Nanoscale

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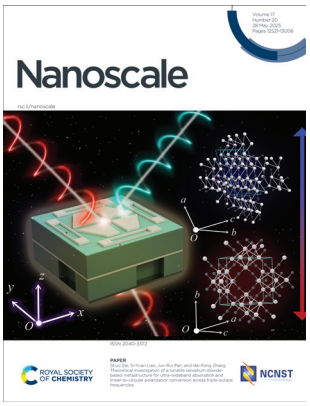
ISSN 2040-3372 CODEN NANOHL 17(20) 12521–13006 (2025)



Cover
See Shuo Dai, Si-Yuan Liao, Jun-Rui Pan, and Hai-Feng Zhang, pp. 12673–12683.

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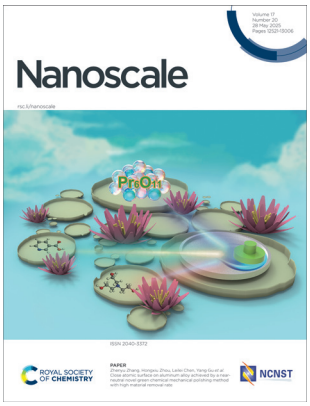

Inside cover
See Zhenyu Zhang, Hongxiu Zhou, Leilei Chen, Yang Gu *et al.*, pp. 12684–12694.

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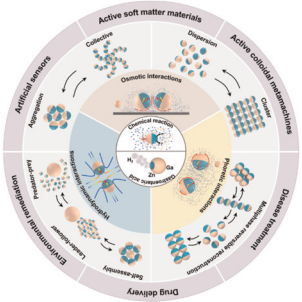
REVIEWS

12534

Chemically active colloidal superstructures

Yang Huang, Changcheng Ke, Celi Lou and Qiang He*



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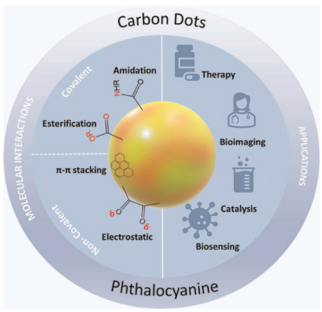
Carbon dot–phthalocyanine hybrids: synergistic effects that boost their multifaceted applications

Carla I. M. Santos,* Ana Catarina Almeida, Ana L. F. Martins, Ana R. Araújo, Leandro M. O. Lourenço,* Gil Gonçalves* and M. Graça P. M. S. Neves*



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REVIEWS

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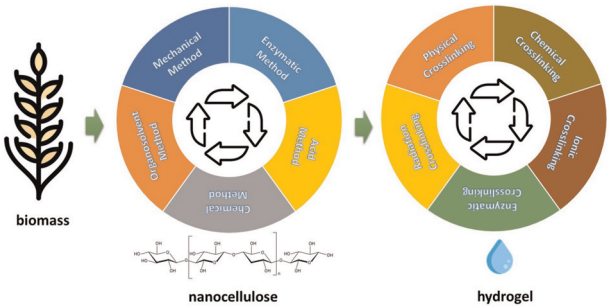
Nanocellulose hydrogels from agricultural wastes: methods, properties, and application prospects

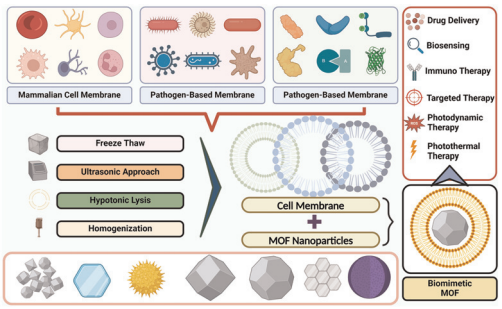
Yerkebulan Altynov, Kalampyr Bexeitova, Meruyert Nazhipkyzy, Seitkhan Azat, Aishuak Konarov, Damira Rakhman, Nurettin Sahiner and Kenes Kudaibergenov*



12620

Metal–organic frameworks: a biomimetic odyssey in cancer theranostics

Soji Soman, Sanjay Kulkarni, Jahnavi Kulkarni, Namdev Dhas, Amrita Arup Roy, Rahul Pokale, Anoushka Mukharya and Srinivas Mutalik*



