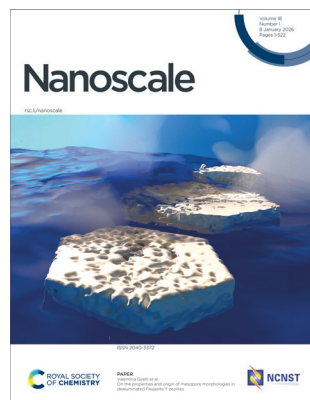


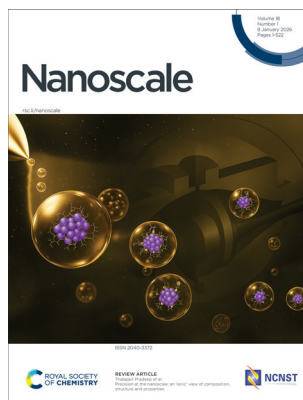
## IN THIS ISSUE

ISSN 2040-3372 CODEN NANOHL 18(1) 1–522 (2026)



**Cover**  
See Valentina Girelli *et al.*,  
pp. 173–187.

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**Inside cover**  
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pp. 15–65.

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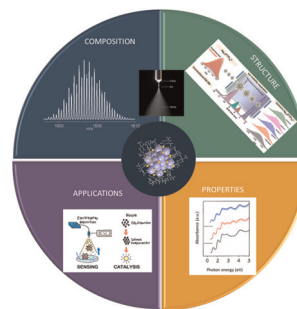
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## REVIEWS

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### Precision at the nanoscale: an 'ionic' view of composition, structure and properties

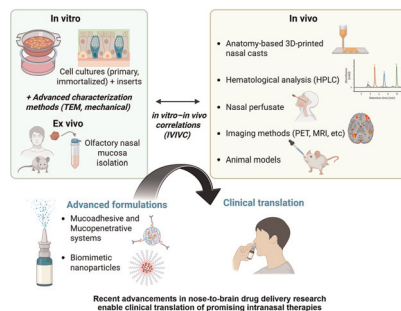
Anagha Jose, B. S. Sooraj and Thalappil Pradeep\*



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### Overcoming barriers: nanomedicine-based strategies for nose-to-brain delivery

West Kristian Paraiso,\* Carlos Palacín Ramos, Parisa Mishal Hossain, Carla Alvarez Gordi, Pablo Adrian Guillen-Poza, Sebastián Zagmutt, Sabina Quader\* and Rosalía Rodríguez-Rodríguez\*



Recent advancements in nose-to-brain drug delivery research enable clinical translation of promising intranasal therapies



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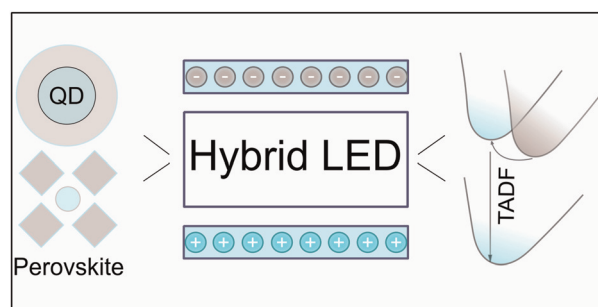
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## REVIEWS

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**Thermally activated delayed fluorescence materials for nanomaterial-based light-emitting diodes**

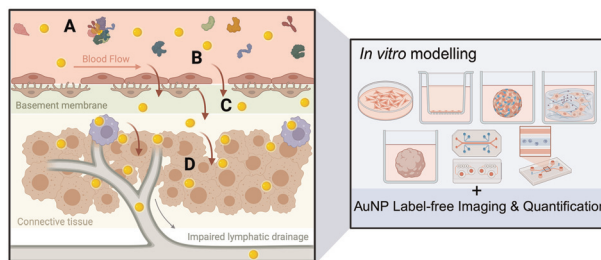
Aleksandr P. Litvin,\* Alexander M. Mitroshin, Elena V. Ushakova and Alexander V. Yakimansky



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Christina Christodoulou, Alexander J. MacRobert, Marilena Loizidou, Bala Ramesh, Kate Ricketts, Christopher Thrasivoulou, Gavin Jell\* and Hiram K. Patra\*

