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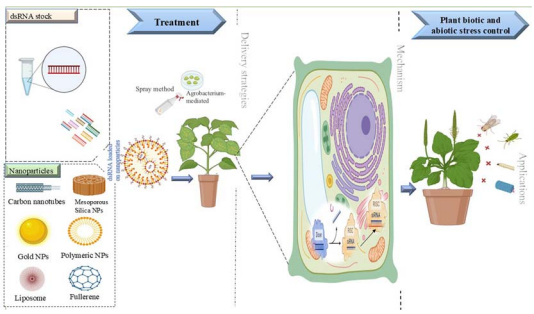
Cover
Image credit: © Thom Leach/ Science Photo Library/Getty Images.

REVIEWS

1768

Advances in RNAi-based nanoformulations: revolutionizing crop protection and stress tolerance in agriculture

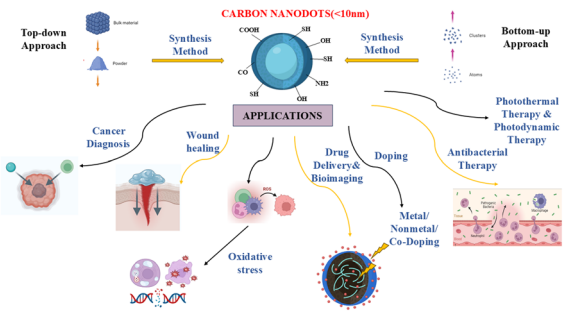
Shivangi Mathur, Ambika Chaturvedi and Rajiv Ranjan*



1784

Effect of carbon nanodots on the cellular redox reaction and immune system

Surabhi Verma, Manini Bhatt and Bodhisatwa Das*



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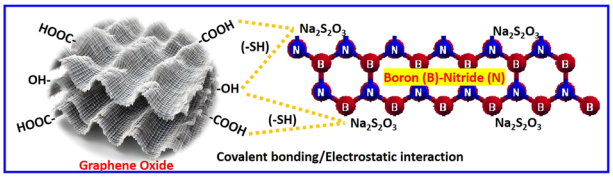
PAPERS

1803

High-performance boron nitride/graphene oxide composites modified with sodium thiosulfate for energy storage applications

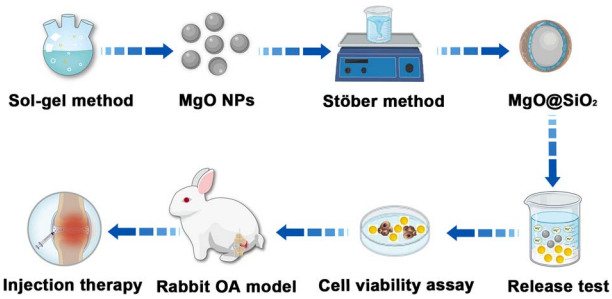
Shamsiya Shams, B. Bindhu,* Adhigan Murali, R. Ramesh,* Abdullah Al Souwaileh and Sung Soo Han*



1814

$MgO@SiO_2$ nanocapsules: a controlled magnesium ion release system for targeted inhibition of osteoarthritis progression

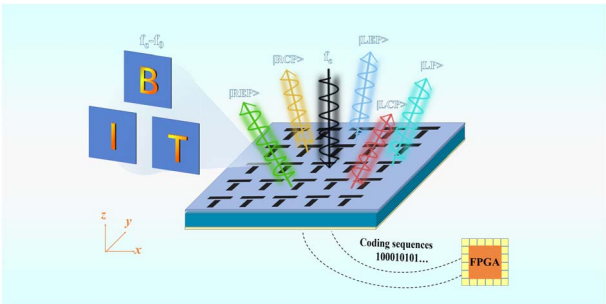
Na Liu, Fangchao Jiang, Zhizi Feng, Sen Mei, Yingna Cui, Yu Zheng, Wei Yang, Benjie Wang, Weizhong Zhang, Jin Xie* and Nan Zhang*



1825

Graphene spatiotemporal reconfigurable intelligent surface (GSRIS) for terahertz polarization-state manipulation and holographic imaging

