

# Nanoscale Horizons

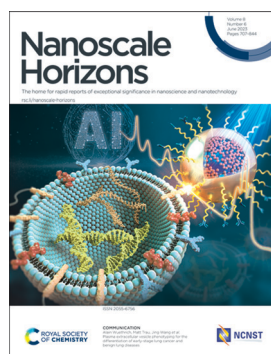
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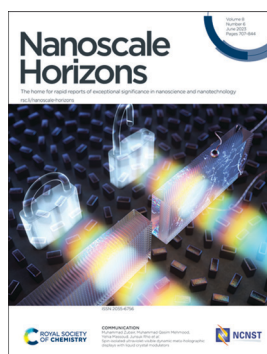
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ISSN 2055-6756 CODEN NHAOAW 8(6) 707-844 (2023)



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See Alain Wuethrich, Matt Trau, Jing Wang *et al.*, pp. 746–758. Image reproduced by permission of Jing Wang from *Nanoscale Horiz.*, 2023, 8, 746.



### Inside cover

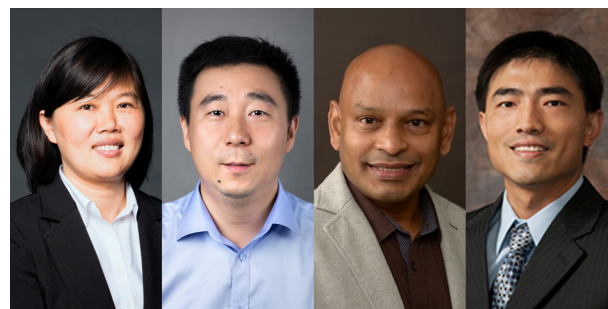
See Muhammad Zubair, Muhammad Qasim Mehmood, Yehia Massoud, Junsuk Rho *et al.*, pp. 759–766. Image reproduced by permission of Prof. Dr Yehia Massoud from *Nanoscale Horiz.*, 2023, 8, 759.

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### Introduction to new horizons in materials for energy conversion, optics and electronics

Jinlan Wang,\* Yuanjian Zhang,\* Seeram Ramakrishna\* and Guihua Yu\*

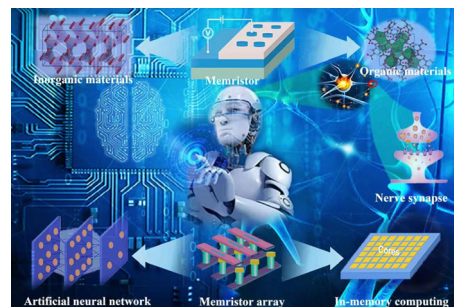


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### Memristor-based neural networks: a bridge from device to artificial intelligence

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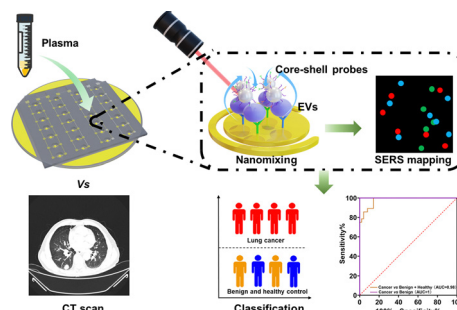
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### Plasma extracellular vesicle phenotyping for the differentiation of early-stage lung cancer and benign lung diseases

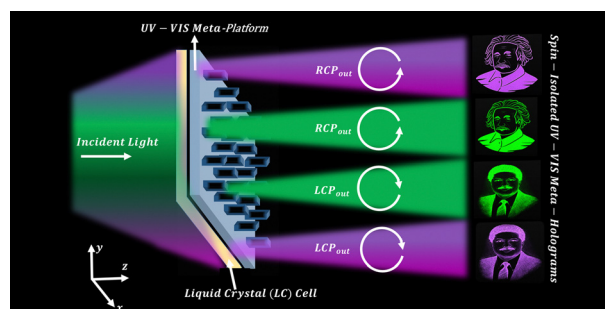
Liwen Yuan, Yanpin Chen, Longfeng Ke, Quan Zhou, Jiayou Chen, Min Fan, Alain Wuethrich,\* Matt Trau\* and Jing Wang\*



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### Spin-isolated ultraviolet-visible dynamic meta-holographic displays with liquid crystal modulators

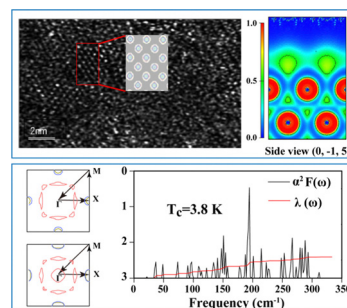
Aqsa Asad, Joohoon Kim, Hafiz Saad Khaliq, Nasir Mahmood, Jehan Akbar, Muhammad Tariq Saeed Chani, Yeseul Kim, Dongmin Jeon, Muhammad Zubair,\* Muhammad Qasim Mehmood,\* Yehia Massoud\* and Junsuk Rho\*