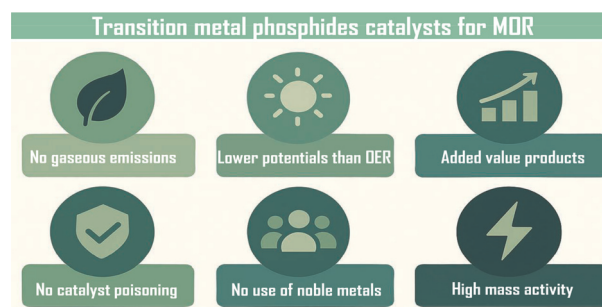


## MINIREVIEWS

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**Metal phosphides as efficient catalysts for methanol oxidation reaction**

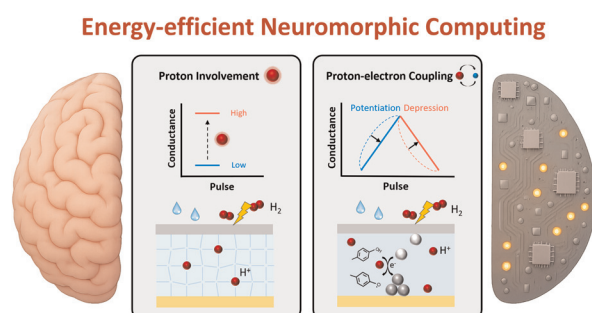
Dyuti Bandyopadhyay and Maya Bar Sadan\*



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**Recent progress in proton involvement and coupling for bio-realistic synaptic devices**

Yubeen Park, Jung-El Ryu, Seok Daniel Namgung\* and Min-Kyu Song\*

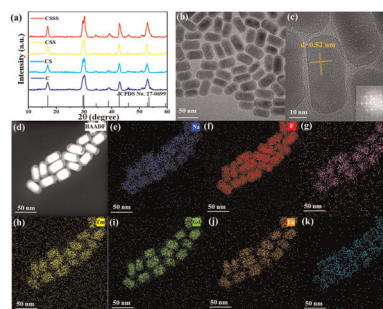




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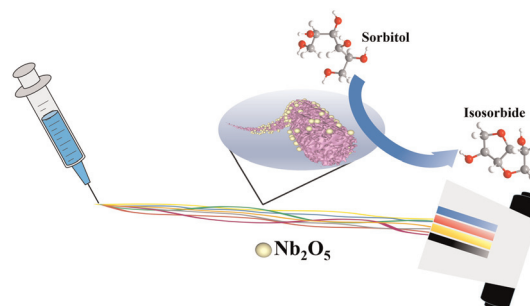
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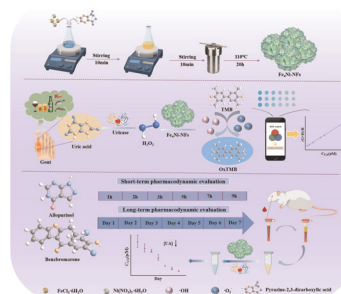
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### Novel iron–nickel bimetallic nanozyme with peroxidase-like activity for ultrasensitive uric acid detection and hyperuricaemia therapy evaluation

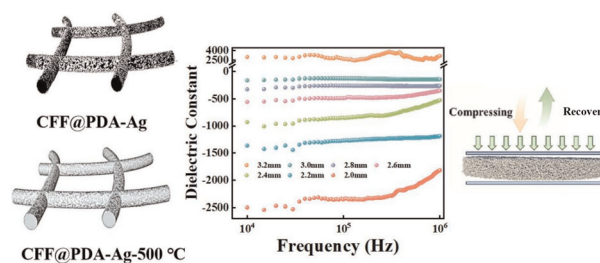
Hanbing Yao, Yifu Li, Yujuan Zhan, Binyu Xiao, Jiayi Yan, Shuangshuang Liu, Zimo Chen and Chang Shu\*



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Xuan Yang, Lixin Xuan, Weiwei Men, Muwen Niu, Xiao Wu,\* Jingyu Bi and Lei Qian\*

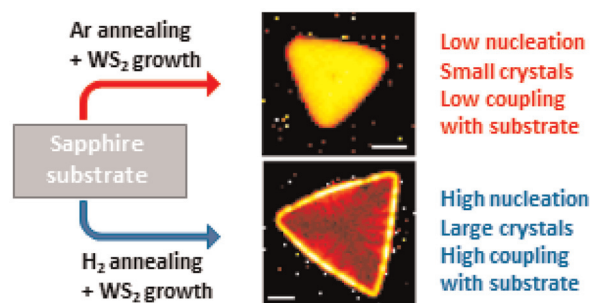




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### Aluminum-rich reconstructed sapphire as a high-quality substrate for tungsten disulfide synthesis