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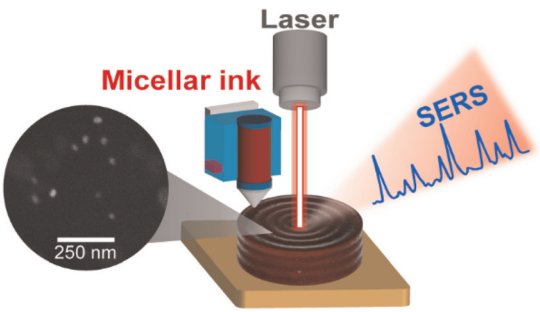
3D-printed ultrasensitive SERS substrates *via* photocrosslinked Pluronic F127 micellar hydrogel with citrate-reduced metallic nanoparticles

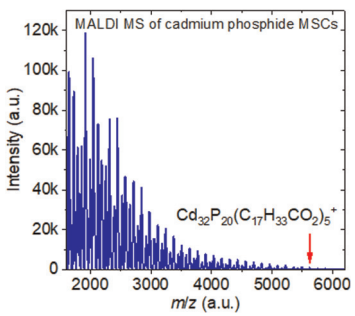
Billy D. Chinchin-Piñan, Mateus P. Bomediano, Marcelo G. de Oliveira and Javier E. L. Villa*



12654

Cd_3P_2 QDs emitting in the SWIR through overgrowth of cadmium phosphide clusters

Nickie Tiwari, Qiaoli Liang and Igor Fedin*



COMMUNICATIONS

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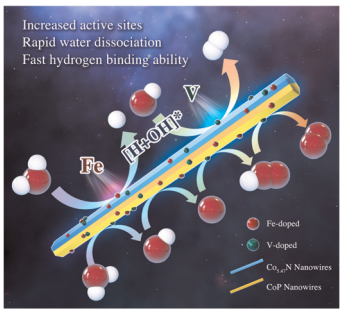

Rational design of mixed-valence cobalt-based nanowires *via* simultaneous vanadium and iron modulations for enhanced alkaline electrochemical water splitting

Weijiang Gan, Selvam Mathi, Jingting Li, Adewale K. Ipadeola, Jianqiu Deng, Aboubakr M. Abdullah, M.-Sadeeq Balogun* and Zhongmin Wang*

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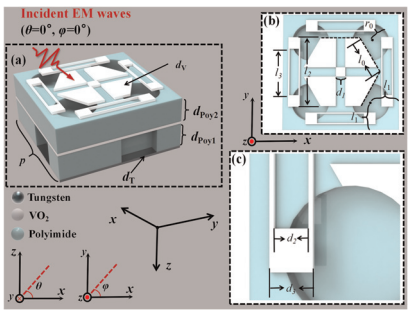
12673



Theoretical investigation of a tunable vanadium dioxide-based metastructure for ultra-wideband absorption and linear-to-circular polarization conversion across triple-octave frequencies

Shuo Dai, Si-Yuan Liao, Jun-Rui Pan and Hai-Feng Zhang*

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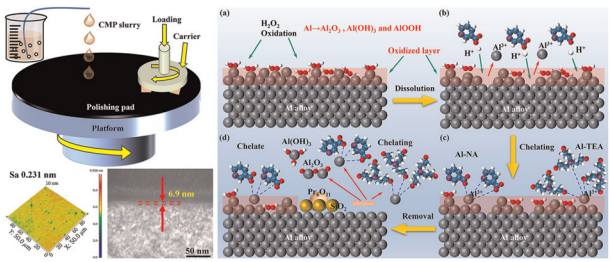

Close atomic surface on aluminum alloy achieved by a near-neutral novel green chemical mechanical polishing method with high material removal rate

Xiaofei Lei, Zhenyu Zhang,* Hongxiu Zhou,* Leilei Chen,* Xingqiao Deng, Weiting Liu, Xuye Zhuang, Mengyi Wang and Yang Gu*

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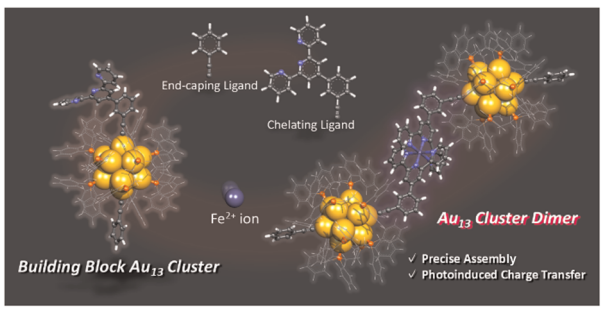

