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See Qionghua Zhou, Wan-Jian Yin, Weiqiao Deng, Jinlan Wang *et al.*, pp. 1651–1660. Image reproduced by permission of Jinlan Wang from *Mater. Horiz.*, 2023, **10**, 1651. The robot in the image was created by DALL-E from Open AI.

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EDITORIAL

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***Materials Horizons* 2022 Outstanding Paper Award**

Materials Horizons
Outstanding Paper Award

REVIEWS

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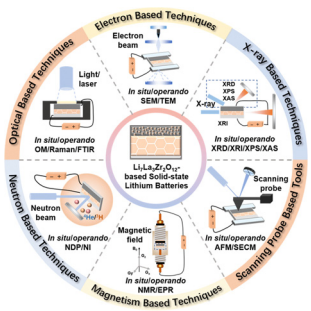
Recent advances in *in situ* and *operando* characterization techniques for $Li_7La_3Zr_2O_{12}$-based solid-state lithium batteries

Lei Zhang, Huilin Fan, Yuzhen Dang, Quanchao Zhuang,* Hamidreza Arandiyan,* Yuan Wang, Ningyan Cheng, Hongyu Sun, H. Hugo Pérez Garza, Runguo Zheng, Zhiyuan Wang, Sajjad S. Mofarah, Pramod Koshy, Suresh K. Bhargava, Yanhua Cui, Zongping Shao and Yanguo Liu*



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REVIEWS

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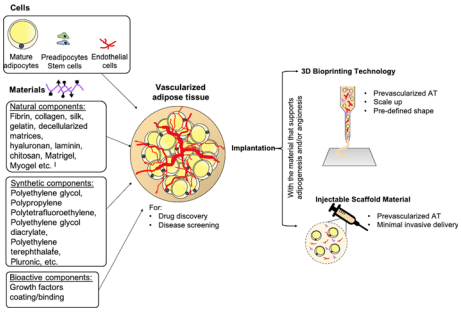
Biofabrication of vascularized adipose tissues and their biomedical applications

Aslı Sena Karanfil, Fiona Louis and Michiya Matsusaki*



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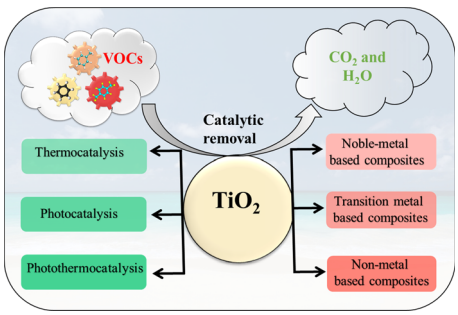
TiO_2-based catalytic systems for the treatment of airborne aromatic hydrocarbons

Aadil Bathla, Sherif A. Younis, Ki-Hyun Kim* and Xiaowei Li



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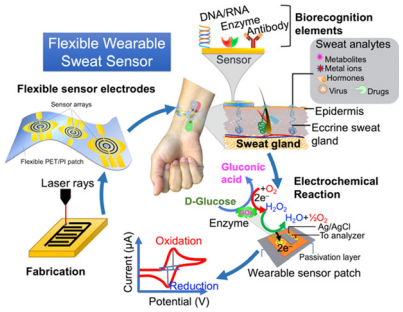
Graphene-interfaced flexible and stretchable micro–nano electrodes: from fabrication to sweat glucose detection

Anjum Qureshi* and Javed H. Niazi*



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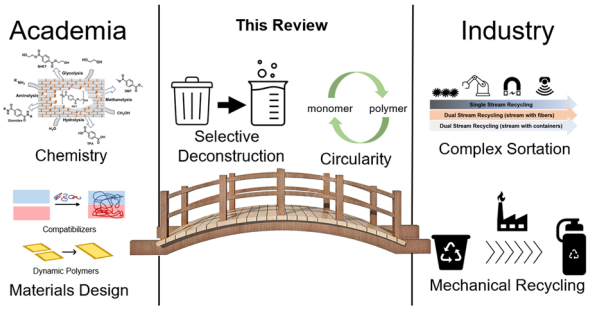
Recent development of end-of-life strategies for plastic in industry and academia: bridging their gap for future deployment