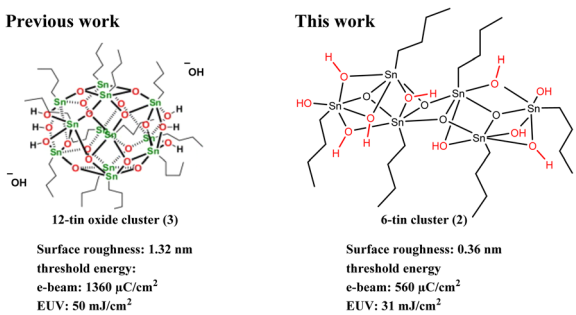
Tianyu Ma, Liming Si,* Chenyang Dang, Rong Niu, Genhao Wu, Xiue Bao, Houjun Sun and Weiren Zhu*



1838

A highly hydroxylated 6-tin oxide cluster serves as an efficient e-beam and EUV-photoresist to achieve high-resolution patterns

Cheng-Dun Li, Chun-Fu Chou, Yu-Fang Tseng, Burn-Jeng Lin,* Tsai-Sheng Gau, Po-Hsiung Chen, Po-Wen Chiu, Sun-Zen Chen, Shin-Lin Tsai, Wen-Bin Jian and Jui-Hsiung Liu*



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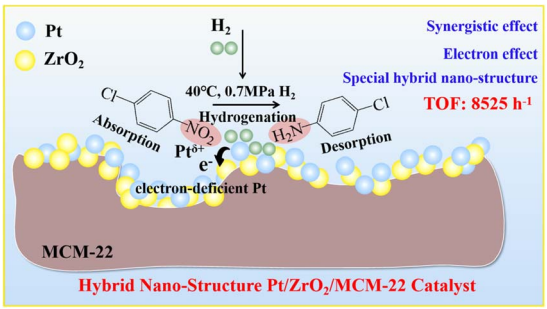
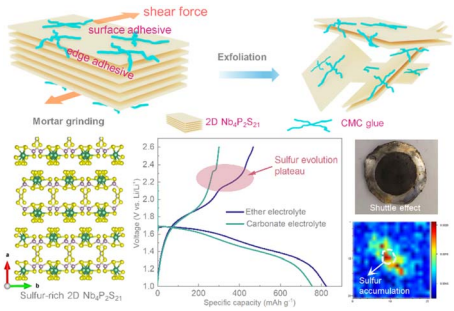
1851



Highly efficient catalytic hydrogenation of *p*-chloronitrobenzene: the synergistic effect and hybrid nano-structure

Yanji Zhang* and Jicheng Zhou

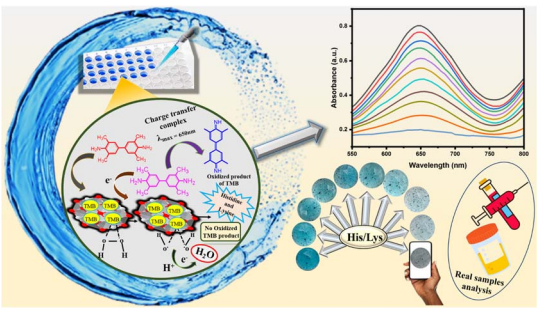
1860



Glue-assisted exfoliation of two-dimensional sulfur-rich niobium thiophosphate ($Nb_4P_2S_{21}$) for sulfur-equivalent electrode study in lithium storage

Bing Wu,* Vlastimil Mazánek, Min Li, Martin Veselý, Qiliang Wei, Luxa Jan, Filipa M. Oliveira, Lei Zheng, Heng Li, Vojtech Kundrat, Jakub Zálešák, Jakub Regner, Rui Gusmão, Junjie He, Tomáš Hartman, Saeed Ashtiani, Yulong Ying and Zdenek Sofer*

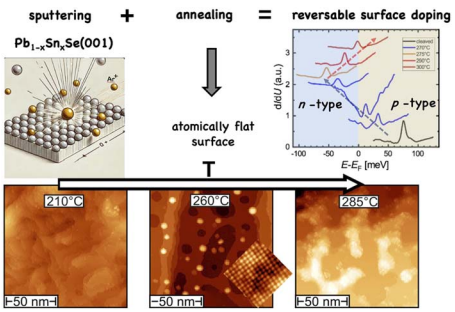
1872



An octahedral metal oxide nanoparticle-based dual-signal sensing platform for simultaneous detection of histidine and lysine in human blood plasma and urine

