

Journal of Materials Chemistry

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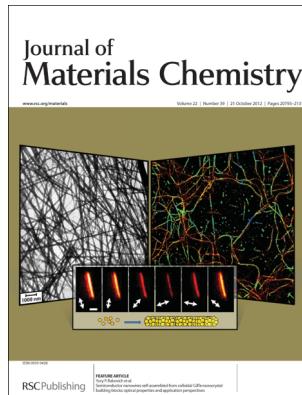
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Cover

See Yoan C. Simon *et al.*,
pp. 20817–20830.
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Inside cover

See Yury P. Rakovich *et al.*,
pp. 20831–20839.
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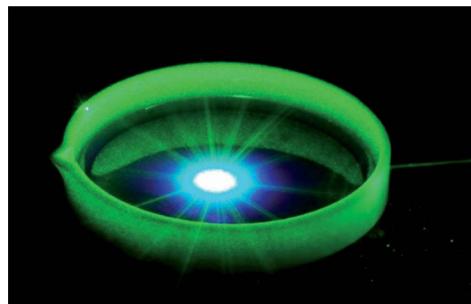
FEATURE ARTICLES

20817

Low-power photon upconversion through triplet–triplet annihilation in polymers

Yoan C. Simon* and Christoph Weder*

This perspective surveys recent approaches to achieve low-power sensitized photon upconversion in polymers and provides perspectives on the further development of the field.

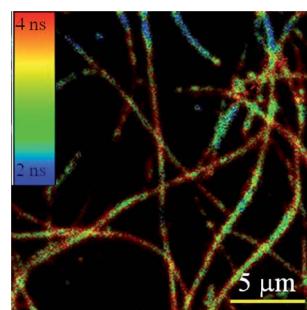


20831

Semiconductor nanowires self-assembled from colloidal CdTe nanocrystal building blocks: optical properties and application perspectives

Yury P. Rakovich, Frank Jäckel, John F. Donegan
and Andrey L. Rogach*

Formation mechanism and optical properties of polycrystalline CdTe nanowires self-assembled from light-emitting thiol-capped CdTe nanocrystals are the focus of this Feature Article.



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Journal of Materials Chemistry

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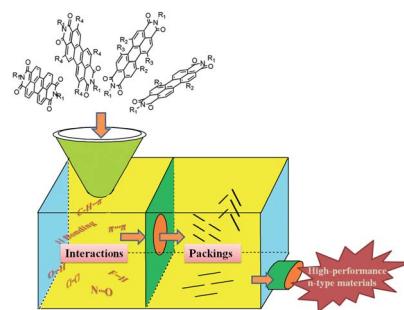
FEATURE ARTICLES

20840

The interplay of intermolecular interactions, packing motifs and electron transport properties in perylene diimide related materials: a theoretical perspective

Yun Geng, Hai-Bin Li, Shui-Xing Wu and Zhong-Min Su*

We mainly focus on the interplay of intermolecular interactions, packing motifs and electron transport properties of perylene diimide related materials from a theoretical point of view, towards paving the way for boosting and improving their electron transport mobilities and air stabilities.



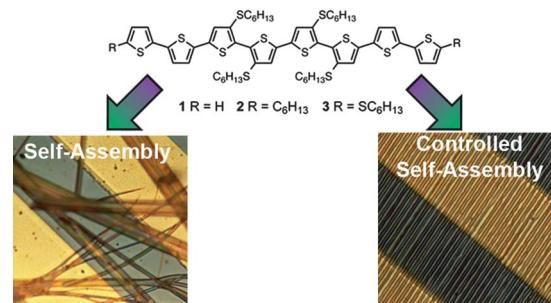
COMMUNICATIONS

20852

Targeting ordered oligothiophene fibers with enhanced functional properties by interplay of self-assembly and wet lithography

Denis Gentili,* Francesca Di Maria, Fabiola Liscio, Laura Ferlauto, Francesca Leonardi, Lucia Maini, Massimo Gazzano, Silvia Milita, Giovanna Barbarella and Massimiliano Cavallini*

A controlled self-assembly process of fiber-forming oligothiophenes and their direct integration with precise density, orientation, and size in OFET devices.

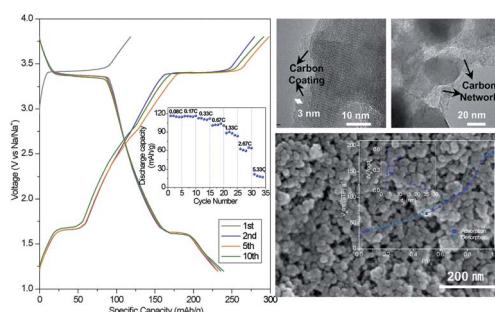


20857

High rate performance of a Na₃V₂(PO₄)₃/C cathode prepared by pyro-synthesis for sodium-ion batteries

Jungwon Kang, Sora Baek, Vinod Mathew, Jihyeon Gim, Jinju Song, Hyosun Park, Eunji Chae, Alok Kumar Rai and Jaekook Kim*

A carbon-coated Na₃V₂(PO₄)₃/C cathode was prepared by a pyro-synthetic process for sodium-ion batteries. The prepared cathode was aided by a carbon-network formed within the structure and possessed a high surface area of 159.4 m² g⁻¹ and dual porosity with pore-sizes in the mesopore range. The beneficial aspects contributed to enhance the rate performances.

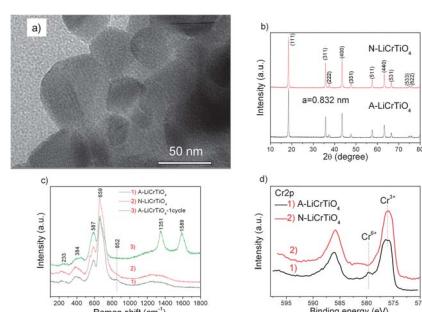


20861

Lithium chromium oxide modified spinel LiCrTiO₄ with improved electrochemical properties

Xuyong Feng, Chen Shen, Ning Ding and Chunhua Chen*

Lithium chromium titanium oxide (LiCrTiO₄) spinel powders are synthesized by an acrylic acid polymerization method.