Synthesis of Au_{13}-based building block clusters for programmed dimer formation and Au_{13} cluster dimer photoexcitation properties

Taiga Kosaka, Yoshiki Niihori,* Tokuhisa Kawawaki and Yuichi Negishi*

PAPERS

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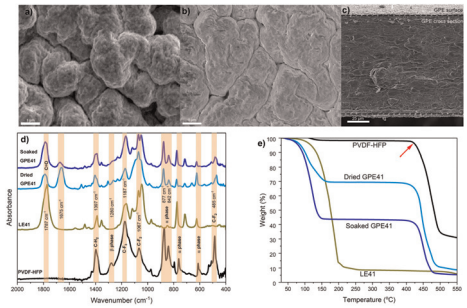
Gel polymer electrolytes for room-temperature sodium sulfur batteries

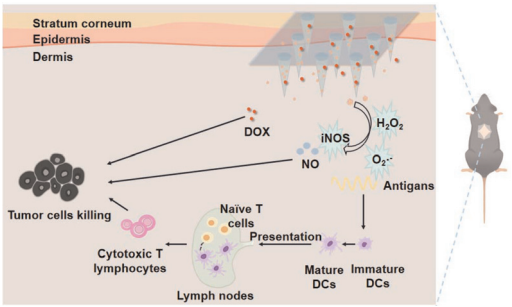
Hao Nguyen, Jiahan Li, Raju Vadthya and Shuya Wei*



12716

Microneedle-based nanomotor cancer vaccine combined with chemotherapy for synergistic melanoma therapy

Yu Chen, Nian Liu, Shufan Feng, Wenhui Xu, Chun Mao* and Mimi Wan*



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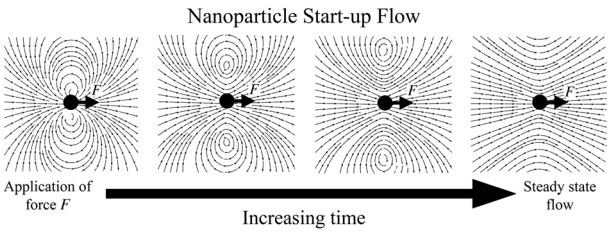
Start-up flow of nanoscale particles and their periodic arrays: insights from fundamental solutions of the unsteady Stokes equations

Christian Aponte-Rivera



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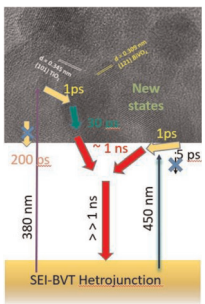
Enhanced mid-visible light absorption and long-lived charge carriers in an electronically and structurally integrated $BiVO_4$–TiO_2 photoanode for efficient artificial photosynthesis applications

Vikas Kumar Jha, Kranti N. Salgaonkar, Avishek Saha,* Chinnakonda S. Gopinath* and E. Siva Subramaniam Iyer*



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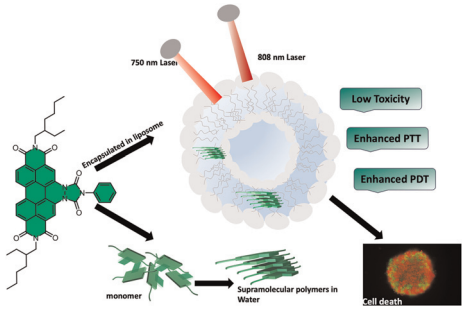

Self-assembly induced dual-wavelength active photothermal and photodynamic therapies using a near-infrared triimide dye nanoformulations

Dasari Srideep, Sajmina Khatun, Chandra Lekha Putta, Sai Rachana Pramatha, Aravind Kumar Rengan* and Kotagiri Venkata Rao*

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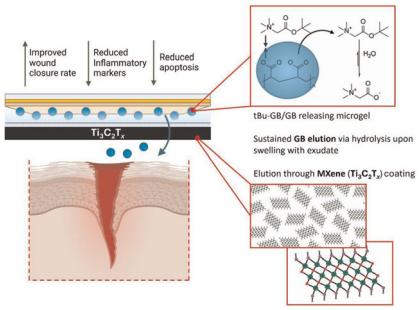

