

Nanoscale Horizons

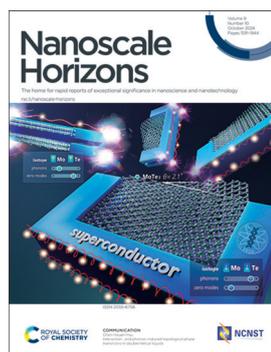
The home for rapid reports of exceptional significance in nanoscience and nanotechnology

rsc.li/nanoscale-horizons

The Royal Society of Chemistry is the world's leading chemistry community. Through our high impact journals and publications we connect the world with the chemical sciences and invest the profits back into the chemistry community.

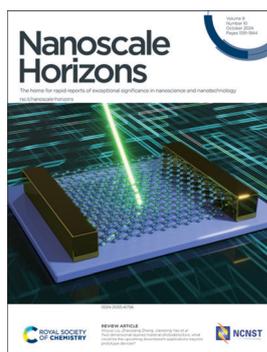
IN THIS ISSUE

ISSN 2055-6756 CODEN NHAOAW 9(10) 1591-1844 (2024)



Cover

See Chen-Hsuan Hsu, pp. 1725–1731. Image reproduced by permission of Kai-Li Chien (SHO SHO Design Ltd.) from *Nanoscale Horiz.*, 2024, 9, 1725.



Inside cover

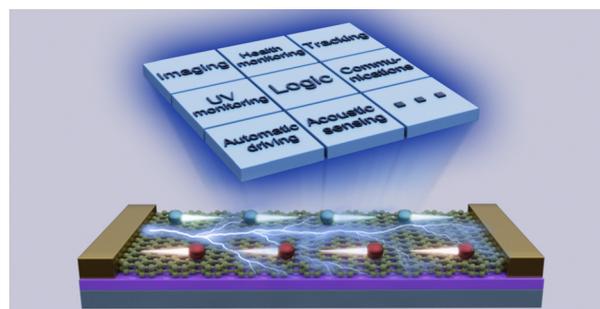
See Xinyue Liu, Zhaoqiang Zheng, Jiandong Yao *et al.*, pp. 1599–1629. Image reproduced by permission of Jiandong Yao from *Nanoscale Horiz.*, 2024, 9, 1599.

REVIEWS

1599

Two-dimensional layered material photodetectors: what could be the upcoming downstream applications beyond prototype devices?

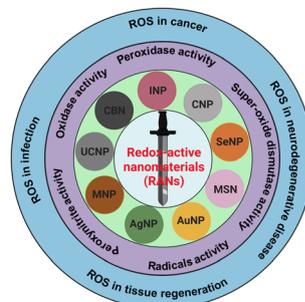
Yuhang Ma, Huanrong Liang, Xinyi Guan, Shuhua Xu, Meiling Tao, Xinyue Liu,* Zhaoqiang Zheng,* Jiandong Yao* and Guowei Yang



1630

Oxidative stress modulating nanomaterials and their biochemical roles in nanomedicine

Kapil D. Patel,* Zalike Keskin-Erdogan, Prasad Sawadkar, Nik Syahirah Aliaa Nik Sharifulden, Mark Robert Shannon, Madhumita Patel, Lady Barrios Silva, Rajkumar Patel, David Y. S. Chau, Jonathan C. Knowles, Adam W. Perriman* and Hae-Won Kim*



**GOLD
OPEN
ACCESS**

EES Solar

**Exceptional research on solar
energy and photovoltaics**



Part of the EES family

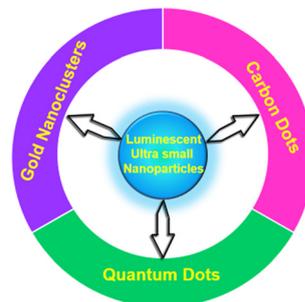
**Join
in** | Publish with us
rsc.li/EESSolar

REVIEWS

1683

Luminescent carbon dots versus quantum dots and gold nanoclusters as sensors

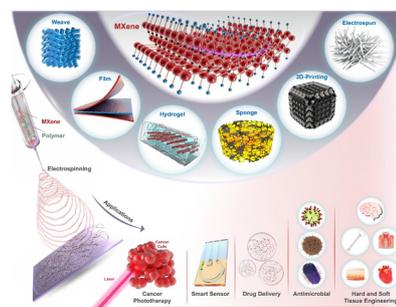
J. S. Anjali Devi,* S. Madanan Anju, G. M. Lekha, R. S. Aparna and Sony George*



1703

Synergistic integration of MXene nanostructures into electrospun fibers for advanced biomedical engineering applications

Xiaobo Li, Shan Wang, Minyan Zheng, Zhanying Ma, Yan Chen, Lingjuan Deng, Weixia Xu, Guang Fan,* Sanaz Khademolqorani, Seyedeh Nooshin Banitaba and Ahmed I. Osman*