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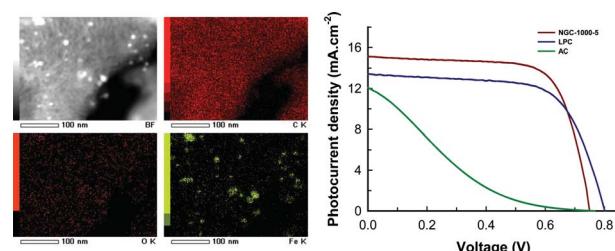
COMMUNICATIONS

20866

Highly efficient nanoporous graphitic carbon with tunable textural properties for dye-sensitized solar cells

Pavuluri Srinivasu,* Ashraful Islam, Surya P. Singh, Liyuan Han, M. Lakshmi Kantam and Suresh K. Bhargava

Nanoporous graphitic carbon (NGC) is synthesized by direct carbonization of iron phthalocyanine (Fe-PC) and 3D mesoporous silica (KIT-6) mixture for the first time, which exhibit tunable surface area and pore volume, as well as superior energy conversion efficiency for dye-sensitized solar cells than activated carbon (AC) and large porous carbon (LPC).

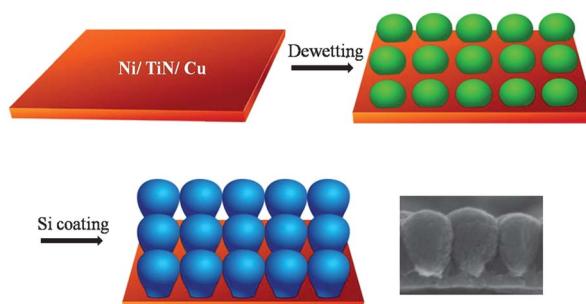


20870

Novel silicon–nickel cone arrays for high performance LIB anodes

Yu Fan, Kai Huang, Qing Zhang,* Qizhen Xiao, Xinghui Wang and Xiaodong Chen

Si–Ni cone arrays with cone shaped Si shells are fabricated and show good electrochemical performance as LIB anodes.

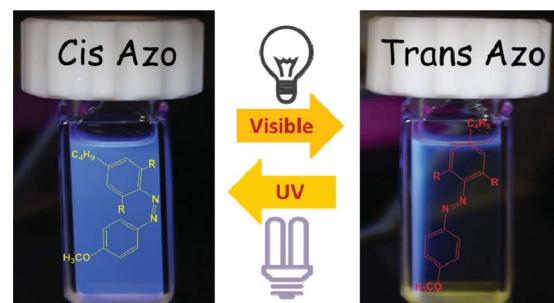


20874

Photoswitchable fluorescence on/off behavior between *cis*- and *trans*-rich azobenzenes

Bo-Kai Tsai, Chien-Hong Chen, Cheng-Hsiang Hung, Vincent K. S. Hsiao and Chih-Chien Chu*

We report rapid photoswitchable fluorescence on/off behavior between *cis*- and *trans*-rich 4-butyl-4'-methoxyazobenzene and its analogue 4-butyl-2,6-dimethyl-4'-methoxyazobenzene.

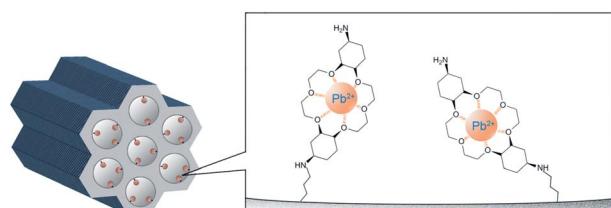


20878

A novel well-ordered mesoporous organosilica specialized for highly selective recognition of Pb(II) by host–guest interactions

Gang Ye,* Feifei Bai, Guangjin Chen, Jichao Wei, Jianchen Wang and Jing Chen*

A novel well-ordered mesoporous organosilica with high selectivity and excellent adsorption towards Pb(II) by host–guest interactions was developed.





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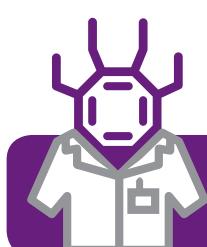
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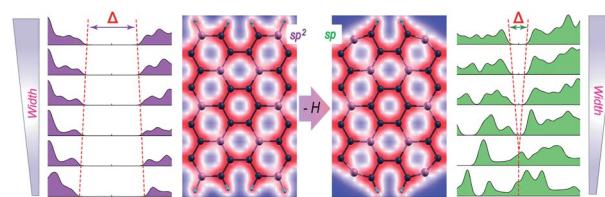
COMMUNICATIONS

20881

Anomalous energy-gap behaviour of armchair BC₃ ribbons due to enhanced π-conjugation

Sudipta Dutta and Katsunori Wakabayashi*

The anomalous behavior of band-gap opening upon increase in width of armchair BC₃ ribbons shows the significant role of hydrogen passivation.

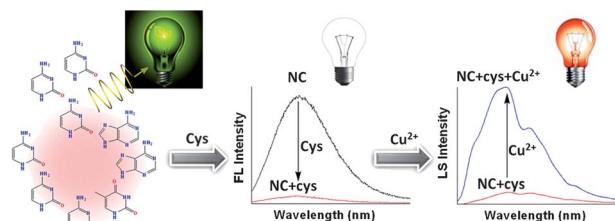


20885

DNA-templated formation of silver nanoclusters as a novel light-scattering sensor for label-free copper ions detection

Guoliang Liu, Da-Qian Feng, Tianfeng Chen, Dan Li* and Wenjie Zheng*

A simple label-free approach for the detection of copper ions with high selectivity and sensitivity has been developed by using single-stranded DNA templated formation of silver nanoclusters (DNA-Ag NCs) as a novel light-scattering sensor.