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### A novel two-dimensional superconducting Ti layer: density functional theory and electron-beam irradiation

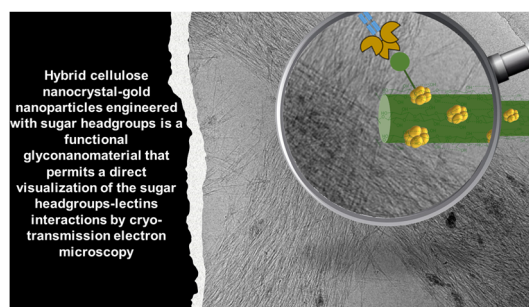
Xiao-Min Zhang, Jiawei Tang, Jing Zhang, Jin Yu, Litao Sun, Zhiqing Yang,\* Ke Xia\* and Weiwei Sun\*



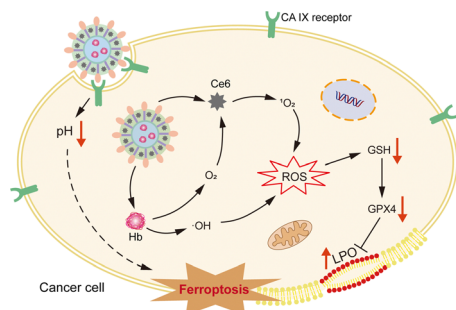
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### Simple engineering of hybrid cellulose nanocrystal-gold nanoparticles results in a functional glyconanomaterial with biomolecular recognition properties

Giacomo Biagiotti, Gianluca Toniolo, Martin Albino, Mirko Severi, Patrizia Andreatti, Marcello Marelli, Hana Kokot, Giancarlo Tria, Annalisa Guerri, Claudio Sangregorio, Javier Rojo, Debora Berti, Marco Marradi, Stefano Cicchi, Iztok Urbančič, Yvette van Kooyk, Fabrizio Chiodo\* and Barbara Richichi\*



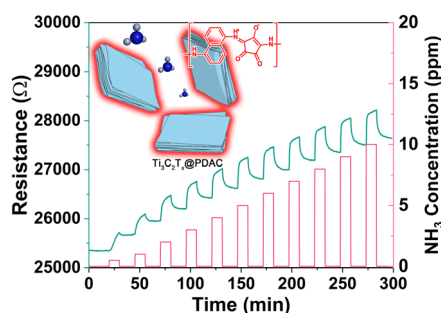
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### Carbonic anhydrase IX-targeted nanovesicles potentiated ferroptosis by remodeling the intracellular environment for synergetic cancer therapy

Nian Liu, Qian Lin, Wenbao Zuo, Weibin Chen, Shan Huang, Yinshu Han, Xing-Jie Liang,\* Xuan Zhu\* and Shuaidong Huo\*

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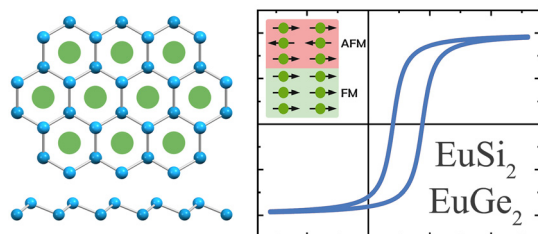


### An ultra-sensitive NH<sub>3</sub> gas sensor enabled by an ion-in-conjugated polycroconaine/Ti<sub>3</sub>C<sub>2</sub>T<sub>x</sub> core-shell composite

Jin Zhou, Seyed Hossein Hosseini Shokouh, Linfan Cui, Topias Järvinen, Olli Pitkänen, Zhong-Peng Lv\* and Krisztian Kordas\*

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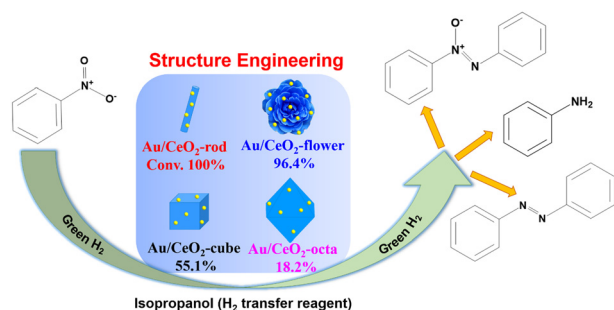
### exchange bias state



### Intrinsic exchange bias state in silicene and germanene materials EuX<sub>2</sub>

Dmitry V. Averyanov, Ivan S. Sokolov, Alexander N. Taldenkov, Oleg E. Parfenov, Igor A. Karateev, Oleg A. Kondratev, Andrey M. Tokmachev and Vyacheslav G. Storchak\*

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Junqing Ye, Meizan Jing, Yu Liang, Wenjin Li, Wanting Zhao, Jianying Huang, Yuekun Lai,\* Weiyu Song, Jian Liu and Jian Sun\*





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## A light-operated integrated DNA walker–origami system beyond bridge burning

Xiao Rui Liu, Iong Ying Loh, Winna Siti, Hon Lin Too, Tommy Anderson and Zhisong Wang\*

