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Volume 25, Issue 9
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About the Cover:

optoelectronic devices necessitate specific band alignments and efficient charge transfer between the HS constituent layers. We show that layer-selective strain engineering can be exploited as an extra degree of freedom to tailor the band alignment and optical properties of HSs made of InSe and transition metal dichalcogenide (TMD) monolayers. A giant emission enhancement of InSe is demonstrated via a strain-activated charge transfer from the mechanically deformed TMD monolayes to InSe.
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LETTERS

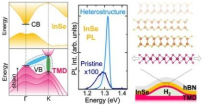
Giant Light Emission Enhancement in Strain-Engineered InSe/MS_2 (M = Mo or W) van der Waals Heterostructures

Elena Blundo*, Federico Tuzi, Marzia Cuccu, Michele Re Fiorentin, Giorgio Pettinari, Atanu Patra, Salvatore Cianci, Zakhar R. Kudrynskyi, Marco Felici, Takashi Taniguchi, Kenji Watanabe, Amalia Patanè, Maurizia Palummo, and Antonio Polimeni*

Nano Letters 2025, 25, 9, 3375-3382 **(Letter)** Open Access
Publication Date (Web): February 5, 2025

Abstract Full text PDF

ABSTRACT



Metastable Phase Noble-Metal-Free Core–Shell Structure for Efficient Electrocatalytic Nitrobenzene Transfer Hydrogenation

Yutian Xiong, Jinxin Chen, Yue Wang, Qun Wang, Da Liu, Qi Shao*, and Jianmei Lu*

Nano Letters 2025, 25, 9, 3383-3390 **(Letter)**
Publication Date (Web): February 19, 2025

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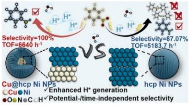
ABSTRACT


H*
Selectivity=100%
TOF=6640 h-1
Selectivity=87.07%
TOF=5183.7 h-1
VS
Cu@hcp Ni NPs
hcp Ni NPs
Cu Ni
O N C H
✓Enhanced H* generation
✓Potential-/time-independent selectivity

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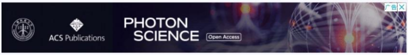
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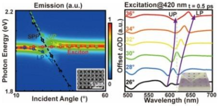
Ultrafast Investigation of the Strong Coupling System between Square Ag Nanohole Array and Monolayer WS_2

Jinyu Yang, Leyi Zhao, Zixuan Song, Jiamin Xiao, Lingyao Li, Guangjun Zhang, and Wenxin Wang*

Nano Letters 2025, 25, 9, 3391-3397 **(Letter)**
Publication Date (Web): February 18, 2025

Abstract Full text PDF

ABSTRACT



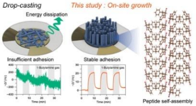
On-Site Nanowire Growth of Peptides Enables Stable Amine Selective QCM Gas Sensing

Shogaku Takeda, Wataru Tanaka*, Takuro Hosomi, Tsunaki Takahashi, Jiangyang Liu, and Takeshi Yanagida*

Nano Letters 2025, 25, 9, 3398-3404 **(Letter)**
Publication Date (Web): February 6, 2025

Abstract Full text PDF

ABSTRACT


Drop-casting
This study : On-site growth
Energy dissipation
Insufficient adhesion
Stable adhesion
1-Butylamine gas
1-Butylamine gas
-Δf (Hz)
Time (min)
Peptide self-assembly

Light Weight Organic Composites with High Thermal Management Capability

Yingying Guo, Kang Xu, Yandong Wang, Zhenbang Zhang, Ping Gong, Jianxiang Zhang, Linhong Li, Rongjie Yang, Yue Qin, Xingye Wang, Boda Zhu, Tao Cai, Cheng-Te Lin, Kazuhito Nishimura, Maohua Li*, Nan Jiang*, and Jinhong Yu*

Nano Letters 2025, 25, 9, 3405-3413 **(Letter)**
Publication Date (Web): February 7, 2025

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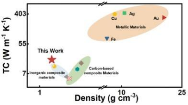
ABSTRACT



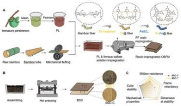
A Green-Modification Strategy for High-Performance Bamboo-Based Composites via Persimmon Lacquer and Iron Ion Complexation

Xiaoyan Li, Wencheng Lei, Fei Rao*, Yongjie Bao, Shoujun Liao, Yuyue Zhang, Neng Li*, Yahui Zhang*, and Yuhe Chen*