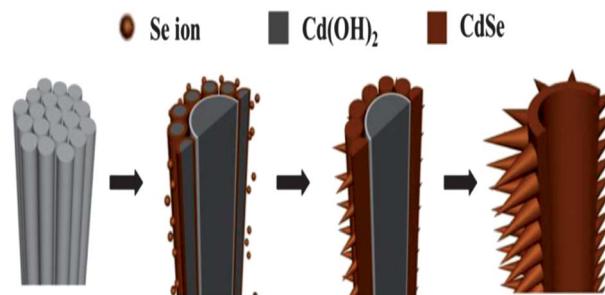
PAPERS

20889

Thorny CdSe nanotubes *via* an aqueous anion exchange reaction process and their photoelectrochemical applications

Jeong Won Kim, Hee-Sang Shim, SungWook Ko, Unyoung Jeong, Chang-Lyoul Lee and Won Bae Kim*

The thorny CdSe nanotubes were synthesized *via* a simple anion exchange process by using a sacrificial Cd(OH)₂ template.

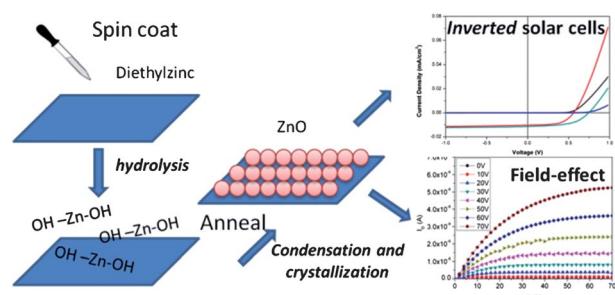


20896

ZnO layers for opto-electronic applications from solution-based and low-temperature processing of an organometallic precursor

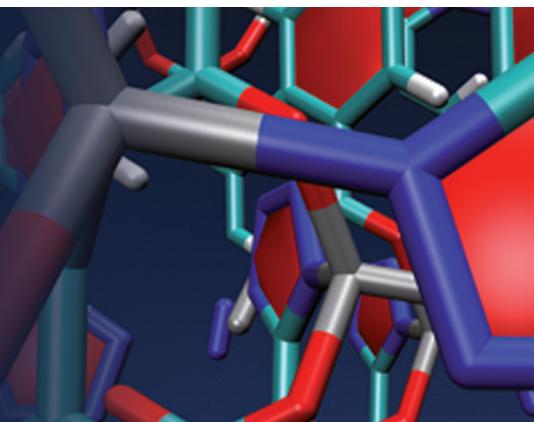
Thelese Ru Bao Foong,* Samarendra Pratap Singh,* Prashant Sonar, Zi-En Ooi, Khai Leok Chan and Ananth Dodabalapur*

Doped and undoped ZnO electron transport layers are successfully wet-processed from an organometallic precursor at low temperatures (≤ 200 °C).



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Key dates

Oral abstract deadline – 9 November 2012
Early bird and poster abstract deadline – 10 May 2013
Standard registration deadline – 7 June 2013

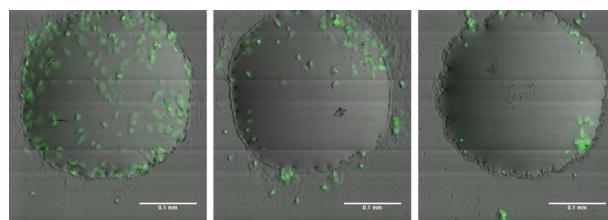
PAPERS

20902

Modelling human embryoid body cell adhesion to a combinatorial library of polymer surfaces

V. Chandana Epa, Jing Yang, Ying Mei, Andrew L. Hook, Robert Langer, Daniel G. Anderson, Martyn C. Davies, Morgan R. Alexander and David A. Winkler*

Modern, sparse machine learning methods allow accurate *in silico* prediction of stem cell embryoid body adhesion to large polymer libraries.

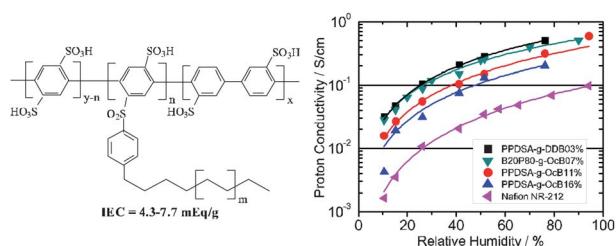


20907

Synthesis and characterization of poly(*para*-phenylene disulfonic acid), its copolymers and their *n*-alkylbenzene grafts as proton exchange membranes: high conductivity at low relative humidity

Kun Si, Daxuan Dong, Ryszard Wycisk and Morton Litt*

Water insoluble poly(*para*-phenylene disulfonic acid) and its copolymers were synthesized by direct polymerization of 1,4-dibromobenzene-2,5-disulfonic acid and 4,4'-dibromobiphenyl-3,3'-disulfonic acid lithium salts using Ullmann coupling and subsequent grafting of long-tail alkylbenzene groups onto the polymer backbones.

