

# Nanoscale Advances

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### Cover

See Takashi Shirai *et al.*, pp. 3034–3040. Image reproduced by permission of Takashi Shirai from *Nanoscale Adv.*, 2024, 6, 3034.



### Inside cover

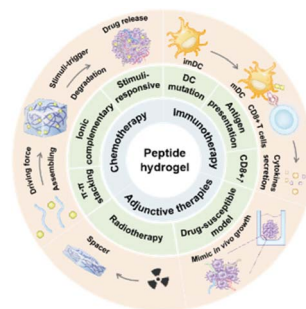
See Daniel Jiráček *et al.*, pp. 3041–3051. Image reproduced by permission of Daniel Jiráček – IKEM from *Nanoscale Adv.*, 2024, 6, 3041.

## REVIEWS

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### Applications of self-assembled peptide hydrogels in anti-tumor therapy

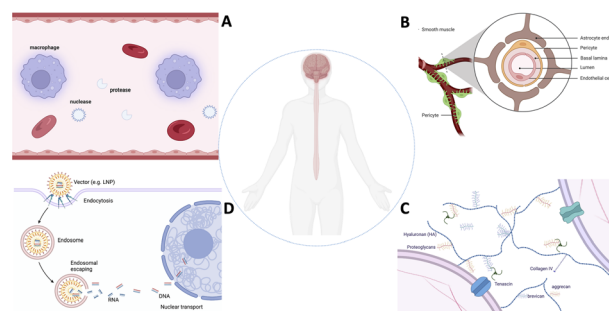
Yue Hua and Yang Shen\*



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### Strategies for enhanced gene delivery to the central nervous system

Zhenghong Gao\*



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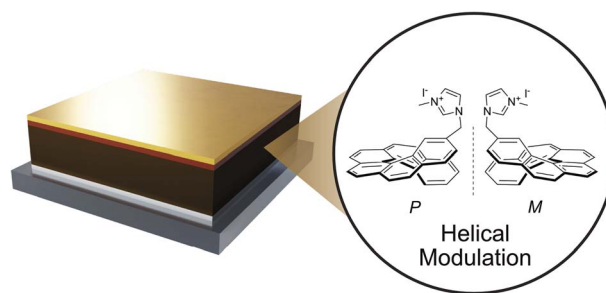


## COMMUNICATION

3029

**Helical interfacial modulation for perovskite photovoltaics**

Ghewa AlSabeih, Masaud Almalki, Sitthichok Kasemthaveechok, Marco A. Ruiz-Preciado, Hong Zhang, Nicolas Vanthuyne, Paul Zimmermann, Daphne M. Dekker, Felix Thomas Eickemeyer, Alexander Hinderhofer, Frank Schreiber, Shaik M. Zakeeruddin, Bruno Ehrler, Jeanne Crassous,\* Jovana V. Milić\* and Michael Grätzel\*

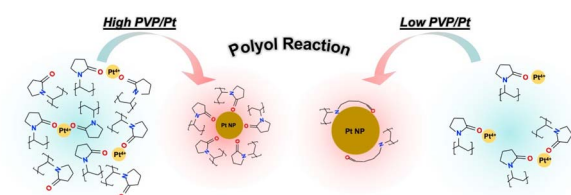


## PAPERS

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**Role of polyvinylpyrrolidone in the polyol synthesis of platinum nanoparticles**

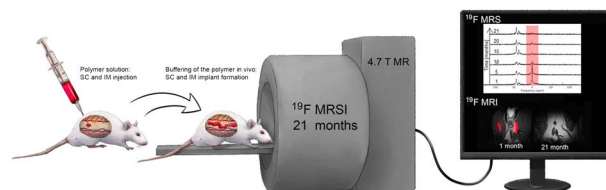
Yunzi Xin, Taku Nagata, Kunihiro Kato, Yuping Xu and Takashi Shirai\*



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**Long-term *in vivo* dissolution of thermo- and pH-responsive,  $^{19}\text{F}$  magnetic resonance-traceable and injectable polymer implants**