Nano Letters 2025, 25, 9, 3414-3421 **(Letter)**
Publication Date (Web): February 10, 2025

Abstract Full text PDF

ABSTRACT


A
Immature persimmon
PL
Bamboo fiber
Raw bamboo
Bamboo tube
Mechanical fluffing
Resin-impregnated OBFM
B
Assembling
Hot pressing
BSC
C
Mildew resistance
Color stability
Mechanical properties
Flame retardancy

Heterostructure Nanoscintillator for Matching Radiation Absorbing Layers with Fast Light-Emitting Layers

Orr Be'er, Avner Shultzman, Rotem Strassberg, Georgy Dosovitskiy, Noam Veber, Roman Schuetz, Charles Roques-Carmes, Ido Kaminer, and Yehonadav Bekenstein*

Nano Letters 2025, 25, 9, 3422-3429 **(Letter)**
Publication Date (Web): February 19, 2025

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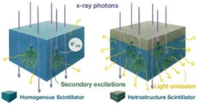
ABSTRACT


x-ray photons
e^-_{PE}
Secondary excitations
Light emission
Homogenous Scintillator
Hetrostructure Scintillator

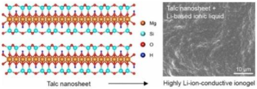
Talc Nanosheet Ionogel Electrolytes with High Lithium-Ion Conductivity for Solid-State Lithium Metal Batteries

Xinjie Luo, Jiaming Li, Yuxing Gu, Jian Du, Yijia Huang, Igor Baskin, Yair Ein-Eli*, and Woo Jin Hyun*

Nano Letters 2025, 25, 9, 3430-3437 **(Letter)**
Publication Date (Web): February 24, 2025

Abstract Full text PDF

ABSTRACT


Mg
Si
O
H
Talc nanosheet +
Li-based ionic liquid
10 μm
Talc nanosheet
Highly Li-ion-conductive ionogel

Dynamic Tuning of Single-Photon Emission in Monolayer WSe_2 via Localized Strain Engineering

Yi Yu, Junyu Ge, Manlin Luo, In Cheol Seo, Youngmin Kim, John J. H. Eng, Kunze Lu, Tian-Ran Wei, Seok Woo Lee, Weibo Gao, Hong Li*, and Donguk Nam*

Nano Letters 2025, 25, 9, 3438-3444 **(Letter)**
Publication Date (Web): February 18, 2025

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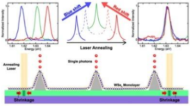
ABSTRACT


Normalized Intensity
Energy (eV)
1.61
1.62
1.63
1.64
Blue shift
Red shift
Laser Annealing
Annealing Laser
Single photons
WSe_2 Monolayer
Shrinkage
Shrinkage

A Brain-Targeting NIR-II Polymeric Phototheranostic Nanoplatform toward Orthotopic Drug-Resistant Glioblastoma

Xiang Su, Yisheng Liu, Yong Zhong, Ping Shangguan, Junkai Liu, Zhengqun Luo, Cai Qi, Jincheng Guo, Xi Li, Danmin Lin, Gaoyang Wang, Dong Wang, Ting Han*, Jiefei Wang*, Bingyang Shi*, and Ben Zhong Tang*

Nano Letters 2025, 25, 9, 3445-3454 **(Letter)**
Publication Date (Web): February 24, 2025

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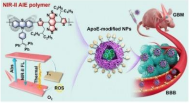
ABSTRACT


NIR-II AIE polymer
C_2H_5
C_4H_9
Ph
Abs
NIR-II FL
Thermal
T_1
ROS
O_2
ApoE-modified NPs
GBM
BBB

A Spatiotemporal Tunable Filter Array Chip for Video-Rate Hyperspectral Imaging

Zijian Lin, Tingbiao Guo*, Zhi Zhang, Yuan Zhang, Haochen Chu, Yijia Zeng, Xiao Chen, Nan Wang, Ruili Zhang, and Sailing He*

Nano Letters 2025, 25, 9, 3455-3463 **(Letter)** Open Access
Publication Date (Web): February 3, 2025

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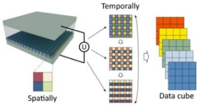
ABSTRACT


Temporally
U
Spatially
Data cube

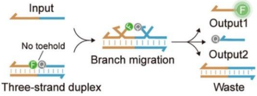
DNA Logic Circuit Based on a Toehold-Independent Strand Displacement Reaction Network