$Ti_3C_2T_x$ MXene augments osmo-adaptive repression of the inflammatory stress response for improved wound repair

Sertan Kiziloz, Emma J. Ward, Daniel Hawthorne, Avick Sinha, Grace Cooksley, Dipak Sarker, Cyril Crua, Andrew Lloyd, Christopher E. Shuck, Yury Gogotsi and Susan Sandeman*

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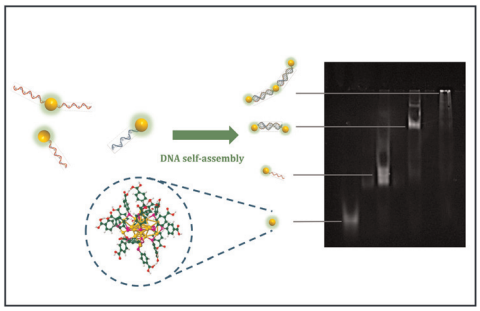

Designing atomically precise gold nanocluster architectures with DNA-guided self-assembly and biofunctionalization approaches

Abdallah Alhalabi, Christine Saint-Pierre, Elisabetta Boeri-Erba, Pierre-Henri Elchinger, Harinderbir Kaur, Didier Gasparutto* and Xavier Le Guével*

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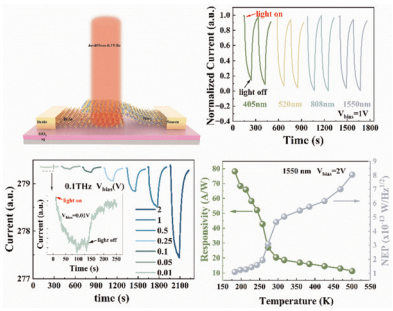

Bi_2Se_3–$PtSe_2$ heterostructure ultrabroadband UV-to-THz negative photoconductive photodetectors with wide-temperature-range operation

Tianyu Shu, Chao Tan, Guohua Hu, Siyuan Luo and Zegao Wang*

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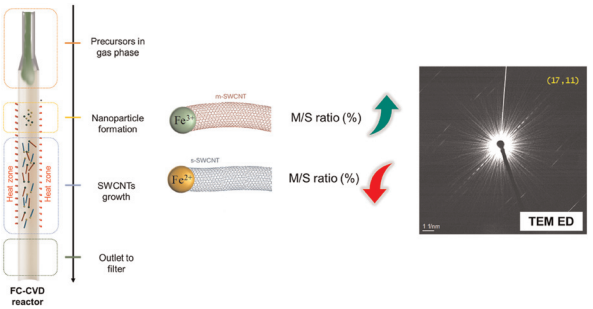
The impact of ferrocenium as a catalyst on the chiral distribution of single-walled carbon nanotubes in floating-catalyst chemical vapor deposition synthesis

Anastasios Karakassides,* Hirotaka Inoue, Peng Liu, Zhenyu Xu, Ghulam Yasin, Hua Jiang and Esko I. Kauppinen*



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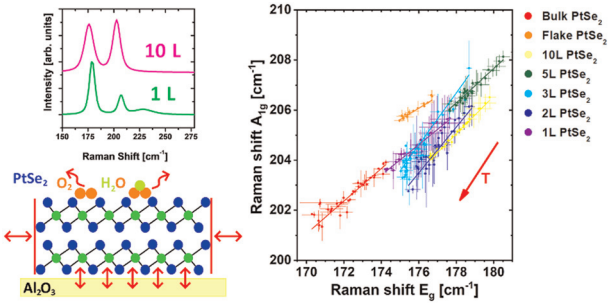
Thermally induced correlation effects studied by Raman spectroscopy in $PtSe_2/Al_2O_3$ systems

Jan Raczyński,* Jakub Nowaczyk, Ewelina Nowak, Semir El-Ahmar, Edyta Chłopocka, Mirosław Szybowicz and Wojciech Koczorowski*