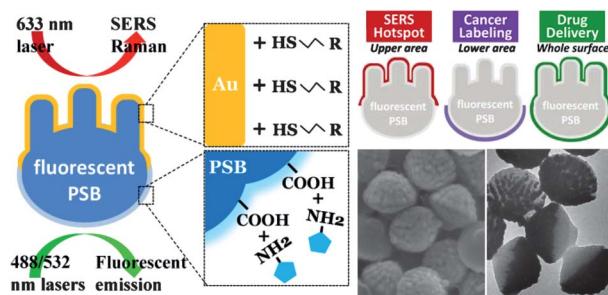


20918

Fabrication and modification of dual-faced nano-mushrooms for tri-functional cell theranostics: SERS/fluorescence signaling, protein targeting, and drug delivery

Hsin-Yi Hsieh, Tsu-Wei Huang, Jian-Long Xiao, Chung-Shi Yang, Chien-Cheng Chang, Chin-Chou Chu, Leu-Wei Lo, Shenq-Hann Wang, Pen-Cheng Wang, Ching-Chang Chieng, Chau-Hwang Lee* and Fan-Gang Tseng*

Monodispersed dual-faced fluorescent nanoparticles, which can be selectively modified for multifunctions.

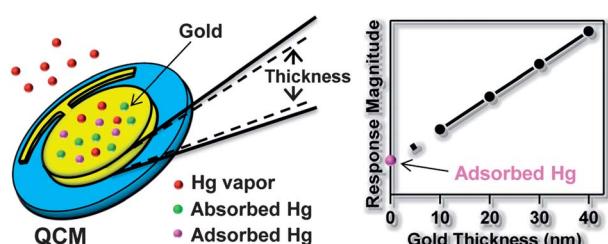


20929

Investigation of Hg sorption and diffusion behavior on ultra-thin films of gold using QCM response analysis and SIMS depth profiling

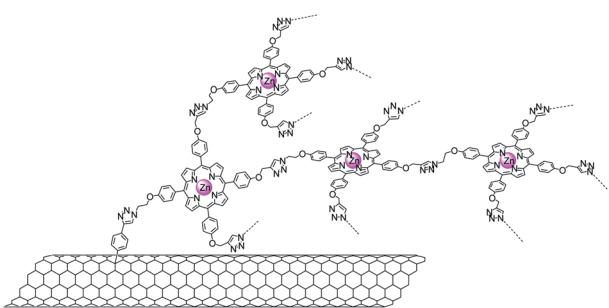
Ylias M. Sabri,* Samuel J. Ippolito, Mohammad Al Kobaisi, Matthew J. Griffin, David R. Nelson and Suresh K. Bhargava*

We demonstrate that the contribution of Hg adsorption and absorption in a sensor response profile can be distinguished by studying the dynamic response curve of a quartz crystal microbalance based Hg vapour sensor.



PAPERS

20936

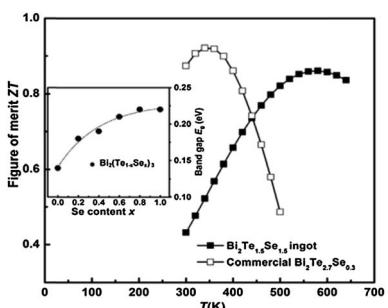


Formation of linear and hyperbranched porphyrin polymers on carbon nanotubes *via* a CuAAC “grafting from” approach

Ismail Hijazi, Bruno Jousselme, Pascale Jégou, Arianna Filoromo and Stéphane Campidelli*

Carbon nanotube porphyrin polymers have been synthesised *via* the click chemistry “grafting from” approach.

20943

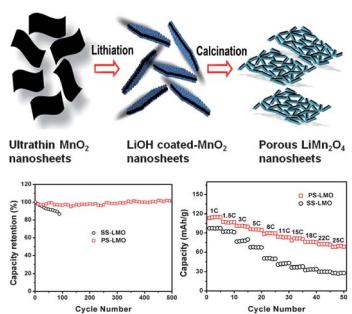


Enhanced thermoelectric properties of Bi₂(Te_{1-x}Se_x)₃-based compounds as n-type legs for low-temperature power generation

Shanyu Wang, Gangjian Tan, Wenjie Xie, Gang Zheng, Han Li, Jihui Yang and Xinfeng Tang*

The ZT_{max} of n-type Bi₂(Te_{1-x}Se_x)₃ is shifted toward elevated T for power generation, with $ZT_{max} \sim 0.86$ at 600 K and $ZT_{Av400-640K} \sim 0.8$.

20952

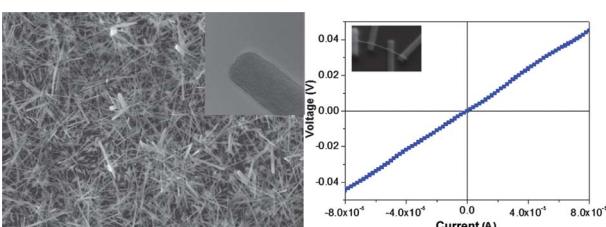


Nanoporous LiMn₂O₄ nanosheets with exposed {111} facets as cathodes for highly reversible lithium-ion batteries

Weiwei Sun, Feng Cao, Yumin Liu, Xingzhong Zhao, Xiaogang Liu and Jikang Yuan*

In this work, we have demonstrated a facile approach to synthesize porous single-crystalline LiMn₂O₄ nanosheets with exposed {111} facets *via* an *in situ* lithiation of ultrathin MnO₂ nanosheets, and these materials demonstrate a significant enhanced cycling reversibility and high rate performance.

20958



A facile route to synthesise silica shell free silicide nanowires

Shaozhou Li,* Hui Cai, Chee Lip Gan,* Jun Guo and Ja Ma

Single-crystalline rare earth disilicide nanowires were synthesized and their electrical properties were characterized.