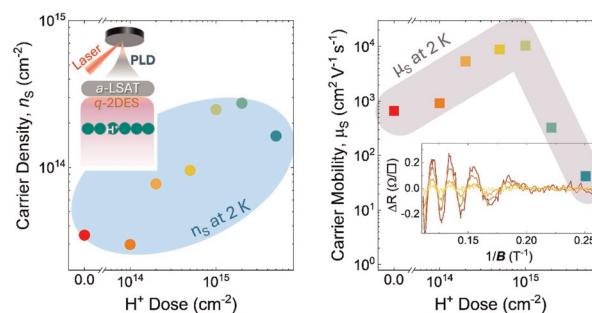
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### Modulation of quantum transport in complex oxide heterostructures with proton implantation

Haidong Liang, Ganesh Ji Omar, Kun Han, Andrew A. Bettiol,\* Zhen Huang\* and A. Ariando\*

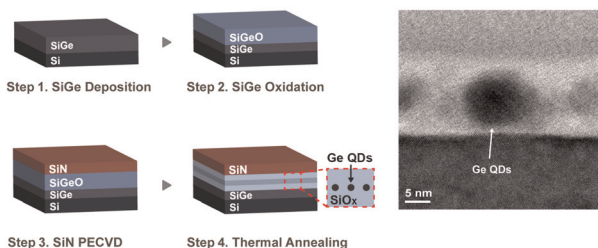


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### Scalable synthesis of spatially confined Ge quantum dots with tunable quantum confinement

Su Hyun Park, Gyeong Min Seo, Jeong Wook Kim, Yun Ho Lee, Gyubin Lee, Hong Jae Lee and Byoung Don Kong\*

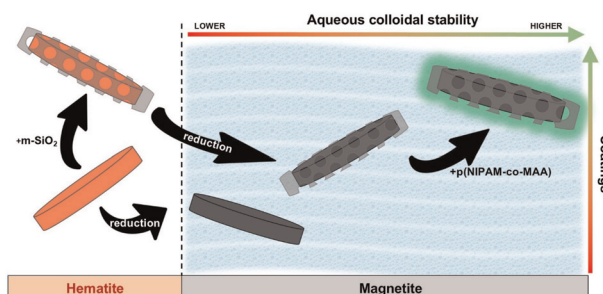
#### Self-Assembled Ge QD Fabrication Process



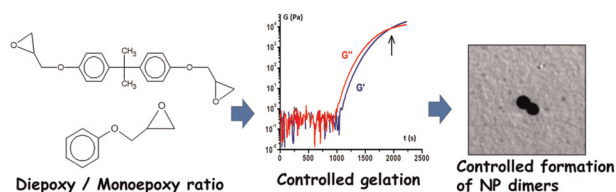
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P. Rafael Donnarumma, Micaela A. Macchione, Franziska Wasner, Elif Kocar, Vicente Durán Toro, Santiago Marzini Iranca, Eduart Gutiérrez Pineda, Sunisa Thongsom, Danijela Gregurec\* and Sergio E. Moya\*



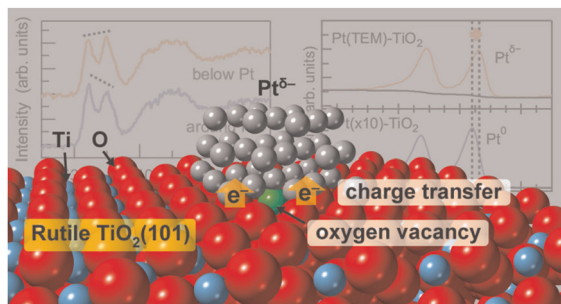
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### Controlling nanoparticle aggregation via gel point shift in the *in situ* photochemical synthesis of plasmonic epoxy-based nanocomposites

Agustina B. Leonardi, Nancy M. Cativa, Gustavo F. Arenas, Marcelo Ceolín, Ignacio E. dell'Erba\* and Walter F. Schroeder\*

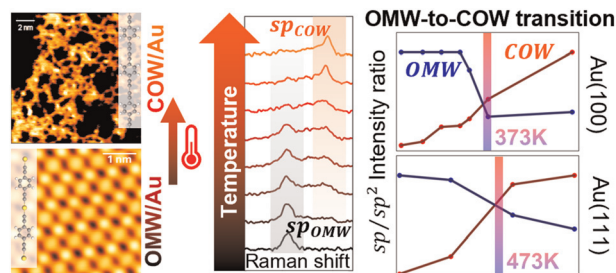
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### Distribution of oxygen vacancies and their impact on the charge state of Pt on $\text{TiO}_2$