Jackie Zheng, Md Arifuzzaman, Xiaomin Tang, Xi Chelsea Chen* and Tomonori Saito*



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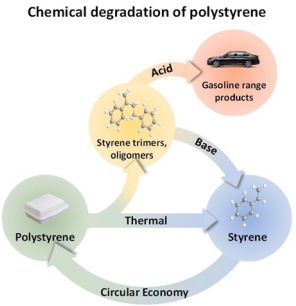

Catalytic routes towards polystyrene recycling

Carlos Marquez,* Cristina Martin, Noemi Linares and Dirk De Vos*

FOCUS

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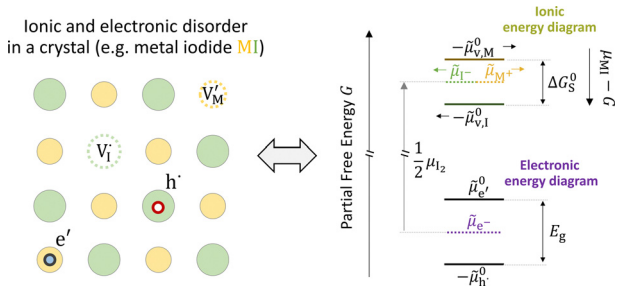

Ionic and electronic energy diagrams for hybrid perovskite solar cells

Davide Moia* and Joachim Maier

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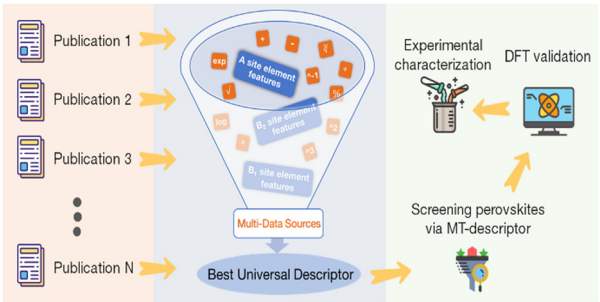

Distilling universal activity descriptors for perovskite catalysts from multiple data sources *via* multi-task symbolic regression

Zhilong Song, Xiao Wang, Fangting Liu, Qionghua Zhou,* Wan-Jian Yin,* Hao Wu, Weiqiao Deng* and Jinlan Wang*

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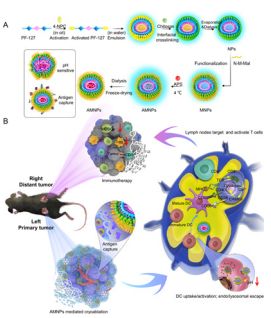

Autologous-cancer-cryoablation-mediated nanovaccine augments systematic immunotherapy

Zhongyang Yu, Dawei Wang, Yuxia Qi, Jing Liu, Tian Zhou,* Wei Rao* and Kaiwen Hu*

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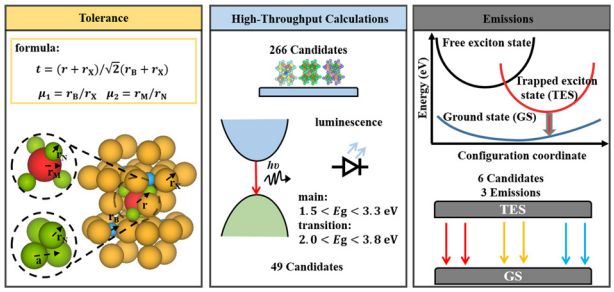
Eco-friendly inorganic molecular novel antiperovskites for light-emitting application

Jiawei Luo, Qun Ji, Yilei Wu, Xinying Gao, Jinlan Wang and Ming-Gang Ju*



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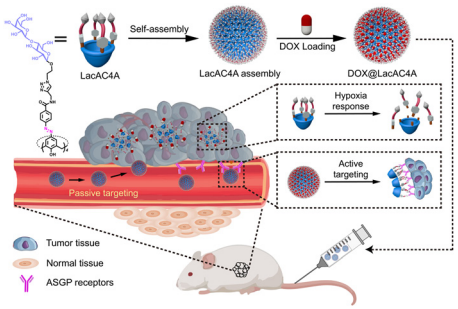
Triple targeting host–guest drug delivery system based on lactose-modified azocalix[4]arene for tumor ablation