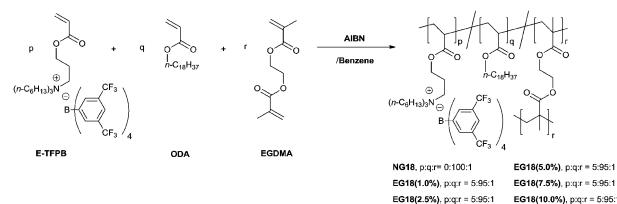
PAPERS

20962

Toward the design of superabsorbent materials for non-polar organic solvents and oils: ionic content dependent swelling behaviour of cross-linked poly(octadecyl acrylate)-based lipophilic polyelectrolytes

Toshikazu Ono and Kazuki Sada*

Oil spills and other industrial chemical leaks to natural environments can cause long-term impact on ecosystems, and the use of polymer-based absorbent materials for such media is a promising technique for cleaning up the contaminated sites.

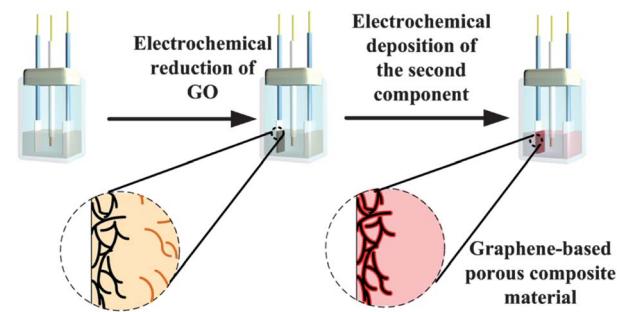


20968

Three-dimensional porous graphene-based composite materials: electrochemical synthesis and application

Kaiwu Chen, Libin Chen, Yunqiang Chen, Hua Bai* and Lei Li*

A universal strategy for the fabrication of three-dimensional porous graphene-based composite materials was developed based on a two-step electrochemical deposition process.

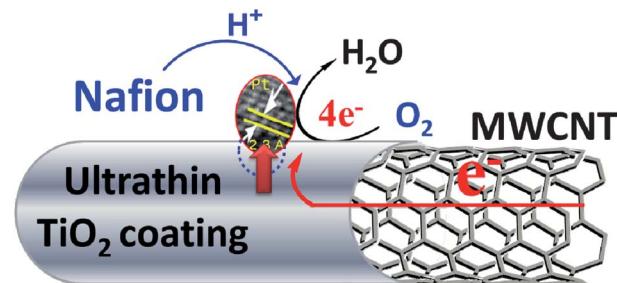


20977

Ultrathin TiO₂-coated MWCNTs with excellent conductivity and SMSI nature as Pt catalyst support for oxygen reduction reaction in PEMFCs

Nibret Gebeyehu Akalework, Chun-Jern Pan, Wei-Nien Su, John Rick, Mon-Che Tsai, Jyh-Fu Lee, Jhih-Min Lin, Li-Duan Tsai and Bing-Joe Hwang*

The integrated advantages of TiO₂ and carbon materials as a novel support for Pt bring improved ORR activity and stability.

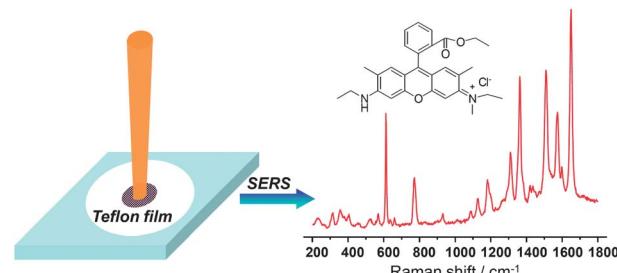


20986

Hydrophobic Teflon films as concentrators for single-molecule SERS detection

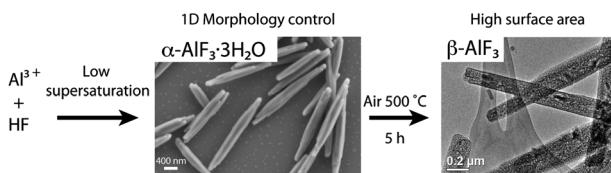
Li-Qiang Lu, Yin Zheng, Wen-Gang Qu, Han-Qing Yu and An-Wu Xu*

Hydrophobic Teflon films are used as concentrators to construct active SERS substrates, allowing single-molecule detection of R6G.



PAPERS

20991

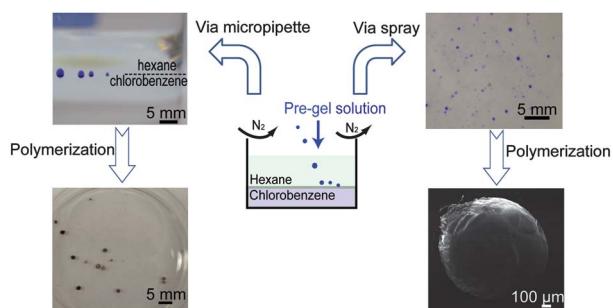


Large-scale solution synthesis of $\alpha\text{-AlF}_3 \cdot 3\text{H}_2\text{O}$ nanorods under low supersaturation conditions and their conversion to porous $\beta\text{-AlF}_3$ nanorods

Marc Estruga, Fei Meng, Linsen Li, Lianyi Chen, Xiaochun Li and Song Jin*

We report for the first time the multi-gram scale solution growth of α -aluminium fluoride trihydrate ($\alpha\text{-AlF}_3 \cdot 3\text{H}_2\text{O}$) nanorods (NRs) under low supersaturation conditions, and their conversion to porous $\beta\text{-AlF}_3$ NRs.

20998

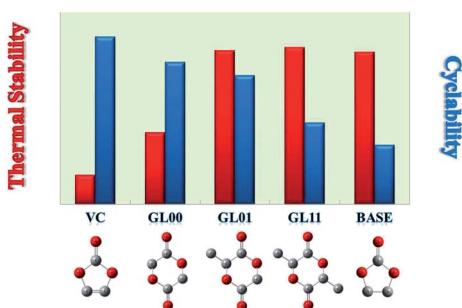


Liquid–liquid interface assisted synthesis of multifunctional and multicomponent hydrogel particles

Zeming Chen, Liang Hu and Michael J. Serpe*

Adding pre-gel solution to the hexane–chlorobenzene solvent interface allows chemically and compositionally complex hydrogel particles to be easily synthesized.