Junlan Liu* and Qing Zhang

Nano Letters 2025, 25, 9, 3464-3470 **(Letter)**
Publication Date (Web): February 21, 2025

Abstract Full text PDF

ABSTRACT


Input
No toehold
F
Three-strand duplex
Branch migration
Output1
Output2
Waste

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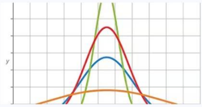

Photoinduced Deterministic Polarization Switching in $CuInP_2S_6$ for Multifunctional Optoelectronic Logic Gates

Junxi Yu*, Songjie Yang, Wenjie Ming, Yuan Zhang, Shiyao Xu, Boyuan Huang, Qingyuan Wang*, and Jiangyu Li*

Nano Letters 2025, 25, 9, 3471-3478 **(Letter)**
Publication Date (Web): February 24, 2025

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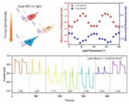
ABSTRACT



Polymeric Nanoparticles Simultaneously Delivering Paclitaxel Prodrug and Combretastatin A4 with Exceptionally High Drug Loading for Cancer Combination Therapy

Huicong Zhou, Zhaofan Yang, Guanyu Jin, Lanqing Wang, Yuanzhen Su, Hao Liu, Hai Sun, Lingwei Xue, Liwei Mi, Irina A. Veselova, Mingqiang Li*, Shixian Lv*, and Xuesi Chen*

Nano Letters 2025, 25, 9, 3479-3488 **(Letter)**
Publication Date (Web): February 24, 2025

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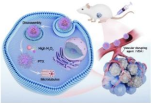
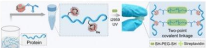
ABSTRACT


Disassembly
High H_2O_2
PTX
Microtubules
Vascular disrupting agent (VDA)

A Macrocycle-Assisted Platform Approach to Protein Cross-Linking Via Chemically Inactive Residues

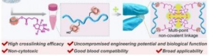
Zhongyu Li, Liping Pu, Delong Hou*, Jun Yan, Qi Zeng, and Yi Chen*

Nano Letters 2025, 25, 9, 3489-3496 **(Letter)**
Publication Date (Web): February 19, 2025


Protein
I2959
UV
Two-point covalent linkage
SH-PEG-SH
Streptavidin

Abstract Full text PDF

ABSTRACT


Multi-point
non-covalent linkage
✓High crosslinking efficacy
✓Uncompromised engineering potential and biological function
✓Non-cytotoxic
✓Good blood compatibility
✓Broad applicability

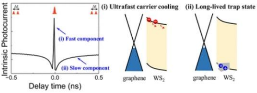
Ultrafast Hot Carrier Cooling Enabled van der Waals Photodetectors at Telecom Wavelengths

Zhouxiaosong Zeng, Yufan Wang, Patrick Michel, Fabian Strauß, Xiao Wang*, Kai Braun*, and Marcus Scheele*

Nano Letters 2025, 25, 9, 3497-3504 **(Letter)** Open Access
Publication Date (Web): February 24, 2025

Abstract Full text PDF

ABSTRACT



Electron-Withdrawing Hexagonal Boron Nitride as a Biocompatible and Metal-Free Antibacterial Platform

Jianxiang Gao, Hengyue Xu, Yingcan Zhao*, Linxuan Sun, Xi Zhang, Yichao Bai, Wenbo Li, Mingchuang Zhao, Haoqi He, Xudong Liu, Qiangmin Yu, Vijay Pandey, Lan Ma, Feiyu Kang, Mauricio Terrones, and Yu Lei*

Nano Letters 2025, 25, 9, 3505-3514 **(Letter)**
Publication Date (Web): February 21, 2025

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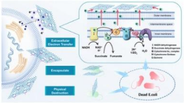
ABSTRACT


Extracellular Electron Transfer
Encapsulate
Physical Destruction
NADH
NAD$^+$
Succinate
Fumarate
H$_2$O
Dead E.coli

Self-Powered and Reconfigurable Double-Terminal MoS$_2$ Photodetector for Image Recognition

Chengjie Zhou, Qingliang Liu, Xiao Fu, Wencheng Niu, Jingli Wang, Xingqiang Liu, Xuming Zou, Jinshui Miao*, Fukai Shan*, and Zhenyu Yang*

Nano Letters 2025, 25, 9, 3515-3523 **(Letter)**
Publication Date (Web): February 23, 2025

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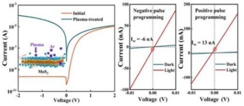
ABSTRACT



Enhancing Stability in Biological Fluids: The Role of Ion-Induced Water Structuring in Artificial Tears