Juan-Juan Li, Rui-Xue Rong, Yan Yang, Zong-Ying Hu, Bing Hu, Ying-Ying Zhao, Hua-Bin Li, Xin-Yue Hu,* Ke-Rang Wang* and Dong-Sheng Guo*



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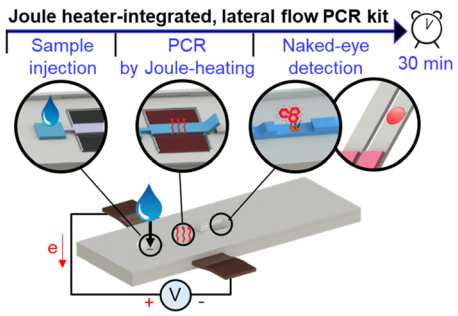
Rapid PCR kit: lateral flow paper strip with Joule heater for SARS-CoV-2 detection

Kihyeun Kim, Bobin Lee, Jun Hyeok Park, Ji-Ho Park, Ki Joong Lee, Tae Joon Kwak, Taehwang Son, Yong-Beom Shin, Hyungsoon Im and Min-Gon Kim*



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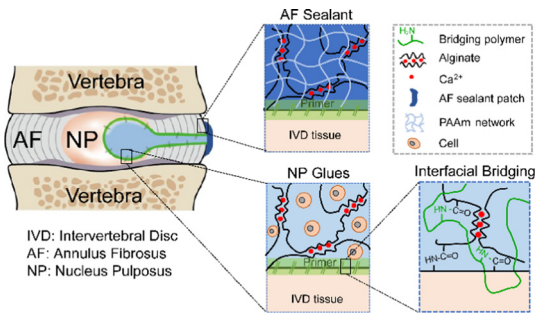
Tissue-mimetic hybrid bioadhesives for intervertebral disc repair

Xuan Li, Yin Liu, Li Li, Ran Huo, Farshid Ghezelbash, Zhenwei Ma, Guangyu Bao, Shiyu Liu, Zhen Yang, Michael H. Weber, Nicole Y. K. Li-Jessen, Lisbet Haglund* and Jianyu Li*



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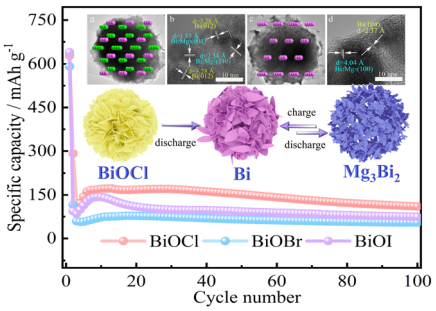

Hierarchical BiOCl flowerlike microspheres *via* a room-temperature solid-state chemical reaction as a new anode for rechargeable magnesium-ion batteries

Caixia Zhu, Yakun Tang, Lang Liu,* Xiang Bai, Youyuan Xu, Yana Nuli and Jiulin Wang

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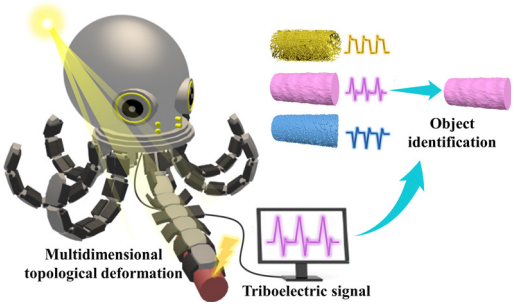

Scalable multi-dimensional topological deformation actuators for active object identification

Tianyi Ji, Wei Gong,* Jie Zhou, Yangmin Jing, Ruizhe Xing, Bingjie Zhu, Kerui Li, Chengyi Hou,* Qinghong Zhang, Yaogang Li* and Hongzhi Wang

