# Nanoscale Horizons

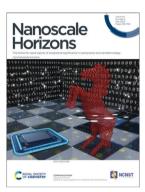
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#### **EDITORIAL**

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# Nanoscale Horizons 2022 Outstanding Paper Award

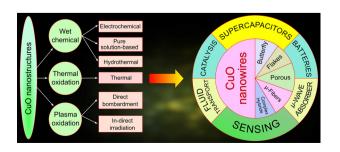


# **REVIEW**

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Recent innovations in the technology and applications of low-dimensional CuO nanostructures for sensing, energy and catalysis

Oleg Baranov,\* Kateryna Bazaka, Thierry Belmonte, Claudia Riccardi, H. Eduardo Roman, Mandhakini Mohandas, Shuyan Xu, Uroš Cvelbar and Igor Levchenko\*



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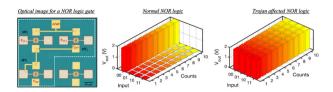
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# Hardware Trojans based on two-dimensional memtransistors

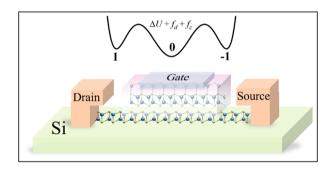
Akshav Wali, Harikrishnan Ravichandran and Saptarshi Das\*



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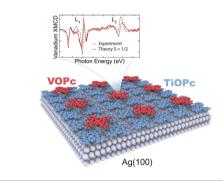
Changming Ke, Yihao Hu and Shi Liu\*



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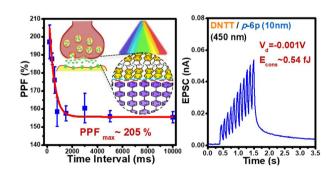
Kyungju Noh, Luciano Colazzo,\* Corina Urdaniz, Jaehyun Lee, Denis Krylov, Parul Devi, Andrin Doll, Andreas J. Heinrich, Christoph Wolf,\* Fabio Donati\* and Yujeong Bae\*



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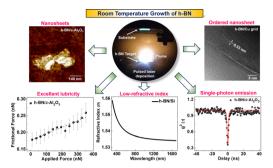
Molecular template growth of organic heterojunctions to tailor visual neuroplasticity for high performance phototransistors with ultralow energy consumption

Ender Ercan,\* Chih-Chien Hung, Guan-Syuan Li, Yun-Fang Yang, Yan-Cheng Lin and Wen-Chang Chen\*



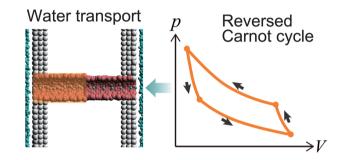
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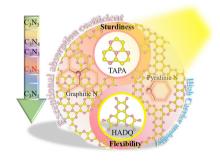
Abhijit Biswas,\* Rishi Maiti, Frank Lee, Cecilia Y. Chen, Tao Li, Anand B. Puthirath, Sathvik Ajay Iyengar, Chenxi Li, Xiang Zhang, Harikishan Kannan, Tia Gray, Md Abid Shahriar Rahman Saadi, Jacob Elkins, A. Glen Birdwell, Mahesh R. Neupane, Pankaj B. Shah, Dmitry A. Ruzmetov, Tony G. Ivanov, Robert Vajtai, Yuji Zhao, Alexander L. Gaeta, \* Manoj Tripathi, \* Alan Dalton and Pulickel M. Ajayan\*



# Wetting hysteresis induces effective unidirectional water transport through a fluctuating nanochannel

Noriyoshi Arai,\* Eiji Yamamoto, Takahiro Koishi, Yoshinori Hirano, Kenji Yasuoka and Toshikazu Ebisuzaki

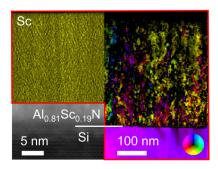
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Xinyong Cai, Jiao Chen, Hongyan Wang,\* Yuxiang Ni, Yuanzheng Chen\* and R. Bruce King\*

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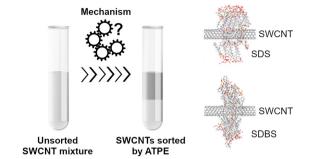
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Pranjala Tiwari,\* Błażej Podleśny, Maciej Krzywiecki, Karolina Z. Milowska and Dawid Janas\*



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Transition metal single atom-optimized g-C<sub>3</sub>N<sub>4</sub> for the highly selective electrosynthesis of H<sub>2</sub>O<sub>2</sub> under neutral electrolytes

Hongcen Yang, Fei Ma, Niandi Lu, Shuhao Tian, Guo Liu, Ying Wang, Zhixia Wang, Di Wang, Kun Tao, Hong Zhang\* and Shanglong Peng\*