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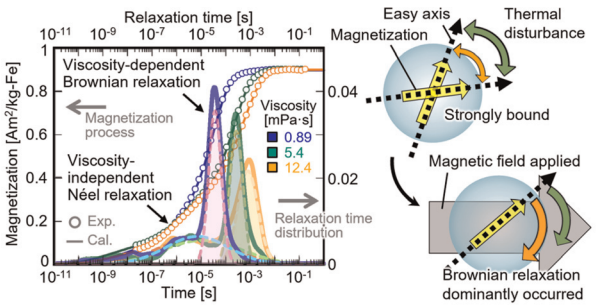
Effects of Néel and Brownian relaxations on dynamic magnetization empirically characterized in single-core and multicore structures of magnetic nanoparticles

Haruki Goto, Masato Futagawa, Yasushi Takemura and Satoshi Ota*



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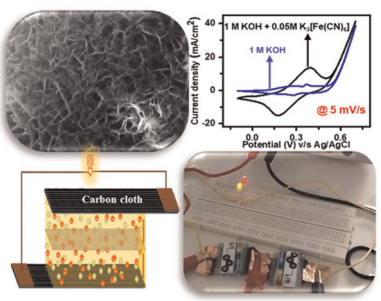
Energy harvesting from $NiCo_2S_4/Co_xS_y$ nanoflakes: a two-fold strategy by morphology control and using redox-additive electrolytes

Love Bansal, Deb Kumar Rath, Shivansh Raj Pandey, Bhumika Sahu, Nikita Ahlawat, Subin Kaladi Chondath* and Rajesh Kumar*



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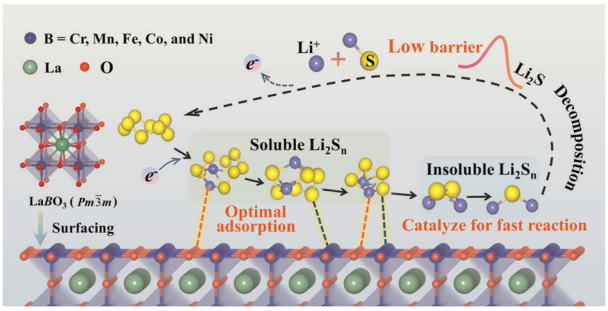

Atomic insights into the electrocatalytic properties of $LaBO_3$ perovskite oxides for lithium–sulfur battery performance

Lirong Zhang, Qi Jin, Fengfeng Han, Zhiguo Zhang, Xitian Zhang* and Lili Wu*

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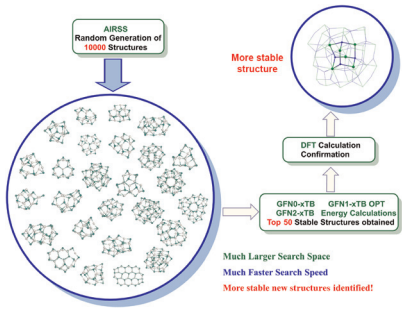

Structure prediction for nanoscale magic-size CdSe clusters from a new efficient structure-searching strategy

Gaolu Zhang, Xin Wang* and Dingguo Xu*

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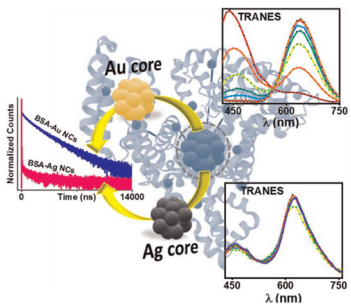

Revisiting protein protected gold and silver nanoclusters: Excited state dynamics and long-lived emission

Shagun Sharma, Subhadeep Das, Kush Kaushik, Abhijit Patra* and Chayan Kanti Nandi*

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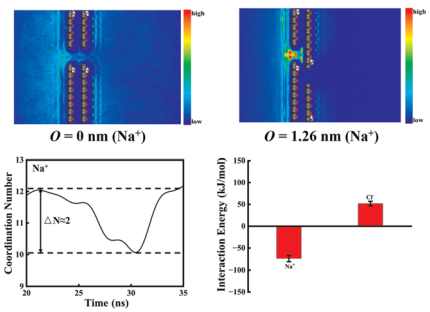

Effects of structural parameters on the desalination performance of a multilayer stacked graphene oxide membrane: insights from molecular dynamics simulation

Chen Chen and Li Zhang*

PAPERS

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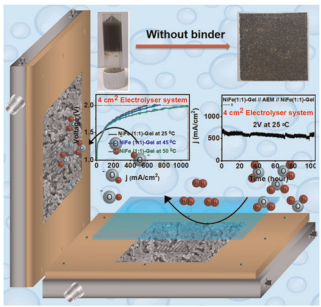
Bio-inspired nickel–iron-based organogel: an efficient and stable bifunctional electrocatalyst for overall water splitting at high current density