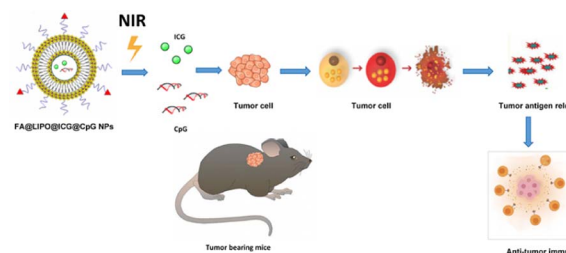
Natalia Jirát-Ziółkowska, Martin Vít, Ondřej Groborz, Kristýna Kolouchová, David Červený, Ondřej Sedláček and Daniel Jirák\*



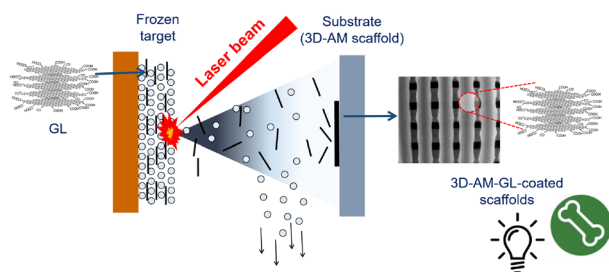
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**Targeted nanotherapy platform mediated tumor-infiltrating CD8<sup>+</sup> T cell immune function effects for collaborative anti-tumor photothermal immunotherapy for cervical cancer**

Lei Wang, Jianhuan Chen, Cailing Ma\* and Chuanshan Zhang\*



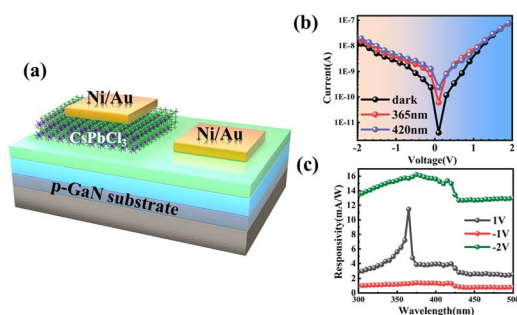
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### An integrated design strategy coupling additive manufacturing and matrix-assisted pulsed laser evaporation (MAPLE) towards the development of a new concept 3D scaffold with improved properties for tissue regeneration

Teresa Russo, Valentina Peluso, Antonio Gloria,<sup>\*</sup>  
Valentina Gargiulo, Michela Alfe<sup>\*</sup> and Giovanni Ausanio<sup>\*</sup>

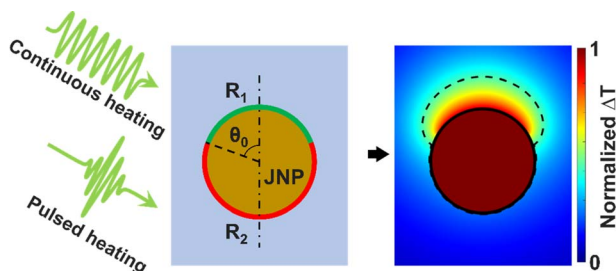
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### Visible–ultraviolet dual-band photodetectors based on an all-inorganic CsPbCl<sub>3</sub>/p-GaN heterostructure

Bingjie Ye, Boxiang Wang, Yan Gu, Jiarui Guo,  
Xiumei Zhang, Weiying Qian, Xiangyang Zhang,  
Guofeng Yang,<sup>\*</sup> Zhixing Gan<sup>\*</sup> and Yushen Liu<sup>\*</sup>

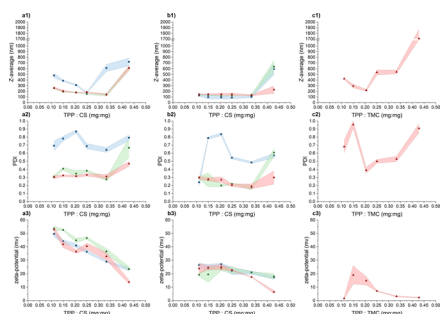
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### Regulating nanoscale directional heat transfer with Janus nanoparticles

Chen Xie, Blake A. Wilson and Zhenpeng Qin<sup>\*</sup>

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### Exploring the antimicrobial potential of chitosan nanoparticles: synthesis, characterization and impact on *Pseudomonas aeruginosa* virulence factors

