 (2025)] ✓

H. Wang; N. D. Orlov; N. Noordzij; T. Descamps; J. W. N. Los; V. Zwiller; I. Esmaeil Zadeh

Appl. Phys. Lett. 129, 199901 (2026) https://doi.org/10.1063/5.0364088

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