Peijia Li, Zhaoxiang Lu, Yilin Wang, Yixiao Wang, Fan Xia, Yun Feng*, and Ye Tian*

Nano Letters 2025, 25, 9, 3524-3531 **(Letter)**
Publication Date (Web): February 23, 2025

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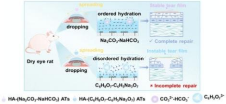
ABSTRACT


spreading
Stable tear film
ordered hydration
dropping
Na$_2$CO$_3$-NaHCO$_3$
✓ Complete repair
Dry eye rat
spreading
Instable tear film
disordered hydration
dropping
C$_6$H$_8$O$_7$-C$_6$H$_5$Na$_3$O$_7$
× Incomplete repair
HA-(Na$_2$CO$_3$-NaHCO$_3$) ATs
HA-(C$_6$H$_8$O$_7$-C$_6$H$_5$Na$_3$O$_7$) ATs
CO$_3^{2-}$-HCO$_3^-$
C$_6$H$_5$O$_7^{3-}$

Hierarchical Phosphide-Based Hybrid Anodes for High-Performance Lithium-Ion Batteries

Shanshan Xiao, Yong Chen, Xianggang Zhou, Hechen Sun, Wubin Wan, Yingqi Li*, Ruiqi Yao, Fei Bi, Li Zhao, Liyan Wang*, Xing-You Lang*, and Qing Jiang

Nano Letters 2025, 25, 9, 3532-3540 **(Letter)**
Publication Date (Web): February 21, 2025

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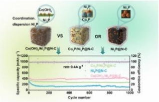
ABSTRACT



A Paste-like Polymeric Resist with High Thermal Endurance for Vapor-Phase Bottom-Up Fabrication

Chun Li, Jiaxun Yao, Rui Xia, Haochuan Wang, Yan Shao, Ming Chen, Zixin Zhang, Lizhi Yan, Paddy Kwok Leung Chan, Xing Cheng, and Yanhao Yu*

Nano Letters 2025, 25, 9, 3541-3548 **(Letter)**
Publication Date (Web): February 20, 2025

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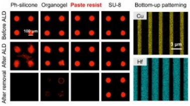
Ph-silicone
Organogel
Paste resist
SU-8
Bottom-up patterning
Before ALD
After ALD
After removal
100 μm
Cu
3 μm
Hf

Spin-Valve Effect in Junctions with a Single Ferromagnet

Fengrui Yao*, Volodymyr Multian, Kenji Watanabe, Takashi Taniguchi, Ignacio Gutiérrez-Lezama, and Alberto F. Morpurgo*

Nano Letters 2025, 25, 9, 3549-3555 **(Letter)**
Publication Date (Web): February 19, 2025

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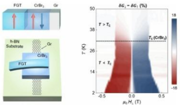
ABSTRACT



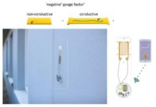
Tunneling Barrier-Integrated Gold Nanofilms for Negative Strain Gauging with Near-Zero Energy Consumption

Soosang Chae*, Wonjin Choi, Su-Hyeong Lee, Quinn A. Besford, and Andreas Fery*

Nano Letters 2025, 25, 9, 3556-3564 **(Letter)**
Publication Date (Web): February 24, 2025

Abstract Full text PDF

ABSTRACT


'negative' gauge factor
non-conductive
conductive

Excitation of Spin Waves by Oscillatory Voltage-Controlled Dzyaloshinskii–Moriya Interaction in Ferroelectric/Skyrmion Heterostructure

Jincheng Hou, Shaojie Hu*, and Long You*

Nano Letters 2025, 25, 9, 3565-3570 **(Letter)**
Publication Date (Web): February 18, 2025

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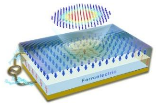
ABSTRACT


Ferroelectric

Photolithography-Induced Doping and Interface Modulation for High-Performance Monolayer WSe_2 P-Type Transistors

Yu-Tung Lin, Yu-Wei Hsu, Zih-Yun Fong, Ming-Yu Shen, Ching-Hao Hsu, Shu-Jui Chang, Ying-Zhan Chiu, Shao-Heng Chen, Nien-En Chiang, I-Chih Ni, Tsung-En Lee*, and Chih-I Wu*

Nano Letters 2025, 25, 9, 3571-3578 **(Letter)** Open Access
Publication Date (Web): February 21, 2025