Robina Akhtar, Asim Yaqub,* Zia Ul Haq Khan, Ali Turab Jafry and Huma Ajab*

1885



Reversible doping and fine-tuning of the Dirac point position in the topological crystalline insulator $Pb_{1-x}Sn_xSe$ *via* sputtering and annealing process

Artem Odobesko,* Johannes Jung, Andrzej Szczerbakow, Jędrzej Korczak, Tomasz Story and Matthias Bode

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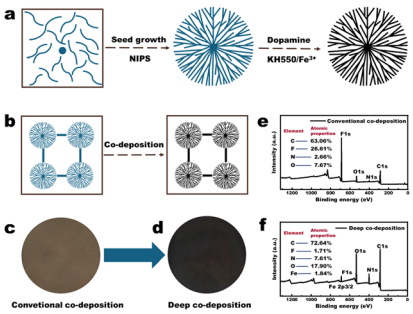
PAPERS

1892

Deep co-deposition of polydopamine in PVDF hydrogel to enhance photothermal evaporation efficiency

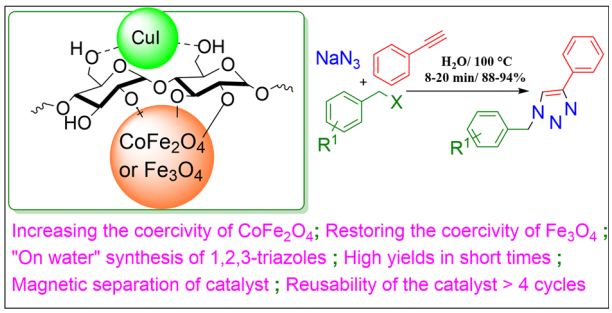
Yu Ma,* Lan Yang, Shangdi Wu, Liran Xu and Hua Huang*



1901

Cuprous iodide implanted in hot-water-soluble-starch coating of ferrite nanoparticles: efficient catalysts for on-water click synthesis of 1,2,3-triazoles

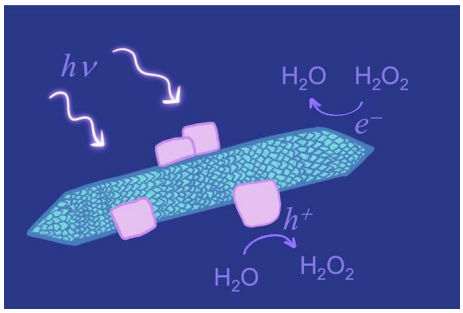
Seyyed Mohammad Rezapour Mousavi and Kurosh Rad-Moghadam*



1914

Light driven water oxidation on silica supported NiO–TiO_2 heteronanocrystals yields hydrogen peroxide

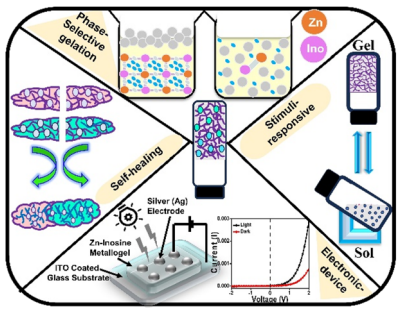
Nurul Muttakin, Shelton J. P. Varapragasam, Rashed Mia, Mahfuz A. Swadhen, Michael Odlyzko and James D. Hoefelmeyer*



1923

A multistimuli responsive and self-healing Zn(II)–inosine supramolecular metal–organic gel: phase selective gelation and application as a light-responsive Schottky barrier diode

Surbhi Singh, Atul Kumar Sharma, Kunal Rohilla, Nisha Verma and Bhagwati Sharma*



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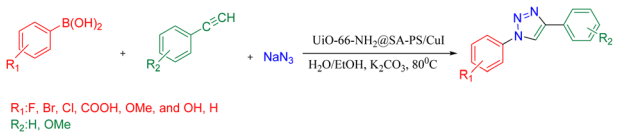
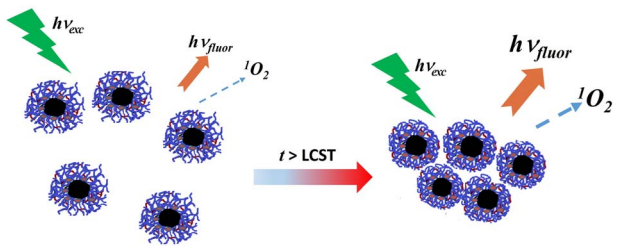
1937