Debasish Ghosh, Subhransu Maharana and Asit Baran Panda*



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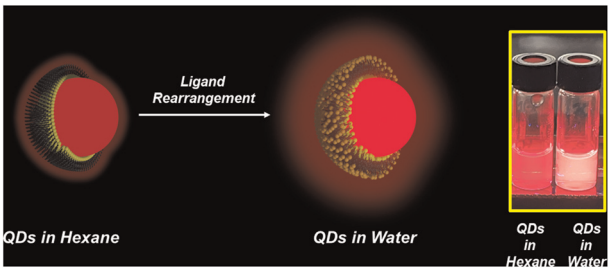
Oleic acid rearrangement enables facile transfer of red-emitting quantum dots from hexane into water with enhanced fluorescence

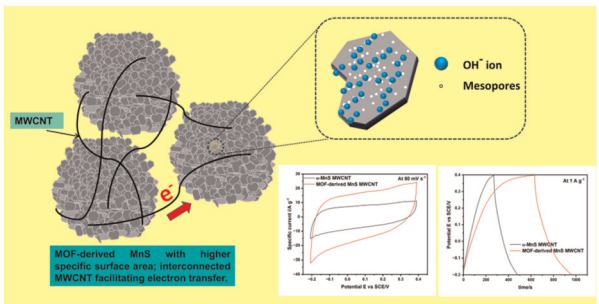
Tohid Baradaran Kayyal, Jasper Tucker, Chanda M. Lowrance, Lekan Ajiboye, Matthew Pelton, Joseph W. Bennett and Marie-Christine Daniel*



12911

A metal–organic framework-derived α-MnS/MWCNT composite as a promising pseudocapacitive material for a flexible quasi-solid-state asymmetric supercapacitor device

Mithun Sarkar, V. R. Siddhartha Sairam Kalahasti and Prakash C. Ghosh*



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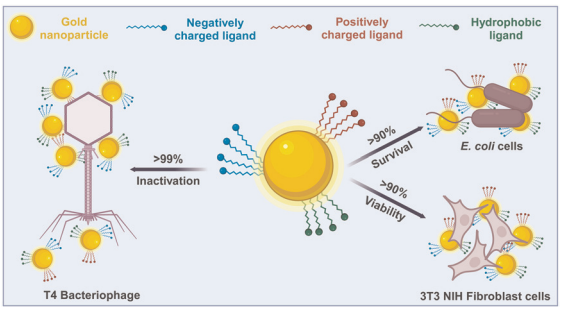
Engineering hydrophobic and electrostatic interactions for selective inactivation of bacteriophages by mixed-ligand nanoparticles

Sada Raza,* Pumza Mente, Bartosz Kamiński, Bartłomiej Bończak, Hossein Maleki-Ghaleh, Visesh Vignesh and Jan Paczesny*



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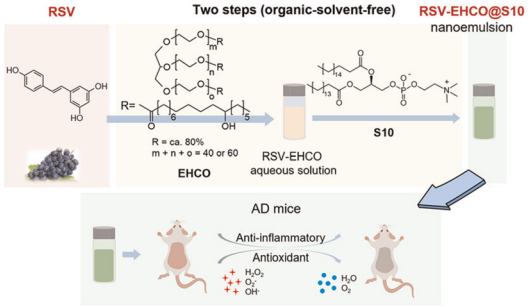

Efficacy of a resveratrol nanoformulation prepared using a facile solvent-free method

Jiahao Li, Yushuang Wei,* Qin Lai, Xiangyang Li, Yu Wang, Xun Wang, Yinghua Chen, Hong Liu, Kai Yang* and Bing Yuan*

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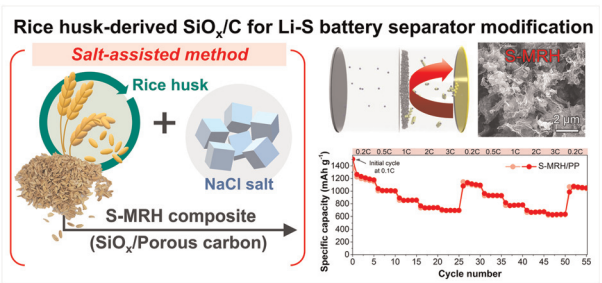