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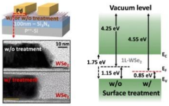
ABSTRACT


Pd
w/ or w/o treatment
100nm – Si_3N_4
P^{++}-Si
w/o treatment
10 nm
WSe_2
w/ treatment
WSe_2
Vacuum level
4.25 eV
4.55 eV
E_c
1.75 eV
1L-WSe_2
E_F
1.15 eV
0.85 eV
E_V
w/o
w/
Surface treatment

Accelerating Reverse Water Gas Shift Reaction through Synergistic CO_2 and H_2 Activation on Ru–Fe–(V_O-in-CeO_2) Ternary Catalytic Centers

Haoyang Jiang, Linyu Wang, Chuanhao Wang, Yi Xie, Caijuan Shi, Yongcheng Xiao, Yueren Liu, Weiping Ding, and Miao Zhong*

Nano Letters 2025, 25, 9, 3579-3587 **(Letter)**
Publication Date (Web): February 24, 2025

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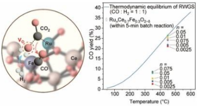
ABSTRACT



Origin of the Rich Polymorphism of Gold in Penta-Twinned Nanoparticles

Camino Martín-Sánchez*, Ana Sánchez-Iglesias, José Antonio Barreda-Argüeso, Jean-Paul Itié, Paul Chauvigne, Luis M. Liz-Marzán, and Fernando Rodríguez

Nano Letters 2025, 25, 9, 3588-3596 **(Letter)** Open Access
Publication Date (Web): February 18, 2025

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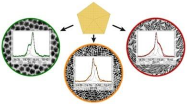
ABSTRACT



Bimodal Atomic Force Microscopy with a Torsional Eigenmode for Highly

Accurate Imaging of Grain Orientation in Organic Thin Films

Rodrigo Arilla, Esther Barrena, Carmen Ocal, and Daniel Martin-Jimenez*

Nano Letters 2025, 25, 9, 3597-3604 **(Letter)** Open Access
Publication Date (Web): February 23, 2025

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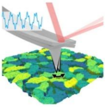
ABSTRACT



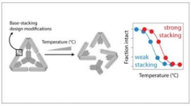
Tuning the Stability of DNA Tetrahedra with Base Stacking Interactions

Jibin Abraham Punnoose*, Dadrian Cole, Tristan Melfi, Vinod Morya, Bharath Raj Madhanagopal, Alan A. Chen, Sweta Vangaveti, Arun Richard Chandrasekaran, and Ken Halvorsen*

Nano Letters 2025, 25, 9, 3605-3612 **(Letter)** Open Access
Publication Date (Web): February 20, 2025

Abstract Full text PDF

ABSTRACT


Base-stacking
design modifications
Temperature (°C)
Fraction intact
strong
stacking
weak
stacking
Temperature (°C)

High-Q Resonance Engineering in Momentum Space for Highly Coherent and Rainbow-Free Thermal Emission

Keren Wang, Kaili Sun, Qi Ding, Lingxiao Zeng, Jing Du, Zhanghua Han*, Lujun Huang*, and Wei Wang*

Nano Letters 2025, 25, 9, 3613-3619 **(Letter)**
Publication Date (Web): February 21, 2025

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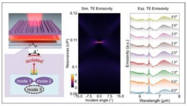
ABSTRACT



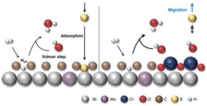
An Efficient H_2S-Tolerant Hydrogen Oxidation Electrocatalyst Enabled by a Lewis Acid Modifier for Fuel Cells

Yu Yang, Ye-Hua Wang, Fei-Yue Gao, Xiao-Long Zhang, Peng-Cheng Yu, Shou-Jie Liu, Lei Zhu, Hui-Kun Yan, Shu-Ping Sun, Zhi-Zheng Wu, Xue-Peng Yang, Chen-Chen Hang, Yu-De Su*, and Min-Rui Gao*

Nano Letters 2025, 25, 9, 3620-3629 **(Letter)**
Publication Date (Web): February 21, 2025

Abstract Full text PDF

ABSTRACT


Migration
Adsorption
Volmer step
Ni
Mo
Cr
O
C
S
H

Ultrahigh Negative Longitudinal Piezoelectricity in Rhombohedral GeTe and Its Group IV–VI Analogues

Yang Liu, Wei Wang, Zhengjie Wang, and Chen Si*

Nano Letters 2025, 25, 9, 3630-3636 **(Letter)**
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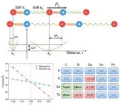
ABSTRACT