21003

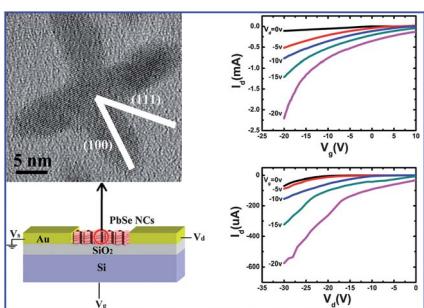


Tuning glycolide as an SEI-forming additive for thermally robust Li-ion batteries

Jongho Jeon, Soojin Yoon, Taeyoon Park, Jeong-Ju Cho, Sunwoo Kang, Young-Kyu Han* and Hochun Lee*

Glycolide is tuned at the molecular level to outperform vinylene carbonate, the current most popular SEI-forming additive for lithium-ion batteries.

21009



The impact of chemical treatment on optical and electrical characteristics of multipod PbSe nanocrystal films

Zhi Yang, Minqiang Wang,* Yanhua Shi, Xiaohui Song, Zhonghai Lin, Zhaoyu Ren and Jintao Bai*

Solid-state field-effect transistors where multipod PbSe nanocrystals are deposited onto Si/SiO₂ substrate are used to investigate the electrical characteristics.

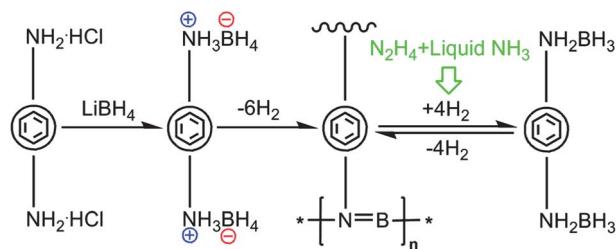
PAPERS

21017

Phenyl introduced ammonium borohydride: synthesis and reversible dehydrogenation properties

Shaofeng Li, Ziwei Tang, Qiaolong Gong, Xuebin Yu,*
Paul R. Beaumont and Craig M. Jensen*

Two novel bis-(ammoniumborohydride)-benzene compounds are shown to release 6 equiv. hydrogens below 200 °C and their spent fuels can be chemically rehydrogenated to *N,N'*-phenyl substituted ammonia-boranes.

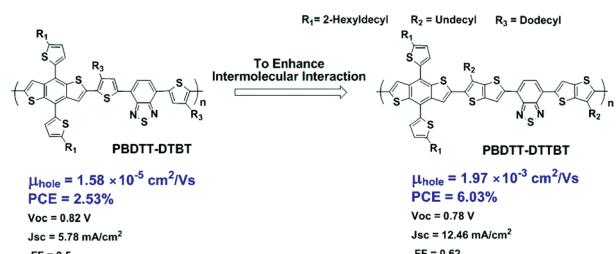


21024

Design, synthesis and photovoltaic properties of a new D-π-A polymer with extended π-bridge units

Xia Guo, Maojie Zhang, Lijun Huo,* Feng Xu, Yue Wu and Jianhui Hou*

The hole mobility as well as the photovoltaic properties of a D-π-A polymer can be improved effectively by using extended π-bridge units.

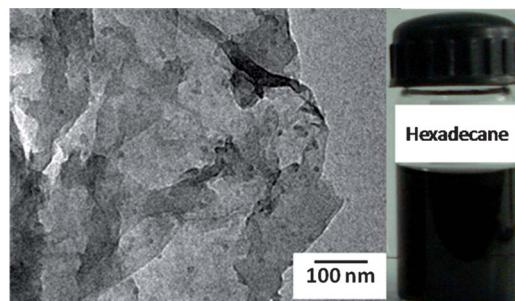


21032

Dispersion of alkylated graphene in organic solvents and its potential for lubrication applications

Shivani Choudhary, Harshal P. Mungse and Om P. Khatri*

Dispersibility of alkylated graphene in hydrocarbon solvents is found to increase with increasing chain length of alkyl groups attached to graphene.

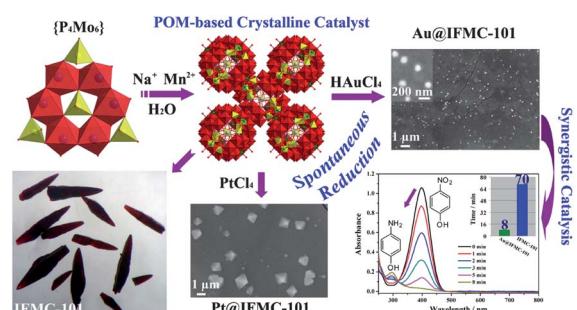


21040

Redox-active polyoxometalate-based crystalline material-immobilized noble metal nanoparticles: spontaneous reduction and synergistic catalytic activity

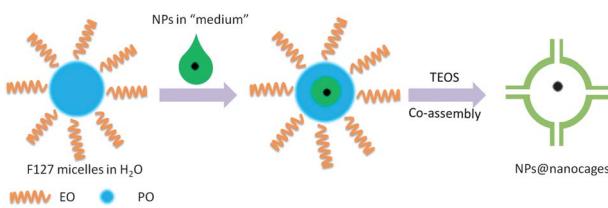
Dong-Ying Du, Jun-Sheng Qin, Chun-Gang Wang, Xian-Chun Liu, Shun-Li Li, Zhong-Min Su,* Xin-Long Wang, Ya-Qian Lan* and En-Bo Wang

A redox-active polyoxometalate-based material was synthesized and used as a reductant and stabilizer to prepare Au and Pt nanoparticles. The Au nanoparticle-loaded POM-based crystalline catalysts were employed toward the reduction of 4-nitrophenol.