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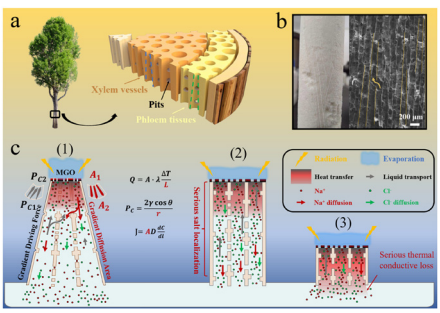

Designing a solar interfacial evaporator based on tree structures for great coordination of water transport and salt rejection

Zhicheng Xu, Xueqin Ran, Zhijie Zhang,* Mingfeng Zhong, Da Wang, Pengping Li and Zhihong Fan

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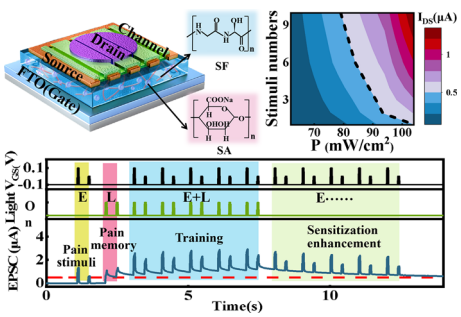

Vertical 0.6 V sub-10 nm oxide-homojunction transistor gated by a silk fibroin/sodium alginate crosslinking hydrogel for pain-sensitization enhancement emulation

Jingya Su, Yanran Li, Dingdong Xie and Jie Jiang*

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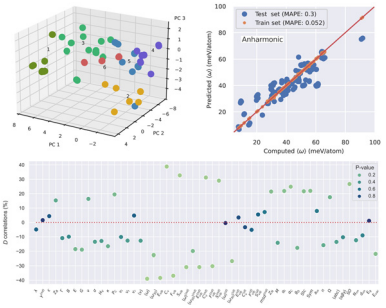
Universal ion-transport descriptors and classes of inorganic solid-state electrolytes

Cibrán López, Agustí Emperador, Edgardo Saucedo, Riccardo Rurali and Claudio Cazorla*



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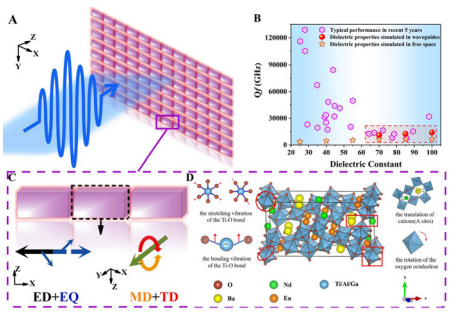
Perfect absorption based on a ceramic anapole metamaterial

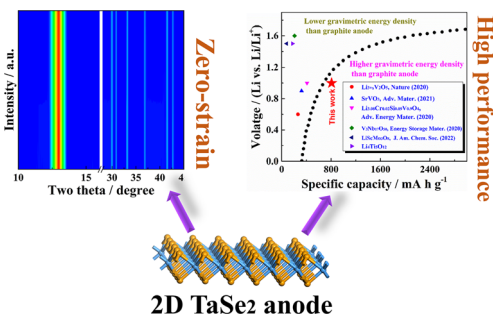
Weijia Luo, Xubin Wang, Xingcong Chen, Siyong Zheng, Shiqiang Zhao, Yongzheng Wen, Lingxia Li* and Ji Zhou*



1780

2D $TaSe_2$ as a zero-strain and high-performance anode material for Li^+ storage

Fei Wang and Jian Mao*



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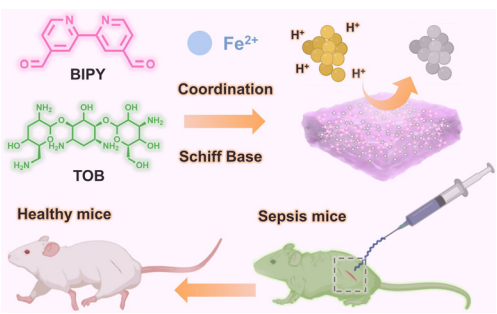
An injectable all-small-molecule dynamic metallogel for suppressing sepsis

Haotian Li, Jianhua Zhang, Hongrui Xue, Lin Li, Xun Liu, Lei Yang, Zhipeng Gu, Yiyun Cheng, Yiwen Li* and Quan Huang*