Stiff k_1
Soft k_2
P_s
Distance, r
C
Si
Ge
Sn
Pb
O
S
Se
Te
Metal

Organic Synaptic Transistors Based on C8-BTBT/PMMA/PbS QDs for UV to NIR Face Recognition Systems

Tianyang Feng, Hang Xu, Yafen Yang, Xuemeng Hu, Tianyu Wang, Hao Zhu, Qingqing Sun, David Wei Zhang, Jialin Meng*, and Lin Chen*

Nano Letters 2025, 25, 9, 3637-3645 **(Letter)**
Publication Date (Web): February 20, 2025

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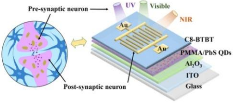
ABSTRACT


Pre-synaptic neuron
UV
Visible
NIR
Au
Au
C8-BTBT
PMMA/PbS QDs
Al_2O_3
ITO
Glass
Post-synaptic neuron

Polarization-Independent Enhancement of Third-Harmonic Generation Empowered by Doubly Degenerate Quasi-Bound States in the Continuum

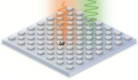
Tingting Liu, Meibao Qin, Jumin Qiu*, Xu Tu, Huifu Qiu, Feng Wu, Tianbao Yu, Qiegen Liu, and Shuyuan Xiao*

Arbitrarily polarized
pump light
3ω

Nano Letters 2025, 25, 9, 3646-3652 **(Letter)** Open Access
Publication Date (Web): February 21, 2025

Abstract | Full text | PDF

ABSTRACT



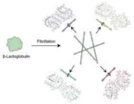
β-Lactoglobulin Forms a Conserved Fibril Core That Assembles into Diverse Fibril Polymorphs

Yongyi Xu, Danni Li, Yiling Zhang, Qinyue Zhao, Bo Sun, Cong Liu, Dan Li, and Bin Dai*

Nano Letters 2025, 25, 9, 3653-3661 **(Letter)**
Publication Date (Web): February 24, 2025

Abstract | Full text | PDF

ABSTRACT


Fibrillation
β-Lactoglobulin

Visualizing In Situ Nucleation and Growth Dynamics of CdSe-Based Heterostructures Regulated by the Water/Oil-Phase Microenvironment

Simin Peng, Linfeng Xu, Zetan Cao, Chuangwei Jiao, Wei Liu, Yong Lu, Wenlong Wang, and Bin Chen*

Nano Letters 2025, 25, 9, 3662-3669 **(Letter)**
Publication Date (Web): February 22, 2025

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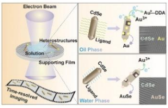
ABSTRACT


Electron Beam
Heterostructures
Solution
Supporting Film
Time-resolved imaging
CdSe
Au³⁺–DDA
Au³⁺
Ligand
Au
Oil Phase
CdSe Au
CdSe
Ligand
Au³⁺
AuSe
Water Phase
CdSe
AuSe

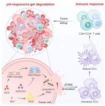
Acid-Responsive Biocompatible Hydrogel Modulating Tumor DNA Self-Repair Collaborated with Chemotherapy for Boosting STING Pathway-Associated Immunotherapy

Yan-Tong Lin, Ran Meng, Shi-Man Zhang, Hao Zhou, Hong Chen, Jun-Long Liang, Wei-Qin Yao, Wei-Hai Chen*, and Xian-Zheng Zhang*

Nano Letters 2025, 25, 9, 3670-3680 **(Letter)**
Publication Date (Web): February 24, 2025

Abstract | Full text | PDF

ABSTRACT


pH-responsive gel degradation
Immune response

ADDITIONS AND CORRECTIONS

Correction to "Rational Design of Genetically Engineered Mitochondrial-Targeting Nanozymes for Alleviating Myocardial Ischemic-Reperfusion Injury"

Xiangyun Zhang, Qiqi Liu, Rongping Zhao, Zhihua Pang, Weiyu Zhang, Tianyi Qi, Mingsheng Zhu, Helong Kang, Meng Qian, Yajuan Wan, Rui Wang, Shufang Wang, Xinglu Huang*, and Jie Zhuang*

Nano Letters 2025, 25, 9, 3681-3682 **(Addition/Correction)** Free to Read
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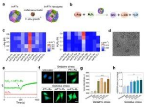

MASTHEADS

Issue Editorial Masthead

Nano Letters 2025, 25, 9, XXX-XXX **(Article)** Free to Read
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Issue Publication Information

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