PAPERS

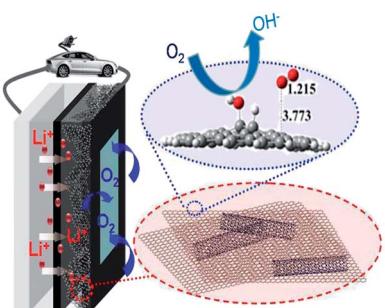
21045

**Entrapment of metal nanoparticles within nanocages of mesoporous silicas aided by co-surfactants**

Xiaobo Li, Xiao Liu, Yan Yang, Jiao Zhao, Can Li* and Qihua Yang*

We demonstrated an efficient approach for *in situ* encapsulation of metal nanoparticles into nanocages of mesoporous silicas using co-surfactants as the transportation medium.

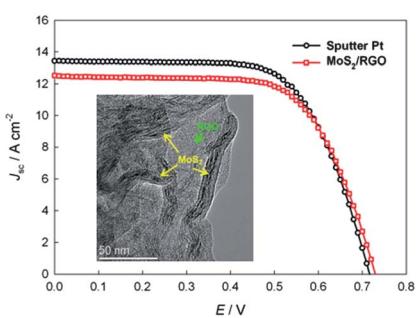
21051

**Oxygen-enriched carbon material for catalyzing oxygen reduction towards hybrid electrolyte Li-air battery**

Shan Wang, Shanmu Dong, Jun Wang, Lixue Zhang, Pengxian Han, Chuanjian Zhang, Xiaogang Wang, Kejun Zhang, Zhenggang Lan* and Guanglei Cui*

Oxygen-containing groups on graphene oxide facilitate the electrocatalysis of O_2 .

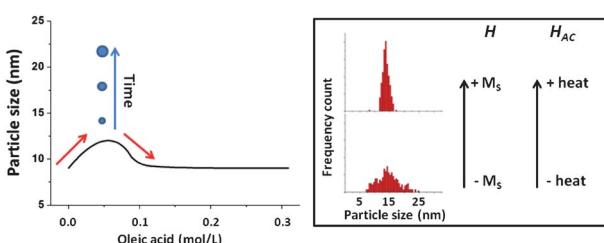
21057

**Facile synthesis of MoS₂/graphene nanocomposite with high catalytic activity toward triiodide reduction in dye-sensitized solar cells**

Chia-Jui Liu, Sheng-Yen Tai, Shu-Wei Chou, Ya-Chu Yu, Kai-Di Chang, Shuei Wang, Forest Shih-Sen Chien, Jeng-Yu Lin* and Tsung-Wu Lin*

A MoS₂/RGO nanocomposite was proposed for the first time as the counter electrode catalyst in DSSCs to reduce I_3^- to I^- .

21065

**Controlled synthesis of uniform magnetite nanocrystals with high-quality properties for biomedical applications**

Gorka Salas,* Cintia Casado, Francisco J. Teran, Rodolfo Miranda, Carlos J. Serna and M. Puerto Morales

Uniform DMSA-coated iron oxide magnetic nanoparticles have been synthesized by controlling the thermal decomposition process of an iron oleate complex. The relationship between synthetic experimental procedures, size, size distribution and shape, and magnetic/magneto-thermal properties is discussed.

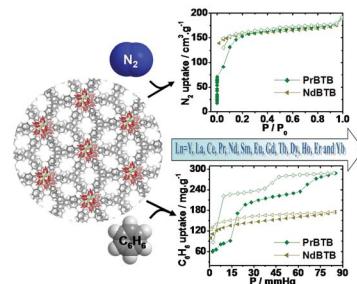
PAPERS

21076

Ultrasensitive sorption behavior of isostructural lanthanide–organic frameworks induced by lanthanide contraction

Zhongjun Lin, Ruqiang Zou,* Wei Xia, Liangjie Chen, Xidong Wang, Fuhui Liao, Yingxia Wang, Jianhua Lin and Anthony K. Burrell

A family of isostructural lanthanide–organic frameworks exhibit ultramicroporous structures and ultrasensitive sorption behavior induced by lanthanide contraction.

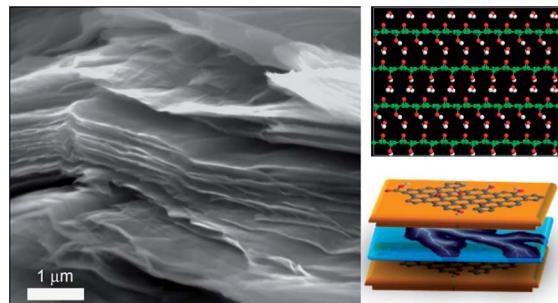


21085

A water-dielectric capacitor using hydrated graphene oxide film

Da-Wei Wang, Aijun Du, Elena Taran, Gao Qing (Max) Lu and Ian R. Gentle*

A hydrated graphene oxide film was used as a dielectric spacer to construct a prototype water-dielectric capacitor. The capacitance per unit area of the GO film is in the range of 100–800 µF cm⁻², which is 5–40 times that of the double layer capacitance per surface area of activated carbon.