Copper-anchored polysulfonamide-modified UiO-66-NH_2/sodium alginate nanocatalyst for sustainable synthesis of 1,2,3-triazoles

Samaneh Koosha, Ramin Ghorbani-Vaghei* and Sedigheh Alavinia

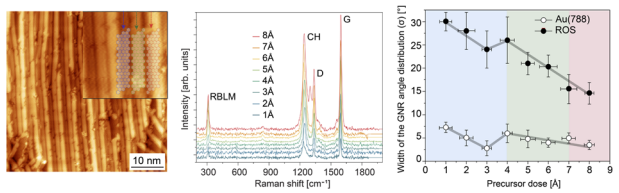
1946



Polymeric nanoparticles with a thermoresponsive shell loaded with fluorescent molecules allow for thermally enhanced fluorescence imaging and singlet oxygen generation

Oksana Chepurna, Artem Yakovliev, Roman Ziniuk, Anna Grebinyk, Hao Xu, Olena A. Nikolaeva, Andrii I. Marynin, Liudmyla O. Vretik, Junle Qu and Tymish Y. Ohulchanskyy*

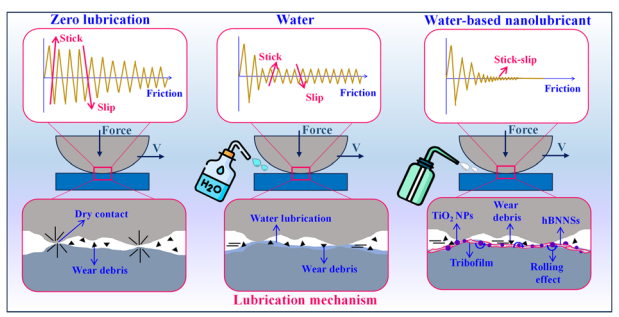
1962



The role of precursor coverage in the synthesis and substrate transfer of graphene nanoribbons

Rimah Darawish, Oliver Braun, Klaus Müllen, Michel Calame, Pascal Ruffieux, Roman Fasel and Gabriela Borin Barin*

1972



hBN/TiO_2 water-based nanolubricants: a solution for stick–slip mitigation in tribological applications

Afshana Morshed, Fei Lin, Hui Wu, Zhao Xing, Sihai Jiao, Md Mahadi Hasan* and Zhengyi Jiang*

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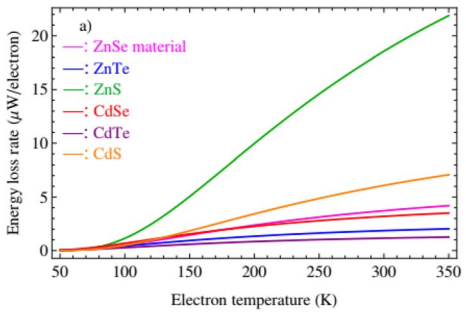
1989

A comparative study of the hot electron energy loss rate in zinc- and cadmium compound quasi-two-dimensional materials

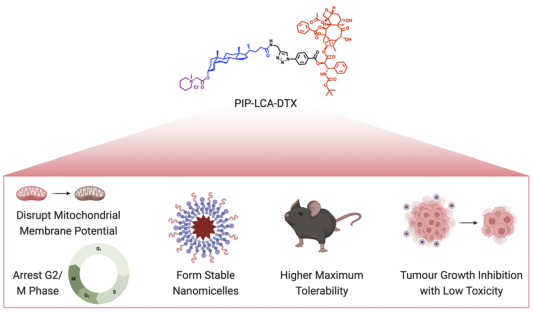
Huynh Thi Phuong Thuy and Nguyen Dinh Hien*



2003

Docetaxel-conjugated bile acid-derived nanomicelles can inhibit tumour progression with reduced toxicity

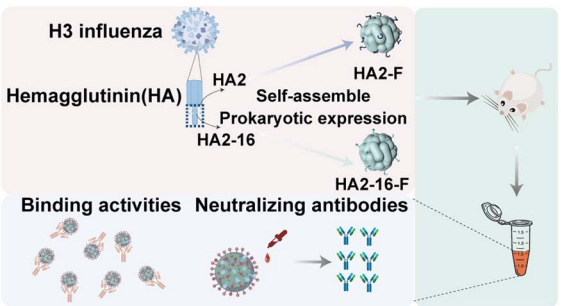
Devashish Mehta, Chhavi Dua, Ruchira Chakraborty, Poonam Yadav, Ujjaini Dasgupta and Avinash Bajaj*