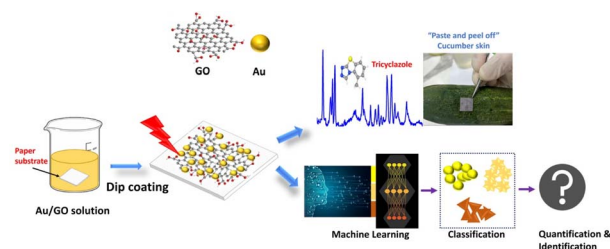
Dominik Maršík,<sup>\*</sup> Olga Mařátková, Anna Kolková  
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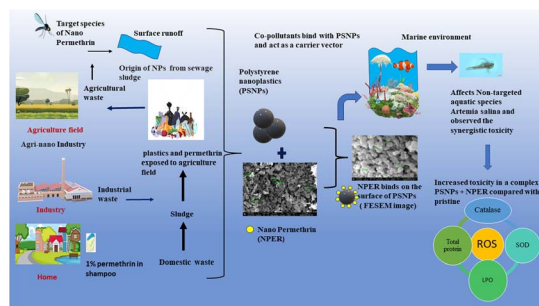
Ha Anh Nguyen,<sup>\*</sup> Quan Doan Mai, Dao Thi Nguyet Nga, Minh Khanh Pham, Quoc Khanh Nguyen, Trong Hiep Do, Van Thien Luong, Vu Dinh Lam and Anh-Tuan Le<sup>\*</sup>



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### Synergistic impact of nanoplastics and nanopesticides on *Artemia salina* and toxicity analysis

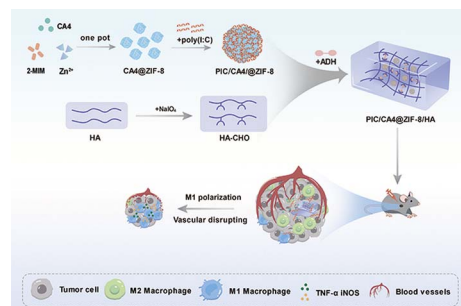
Mahalakshmi Kamalakannan, Durgalakshmi Rajendran, John Thomas and Natarajan Chandrasekaran<sup>\*</sup>



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### Enhancing anti-angiogenic immunotherapy for melanoma through injectable metal–organic framework hydrogel co-delivery of combretastatin A4 and poly(I:C)

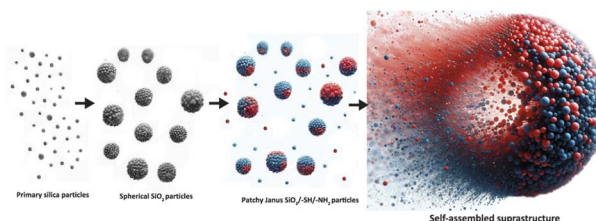
Xufeng Xiao, Yunuo Zheng, Tianlong Wang, Xiaoqing Zhang, Gaochuan Fang, Zhonghai Zhang, Zhengkui Zhang<sup>\*</sup> and Jiaojiao Zhao<sup>\*</sup>



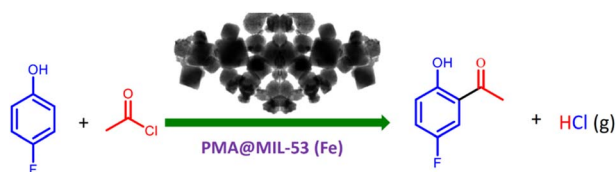
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### Insights into emulsion synthesis of self-assembled suprastructures formed by Janus silica particles with $-NH_2/-SH$ surface groups

Inna V. Melnyk,<sup>\*</sup> Veronika Tomina, Halyna Yankovych, Hristo Kolev, Erika Dutkova, Troy C. Breijaert, Vadim G. Kessler and Gulaim A. Seisenbaeva<sup>\*</sup>



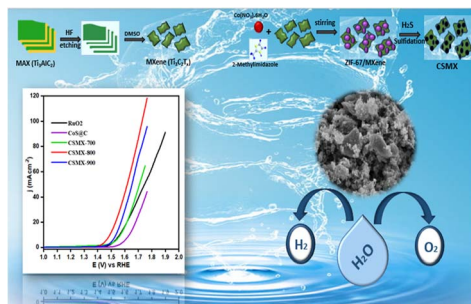
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### RSM optimization of Friedel–Crafts C-acylation of *para*-fluorophenol over the catalysis of phosphomolybdic acid encapsulated in MIL-53 (Fe) metal organic frameworks