Ryugen Suzuki, Hisahiro Einaga and Hajime Hojo\*

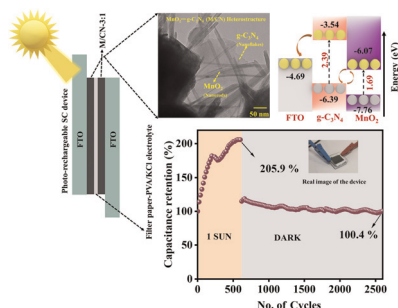
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### Surface dependent organometallic to covalent transition in graphdiyne molecular wires

Alice Cartoceti, Simona Achilli,\* Paolo D'Agosta, Francesco Tumino, Shreya Garg, Alessio Orbelli Biroli, Giovanni Onida, Guido Fratesi, Valeria Russo, Andrea Li Bassi, Sabine Maier and Carlo S. Casari\*

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### Engineered S-scheme $g\text{-C}_3\text{N}_4/\text{MnO}_2$ heterostructures for integrated photo-rechargeable supercapacitors with enhanced energy storage performance

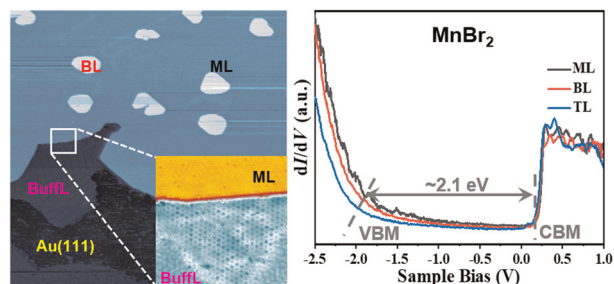
P. Chinnappan Santhosh, Suresh Jayakumar and A. V. Radhamani\*



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### Epitaxial growth of 2D manganese dibromide thin films on Au(111) with buffering overlayers

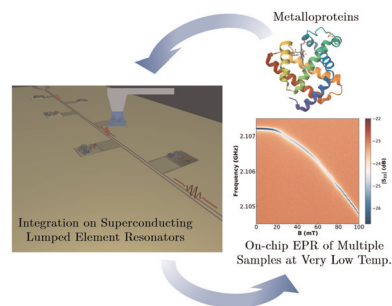
Zhanze Wang, Mingyue Sun, Yuedong Wang, Zhipeng Jiao, Cong Hong, Qixing Wang, Yujie Zheng\* and Yu Li Huang\*



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### On-chip EPR spectrometry of metalloproteins using superconducting lumped element resonators

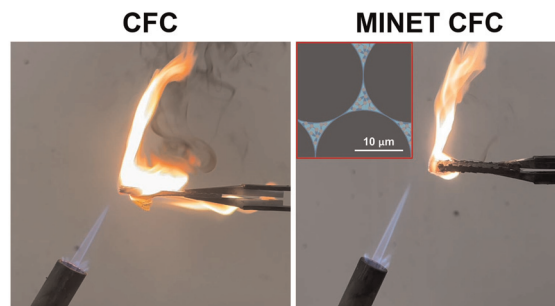
Carlos Marcuello, David Rodriguez, María Carmen Pallarés, Daniel Granados, Olivier Roubeau, Fernando Luis, Alicia Gomez\* and Anabel Lostao\*



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### Enhancing thermal conductivity and flame resistance of carbon fiber composites using CNT-infused multiphase graphene resins

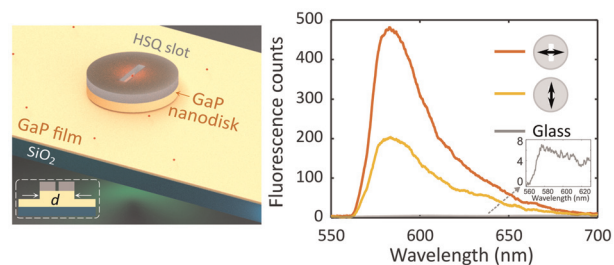
Yogin Patel,\* Pei Huan Sun, Bryan Llumiquinga, Nandi Bao, Jonathan Shi, Adrien Duran, Charm O. Nicholas, Rituparna Mohanty, Nare Cho, Iris You, Stephen D. Tse and Jonathan P. Singer\*