A rice husk-derived SiO_x/C composite for effective lithium-sulfur battery separator modification

Youngseul Cho, Se Hun Lee, Yongyeol Park, Tianyu Chen, Kyu Sang Lee, Su Eun Park, Ok Sung Jeon, Dongpyo Hong, Young Pyo Jeon, Young Joon Yoo,* Sang Yoon Park* and Yuanzhe Piao*

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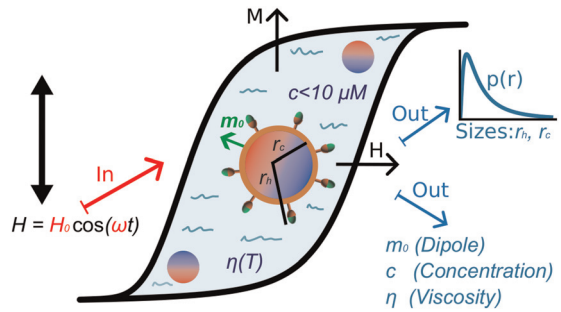

Fast and accurate characterization of bioconjugated particles and solvent properties by a general nonlinear analytical relationship for the AC magnetic hysteresis area

Pablo Palacios-Alonso,* Mohamed M. Shams, Sedef Ozel-Okcu, Elena Sanz-de Diego, F. J. Teran, Rafael Delgado-Buscalioni,* Pablo Palacios-Alonso,* Mohamed M. Shams, Sedef Ozel-Okcu, Elena Sanz-de Diego, F. J. Teran and Rafael Delgado-Buscalioni*

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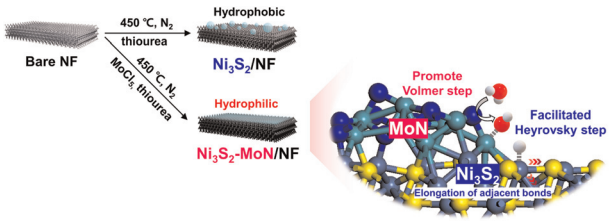

A hydrophilic Ni_3S_2–MoN heterostructure on Ni foam (Ni_3S_2–MoN/NF) as an electrocatalyst for enhanced hydrogen evolution in alkaline media

Yeji Choi, Jae Young Kim,* Hyung-Kyu Lim* and Duck Hyun Youn*

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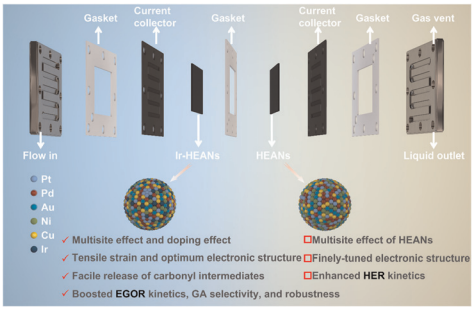
Synergy between multi-components and Ir dopant in Ir-doped high-entropy alloy nanoparticles for efficient and robust ethylene glycol electro-oxidation at an industrial-level current

Qingshou Zheng, Lin Huang,* Shu Yang, Qiao Liang, Ying Yang, Li Gu, Ruobing Cheng, Yongmiao Shen,* Zheng Yan* and Xuebo Cao*



CORRECTIONS

13000

Correction: "Turning the dials": controlling synthesis, structure, composition, and surface chemistry to tailor silicon nanoparticle properties

Sarah Milliken, Alyxandra N. Thiessen, I. Teng Cheong, Kevin M. O'Connor, Ziqi Li, Riley W. Hooper, Christopher Jay T. Robidillo and Jonathan G. C. Veinot*

13001

Correction: A size-shrinkable nanoparticle-based combined anti-tumor and anti-inflammatory strategy for enhanced cancer therapy

Zhengze Lu, Yang Long, Xingli Cun, Xuhui Wang, Jianping Li, Ling Mei, Yiliang Yang, Man Li, Zhirong Zhang and Qin He*

13002

Correction: Micellar nanoparticles inhibit breast cancer and pulmonary metastasis by modulating the recruitment and depletion of myeloid-derived suppressor cells

Zhengze Lu, Houqin Liu, Ling Ma, Kebai Ren, Zhidi He, Man Li and Qin He*