Ahmad Nikseresht,<sup>\*</sup> Reza Mehravar and Masoud Mohammadi

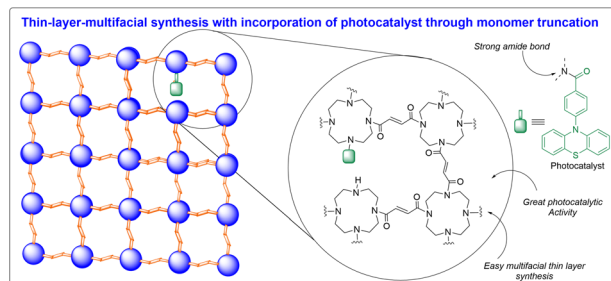
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### MXene boosted MOF-derived cobalt sulfide/carbon nanocomposites as efficient bifunctional electrocatalysts for OER and HER

Komal Farooq, Maida Murtaza, Zhuxian Yang, Amir Waseem, Yanqiu Zhu and Yongde Xia<sup>\*</sup>

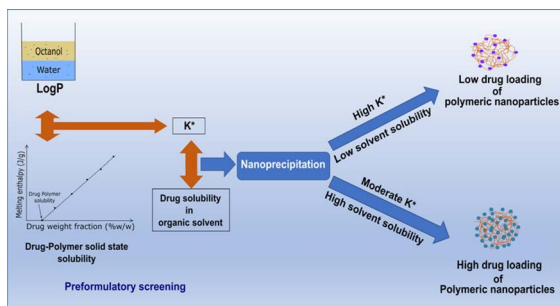
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### Photocatalytic functionalization of thin-layer membranes using a monomer truncation strategy

Jorge Vega-Fernández, Vanesa Marcos, Jesús Álvarez, María José Capitán, Alberto Fraile<sup>\*</sup> and José Alemán<sup>\*</sup>

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### Using a systematic and quantitative approach to generate new insights into drug loading of PLGA nanoparticles using nanoprecipitation

Sherif I. Hamdallah, Randa Zoqlam, Bin Yang, Andrew Campbell, Rebecca Booth, Jonathan Booth, Peter Belton and Sheng Qi<sup>\*</sup>



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## Efficient cationic dye removal from water through *Arachis hypogaea* skin-derived carbon nanospheres: a rapid and sustainable approach

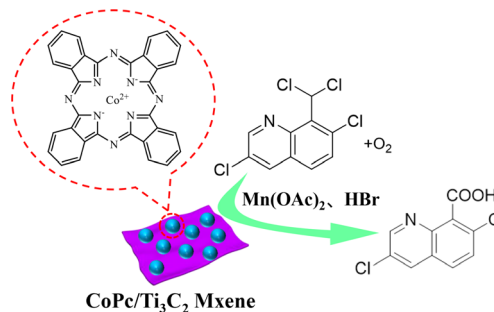
Aman Sharma, Jyothi Mannekote Shivanna, Abdullah N. Alodhayb and Gurumurthy Hegde\*



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## Cobalt phthalocyanine (CoPc) anchored on $\text{Ti}_3\text{C}_2$ MXene nanosheets for highly efficient selective catalytic oxidation

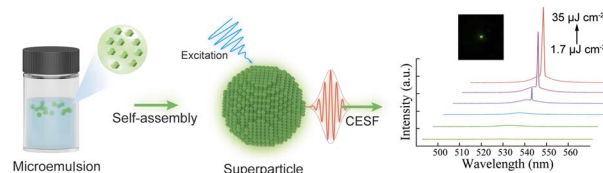
Simeng Zhu, Peng Liu and Xinlin Hong\*



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## Low-threshold cavity-enhanced superfluorescence in polyhedral quantum dot superparticles

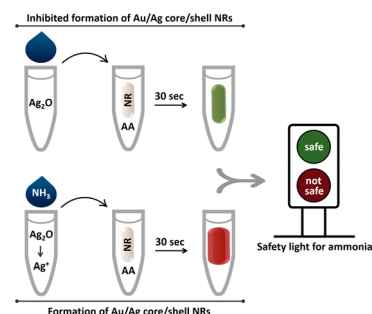
Xinjie Li, Linqi Chen,\* Danqun Mao, Jingzhou Li, Wei Xie, Hongxing Dong\* and Long Zhang\*



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Elahe Ghorbanian, Forough Ghasemi,\* Kamran Rezaei Tavabe and Hamid Reza Alizadeh Sabet



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Jaya Verma\* and Deepak Kumar