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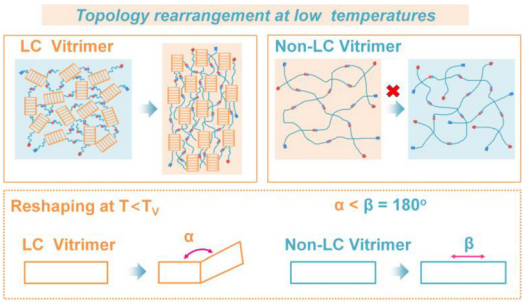
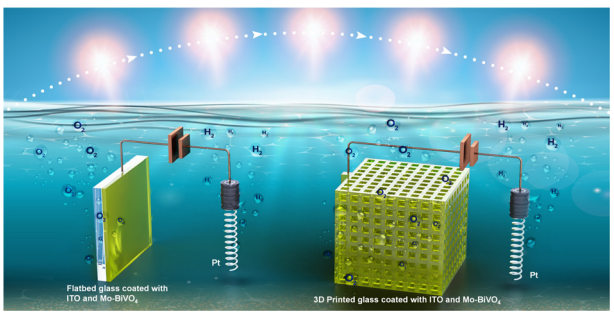


Fabricating liquid crystal vitrimer actuators far below the normal processing temperature

Yanjin Yao, Enjian He, Hongtu Xu, Yawen Liu, Yen Wei and Yan Ji*

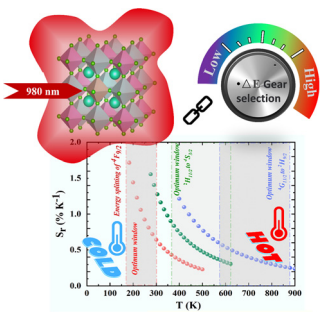
1806



Angle-independent solar radiation capture by 3D printed lattice structures for efficient photoelectrochemical water splitting

Chidanand Hegde, Tamar Rosental, Joel Ming Rui Tan, Shlomo Magdassi* and Lydia Helena Wong*

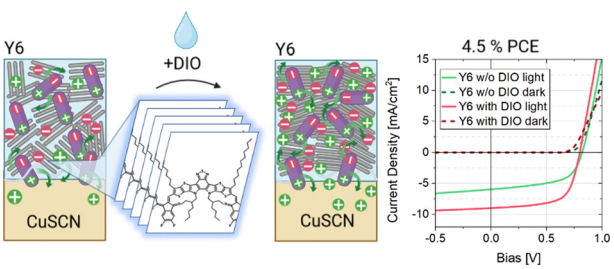
1816



Targeted high-precision up-converting thermometer platform over multiple temperature zones with Er^{3+}

Zhihui Rao, Zhilin Li, Xiujian Zhao and Xiao Gong*

1825



What is special about Y6; the working mechanism of neat Y6 organic solar cells

Elifnaz Sağlamkaya, Artem Musiienko, Mohammad Saeed Shadabroo, Bowen Sun, Sreelakshmi Chandrabose, Oleksandra Shargaieva, Giulia Lo Gerfo M., Niek F. van Hulst and Safa Shoaee*

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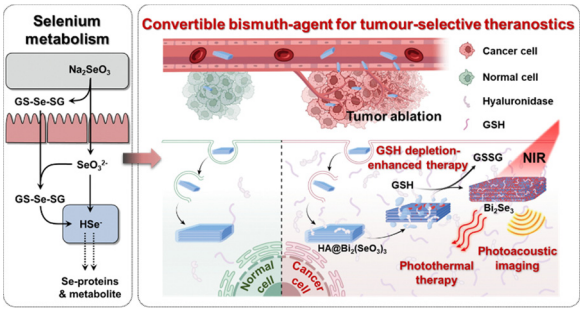
Learning from human metabolism for nanomedicine: a convertible bismuth-agent for tumour-selective theranostics

Qiannan Cao, Cuihong Yang, Yuan Yao, Bin Li, Jinjian Liu, Zhipeng Cao, Jianfeng Liu and Meng Xiao*