2011

Induction of enhanced stem-directed neutralizing antibodies by HA2-16 ferritin nanoparticles with H3 influenza virus boost

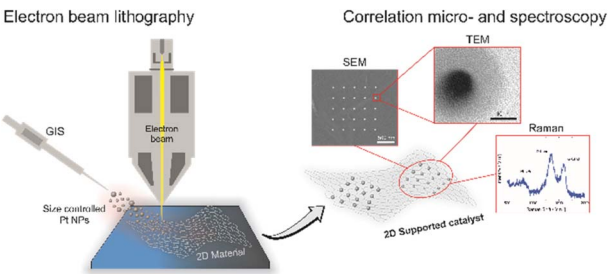
Qingyu Wang, Jiaojiao Nie, Zejinxuan Liu, Yaotian Chang, Yangang Wei, Xin Yao, Lulu Sun, Xiaoxi Liu, Qicheng Liu, Xinyu Liang, Xinran Zhang, Yong Zhang, Weiheng Su, Qi Zhao, Yaming Shan, Yingwu Wang, Xianbin Cheng* and Yuhua Shi*



2021

Direct chemical lithography writing on 2D materials by electron beam induced chemical reactions

Iryna Danylo, Lukáš Koláčný, Kristína Kissíková, Tomáš Hartman, Martina Pitínová, Jiří Šturala, Zdeněk Sofer* and Martin Veselý*



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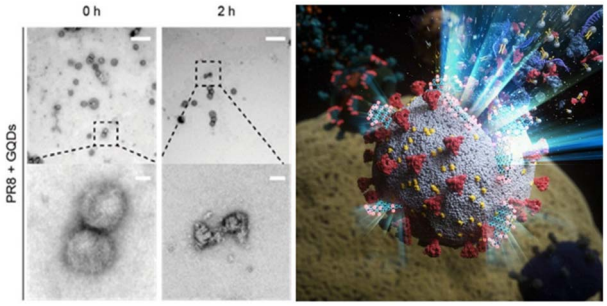
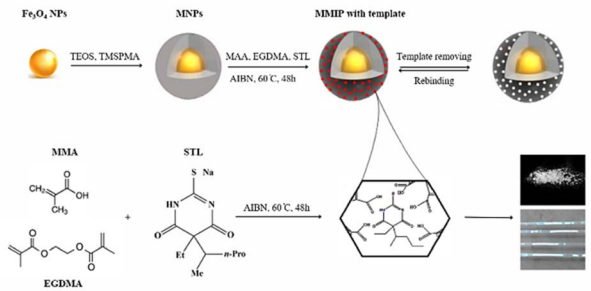
2032



Graphene quantum dots as potential broad-spectrum antiviral agents

Younghun Jung, Jaehyeon Hwang, Hyeonwoo Cho, Jeong Hyeon Yoon, Jong-Hwan Lee, Jaekwang Song, Donghoon Kim, Minchul Ahn,* Byung Hee Hong* and Dae-Hyuk Kweon*

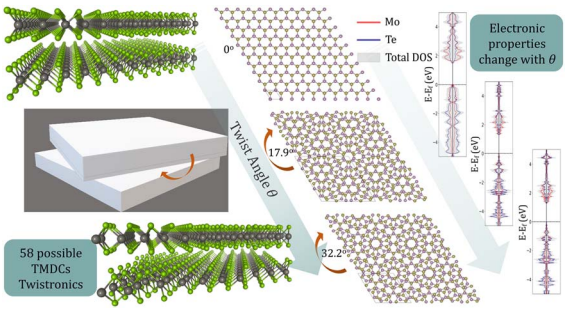
2039



Design and development of pH-sensitive nanocarriers using molecularly imprinted polymers for the targeted delivery of sodium thiopental