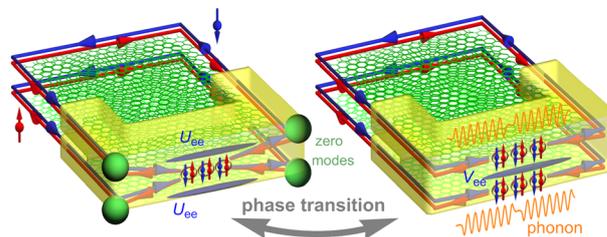


COMMUNICATIONS

1725

Interaction- and phonon-induced topological phase transitions in double helical liquids

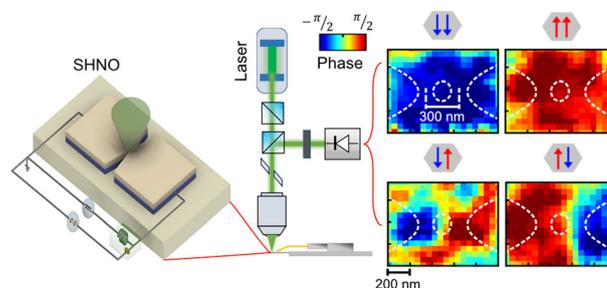
Chen-Hsuan Hsu



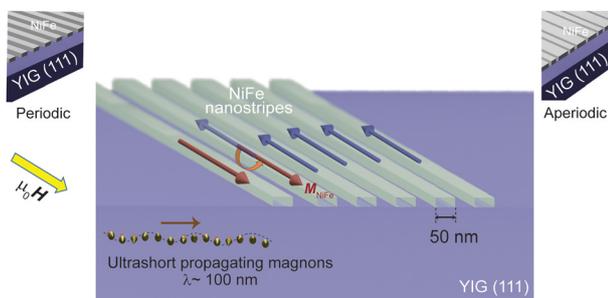
1732

Phase and frequency-resolved microscopy of operating spin Hall nano-oscillator arrays

A. Alemán, A. A. Awad,* S. Muralidhar, R. Khymyn, A. Kumar, A. Houshang, D. Hanstorp and J. Åkerman



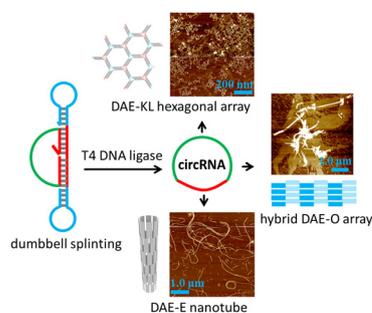
1740



Reversing the magnetization of 50-nm-wide ferromagnets by ultrashort magnons in thin-film yttrium iron garnet

Shreyas S. Jogalekar, Korbinian Baumgaertl, Andrea Mucchietto, Francis Berger and Dirk Grundler*

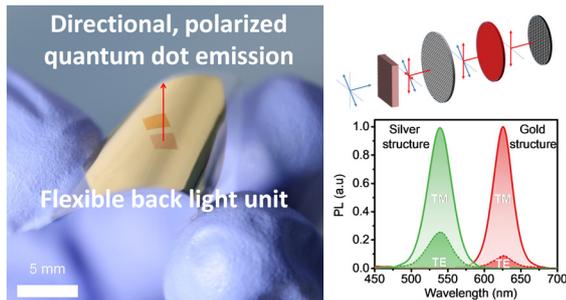
1749



Circular RNA oligonucleotides: enzymatic synthesis and scaffolding for nanoconstruction

Shijie Li, Yanxin Chu, Xin Guo, Chengde Mao* and Shou-Jun Xiao*

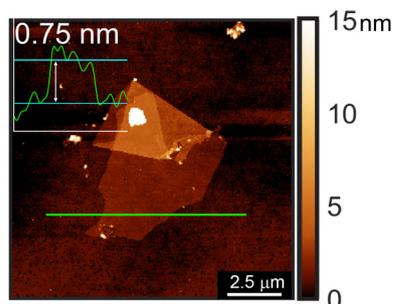
1756



Strongly polarized color conversion of isotropic colloidal quantum dots coupled to fano resonances

Kivanc Gungor, Onur Erdem, Burak Guzel Turk, Emre Unal, Shinae Jun, Eunjoo Jang and Hilmi Volkan Demir*

1766



Freestanding monolayer CrOCl through chemical exfoliation

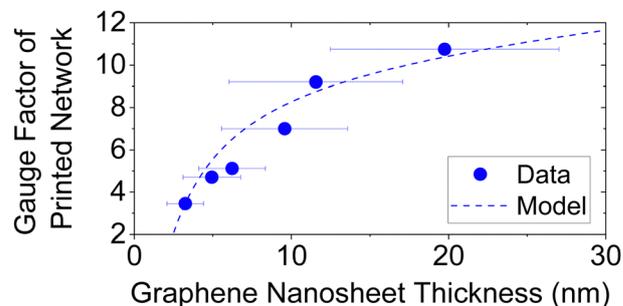
Graciela Villalpando, Jiaze Xie, Nitish Mathur, Guangming Cheng, Nan Yao and Leslie M. Schoop*



1774

Quantifying the effect of nanosheet dimensions on the piezoresistive response of printed graphene nanosheet networks