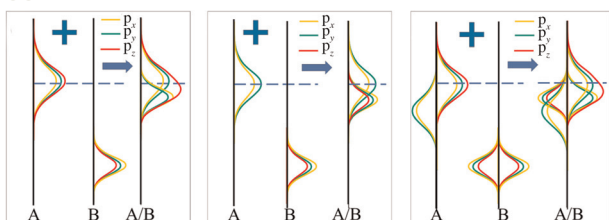
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### Enhanced fluorescence at low excitation powers with GaP hybrid nanoantennas

Yatao Yang, Mi Gu, Wenfu Lin, Xiang Zhang, Shang Li, Qiancheng Zhao,\* Xiao Wei Sun\* and Yi Li\*



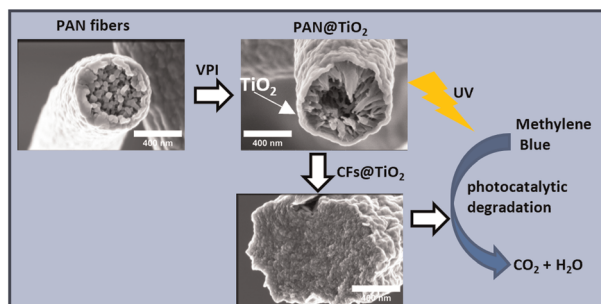
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### Interfacial atomic orbital controlled spin-hybridization proximity effects in vdW heterostructures

Liyenda Gogoi and Pritam Deb\*

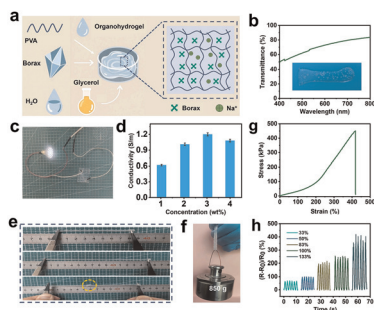
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### Carbon fibers with infiltrated TiO<sub>2</sub> nanocrystalline layers: photocatalytic performance

Pavan Kumar Chennam, Martina Rihova, Susan Azpeitia, Marcela Sepúlveda, Martin Kachlík, Miloslav Pouzar, Veronika Čičmancová, Karel Maca, Mato Knez and Jan M. Macak\*

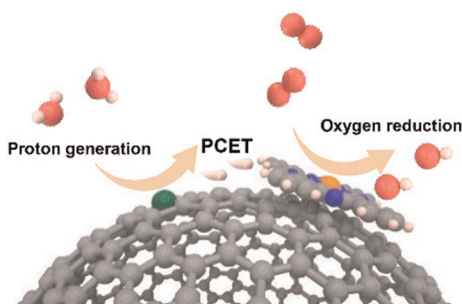
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### Stretchable and transparent PVA/Borax organohydrogel-based triboelectric nanogenerator for self-powered wearables and human-machine interfaces

Junwei Zhao,\* Ze Wan, Yifan Wang, Jian Chen, Chunli Hou and Yujiang Wang\*

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### Synergistically promoting proton-coupled electron transfer of oxygen reduction with dual atomic sites on high-curvature carbon onions for highly efficient Zn-air batteries

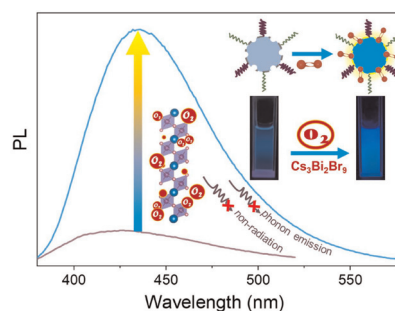
Yunxiang Lin, Qixin Wang, Ruyun Zheng, Bo Geng, Yuanyue Bao, Anhui Ke, Chao Wang, Hengjie Liu, Xue Liu, Lei Shan,\* Li Yang\* and Li Song\*



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### Giant emission enhancement from $\text{Cs}_3\text{Bi}_2\text{Br}_9$ via oxygen-induced optimization of radiation channels

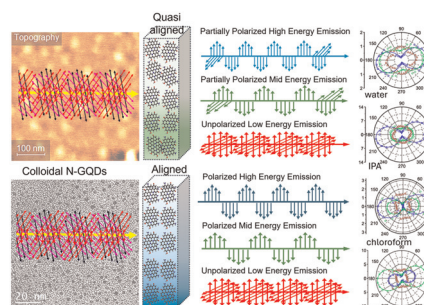
Boning Han,\* Jianpeng Zhao, Shiyang Guo, Jinkai Qin, Zhenfu Song, Xiaobo Han,\* Chunliang Li, Yalong Shen, Xuewei Wang and Jizhong Song\*