Ayda Yari-Ilkhchi, Abdolrahim Abbaszad Rafi and Mehrdad Mahkam*

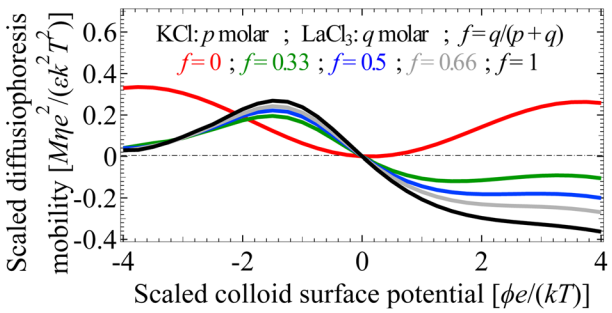
2047



How can we engineer electronic transitions through twisting and stacking in TMDC bilayers and heterostructures? a first-principles approach

Yu-Hsiu Lin, William P. Comaskey and Jose L. Mendoza-Cortes*

2057



Diffusiophoresis in porous media saturated with a mixture of electrolytes

Siddharth Sambamoorthy and Henry C. W. Chu*

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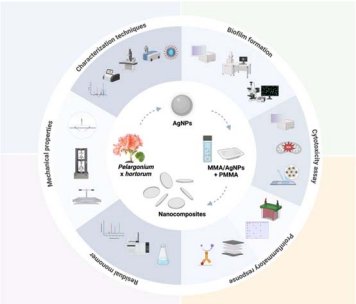
PAPERS

2068

Biological and mechanical properties of a self-curing acrylic resin enriched with AgNPs as a proposal for orthopedic aparatology

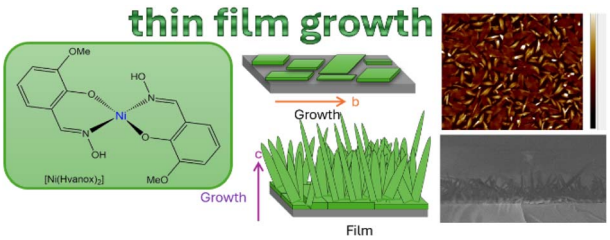
Christian Andrea Lopez-Ayuso, Rene Garcia-Contreras, Ravichandran Manisekaran, Mario Figueroa, Manuel Rangel-Grimaldo, Mariano Jacome, Ruben Abraham Dominguez-Perez, Salvador Lopez-Morales, Sol Cristians and Laura Susana Acosta-Torres*



2083

Investigating the thin film growth of [Ni(Hvanox)$_2$] by microscopic and spectroscopic techniques

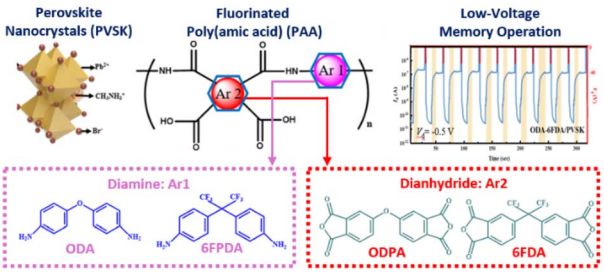
Atharva U. Sapre, Jan Vlček, Esther de Prado, Ladislav Fekete, Mariana Klementová, Martin Vondráček, Petr Svora, Emmelyne Cuza, Grace G. Morgan, Jan Honolka and Irina A. Kühne*



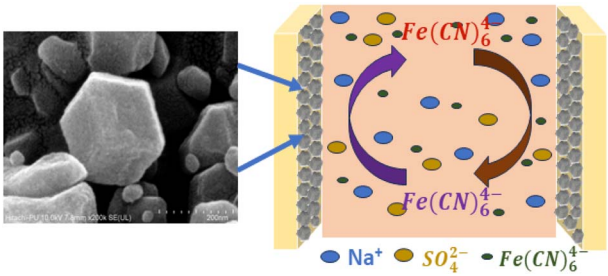
2092

Improving the performance of floating gate phototransistor memory with perovskite nanocrystals embedded in fluorinated polyamic acids

Wei-En Wu, You-Wei Cao, Yu-Chih Hsu, Yan-Cheng Lin* and Yang-Yen Yu*



2105

High performance supercapacitors driven by the synergy of a redox-active electrolyte and core–nanoshell zeolitic imidazolate frameworks

Mansi, Vishal Shrivastav, Prashant Dubey, Aristides Bakandritsos, Shashank Sundriyal,* Umesh K. Tiwari* and Akash Deep*