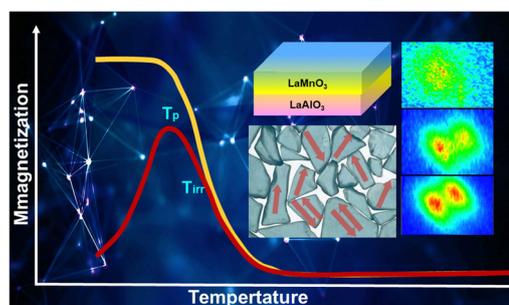
Eoin Caffrey, Jose M. Munuera, Tian Carey and Jonathan N. Coleman*



1785

Epitaxial strain manipulation of the cluster glass state in LaMnO₃ films

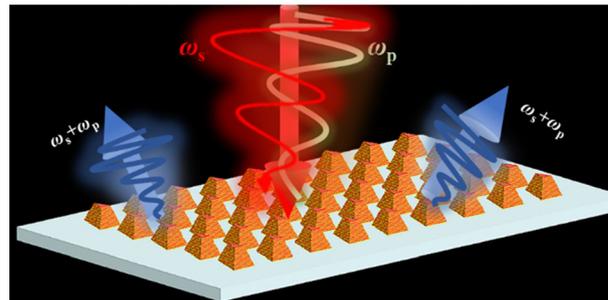
Yongmei Liang, Haonan Lian, Yaqiang Li, Dan Liu, Baochen Han,* Jian Qi* and Dongxiao Ma*



1792

Ultrabroadband nonlinear enhancement of mid-infrared frequency upconversion in hyperbolic metamaterials

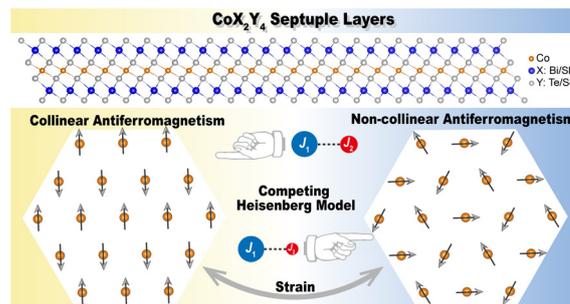
Congfu Zhang, Zhaolu Wang, Changchang Zhang, Wenjuan Shi, Wei Li, Ke Gao and Hongjun Liu*



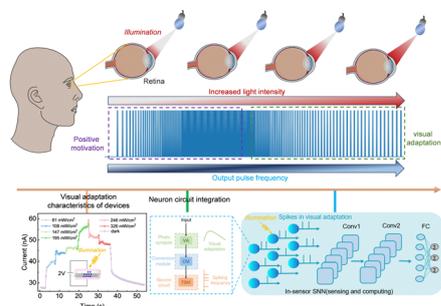
1804

CoX₂Y₄: a family of two-dimensional magnets with versatile magnetic order

Ziyuan Zhao,* Zhao Liu, Mark T. Edmonds and Nikhil V. Medhekar*



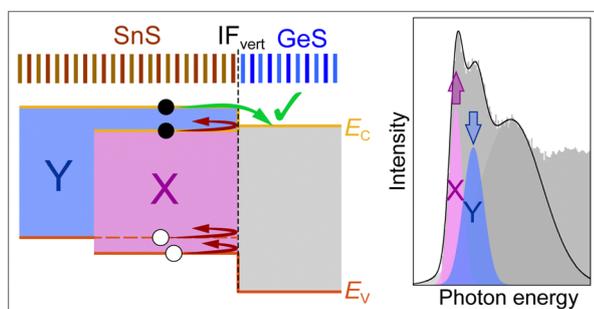
1813



Harnessing a silicon carbide nanowire photoelectric synaptic device for novel visual adaptation spiking neural networks

Zhe Feng, Shuai Yuan, Jianxun Zou, Zuheng Wu,*
Xing Li, Wenbin Guo, Su Tan, Haochen Wang, Yang Hao,
Hao Ruan, Zhihao Lin, Zuyu Xu, Yunlai Zhu,
Guodong Wei* and Yuehua Dai*

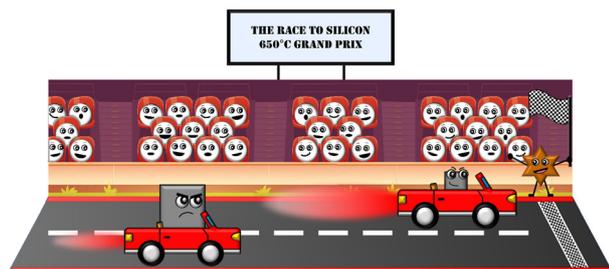
1823



Valley-selective carrier transfer in SnS-based van der Waals heterostructures

E. Sutter,* H.-P. Komsa and P. Sutter*

1833



Unlocking the secrets of porous silicon formation: insights into magnesiothermic reduction mechanism using *in situ* powder X-ray diffraction studies

Sarah A. Martell, Maximilian Yan, Robert H. Coridan,
Kevin H. Stone, Siddharth V. Patwardhan* and
Mita Dasog*