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### Solvent-driven self-assembly and polarized emission in nitrogen-doped graphene quantum dots

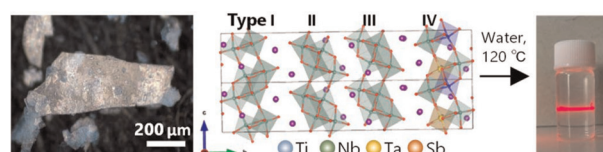
Subhro Kundu, Abu Bakar Siddique, Irvin Fernando Guzmán González, Kevin Armando Rodríguez Mireles, Maritza Iveth Pérez Valverde, Nicolás Antonio Ulloa Castillo, Madhusoodanan Reghunathan, Domingo Ixcoatl García Gutiérrez, Eduardo Martínez Guerra and Mallar Ray\*



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### Multi-element mixing boosts exfoliation of layered hexaniobate single crystals

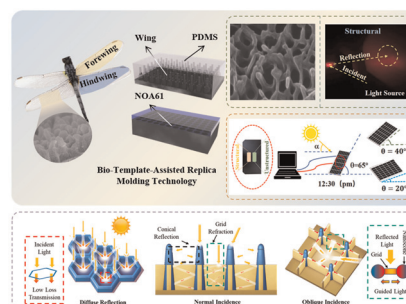
Fumitaka Hayashi,\* Kakeru Umehara, Tomohito Sudare, Kazunori Fujisawa, Hiromasa Shiiba and Katsuya Teshima\*



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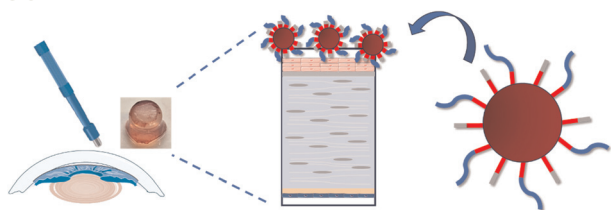
### Broadband and omnidirectional antireflective film with bioinspired nanocone-grid hybrid structures for enhanced solar energy harvesting

Zhibin Jiao, Shuhan Zhang, Chuanhao Zhao, Xueyang Li, Zhaozhi Wang, Jing Zhao, Hanliang Ding,\* Bo Li,\* Shichao Niu and Zhiwu Han



## PAPERS

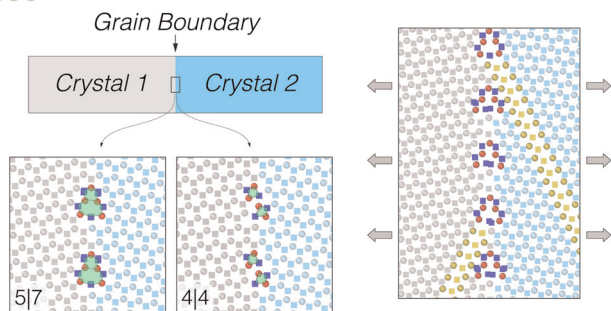
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### Cornea-SELEX-derived DNA aptamers for preparing spherical nucleic acids and corneal staining

Xiaohan Zhang, Ka-Ying Wong, Xinyuan Mu, Qiushi Liu, Xin Wang, Man-Sau Wong and Juewen Liu\*

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### Structure and mechanical properties of grain boundaries in molybdenum disulfide ( $\text{MoS}_2$ )

Robert D. Moore, N. Scott Bobbitt, Ian S. Winter, John F. Curry, Lisa Levandosky, Sophia Renaud, Michael Chandross\* and Fadi Abdeljawad\*

## CORRECTIONS

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Wanchun Duan, Dang Zheng, Dongming Chen, Sishi Huang, Yang Yang, Lvyuan Hao and Xin Xu\*

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### Correction: Nanobody engineering for enhanced-sensitivity rapid COVID-19 tests

Eunji Jeong, Seo Yeong Oh, Seong Uk Son, Sojeong Lee, Ryunhyung Kim, Jaewook Lim, Sunjoo Kim, Taejoon Kang, Juyeon Jung, Seung-Yong Seong, In-Young Jang, Jong Hyun Kim, Eunhee Jang, Hyoung Hwa Jeong, Eun-Kyung Lim\* and Seungjoo Haam\*