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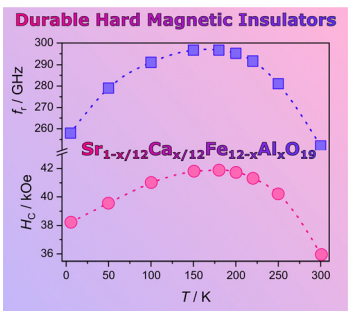
Hard ferrite magnetic insulators revealing giant coercivity and sub-terahertz natural ferromagnetic resonance at 5–300 K

Evgeny A. Gorbachev,* Ekaterina S. Kozlyakova, Liudmila N. Alyabyeva, Asmaa Ahmed and Lev A. Trusov*



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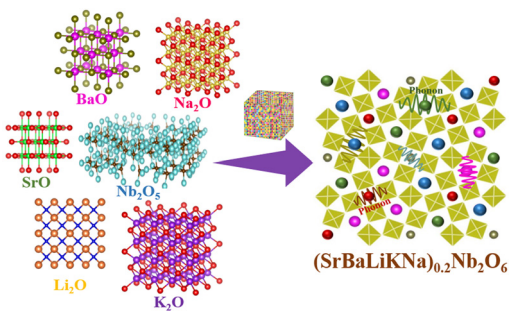
Designing rare earth-free high entropy oxides with a tungsten bronze structure for thermoelectric applications

Subhra Sourav Jana and Tanmoy Maiti*



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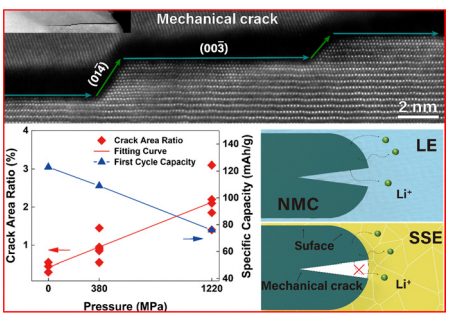
Assessing the roles of mechanical cracks in Ni-rich layered cathodes in the capacity decay of liquid and solid-state batteries

Xuedong Zhang, Zaifa Wang, Xiaomei Li, Yong Su, Zhangran Ye, Liqiang Zhang,* Qiao Huang,* Yongfu Tang* and Jianyu Huang*



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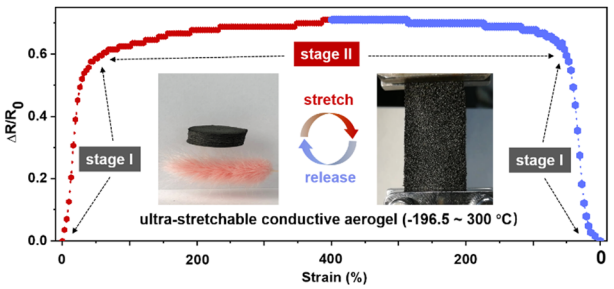
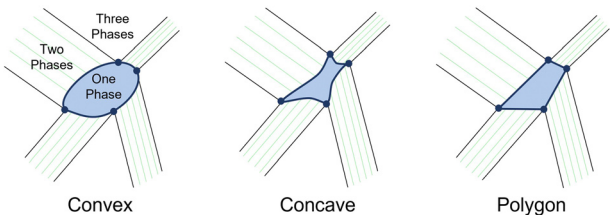


Ultra-stretchable graphene aerogels at ultralow temperatures

Guohui Yang, Xiaofang Zhang, Ruijia Wang, Xu Liu, Jianming Zhang, Lu Zong* and Hongsheng Yang*

1875



Shapes of phases in isothermal phase diagrams: what is wrong with the Thermo-Calc logo

Adetoye H. Adekoya, Shashwat Anand and G. Jeffrey Snyder*

CORRECTION

1884

Correction: Tuning the arrangement of lamellar nanostructures: achieving the dual function of physically killing bacteria and promoting osteogenesis

Shi Mo, Kaiwei Tang, Qing Liao, Lingxia Xie, Yuzheng Wu, Guomin Wang, Qingdong Ruan, Ang Gao, Yuanliang Lv, Kaiyong Cai, Liping Tong,* Zhengwei Wu,* Paul K Chu and Huaiyu Wang*