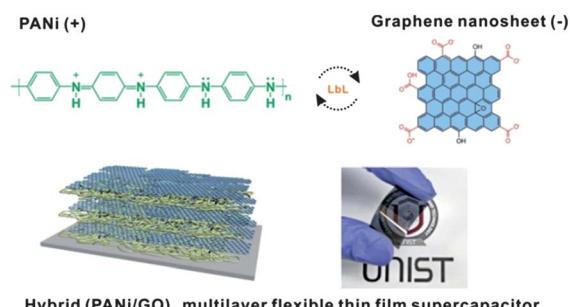


21092

Hybrid multilayer thin film supercapacitor of graphene nanosheets with polyaniline: importance of establishing intimate electronic contact through nanoscale blending

Taemin Lee, Taeyeong Yun, Byeongho Park, Bhawana Sharma, Hyun-Kon Song and Byeong-Su Kim*

A hybrid electrode consisting of an electric double-layer capacitor of graphene nanosheets and a pseudocapacitor of the conducting polymer polyaniline exhibits a synergistic effect with excellent electrochemical performance for flexible thin film supercapacitors.

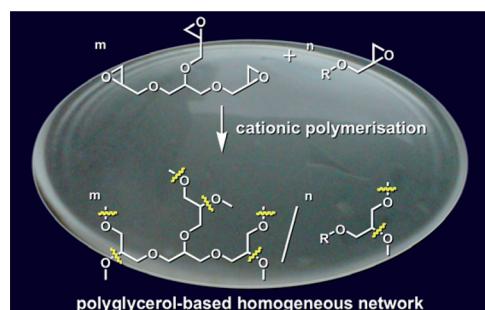


21100

Polyglycerol-based polymer network films for potential biomedical applications

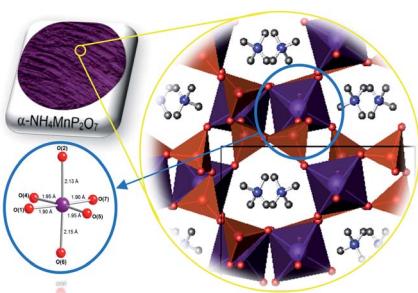
Duygu Ekinci, Adam L. Sisson and Andreas Lendlein*

The facile modular syntheses, and detailed structural analyses, of a series of homogeneous, polyglycerol-based polymer networks is reported. Bulk thermal and mechanical properties can be tuned within a wide range in a highly rational fashion.



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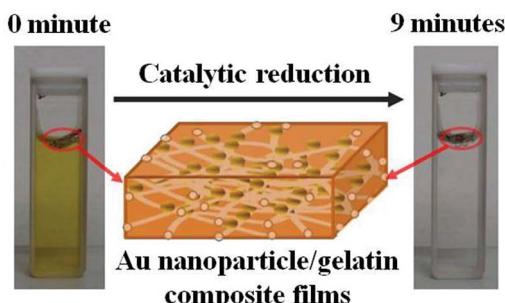
21110

**Relating highly distorted Jahn–Teller MnO_6 to colouration in manganese violet pigments**

Yasmin Begum and Adrian J. Wright*

 Mn^{3+} chelated by pyrophosphate anions provides highly distorted coordination environments, leading to intense violet pigments.

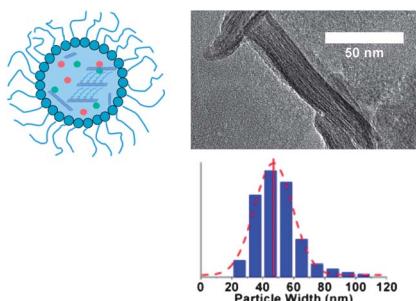
21117

**High catalytic performance of gold nanoparticle–gelatin mesoporous composite thin films**

Li Shi, Qing Yu, Yiyin Mao, Hubiao Huang, Hongwen Huang, Zhizhen Ye and Xinsheng Peng*

Gold nanoparticle–gelatin mesoporous composite thin films prepared by *in situ* reduction at room temperature demonstrate superior catalytic properties.

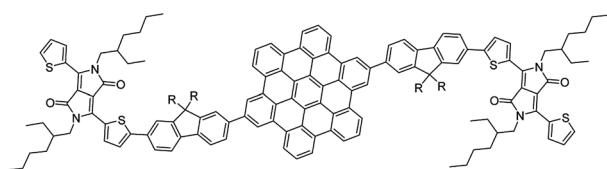
21125

**Synthesis of layered double hydroxide nanoparticles in a novel microemulsion**

Chengle J. Wang and Dermot O'Hare*

Oleylamine performs multiple functions in the synthesis of LDHs nanosheets.

21131

**Liquid crystalline hexa-*peri*-hexabenzocoronene-diketopyrrolopyrrole organic dyes for photovoltaic applications**

Wallace W. H. Wong,* Jegadesan Subbiah, Sreenivasa R. Puniredd, Balaji Purushothaman, Wojciech Pisula, Nigel Kirby, Klaus Müllen, David J. Jones and Andrew B. Holmes

Small changes in the structure of liquid crystalline organic dyes led to significant differences in molecular organisation and semiconducting properties.

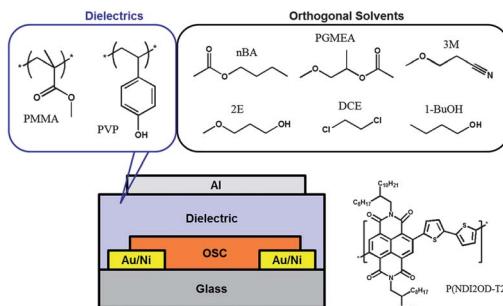
PAPERS

21138

Effects of gate dielectrics and their solvents on characteristics of solution-processed N-channel polymer field-effect transistors

Kang-Jun Baeg, Antonio Facchetti and Yong-Young Noh*

In this study, we investigated the effects of polymer gate dielectrics and their solvents on the characteristics of n-channel top-gate-structured organic field-effect transistors (OFETs) that used poly{[N,N-9-bis(2-octyldodecyl)-naphthalene-1,4,5,8-bis(dicarboximide)-2,6-diyl]-alt-5,59-(2,29-bithiophene)} (P(NDI2OD-T2)) (ActivInk™ N2200).

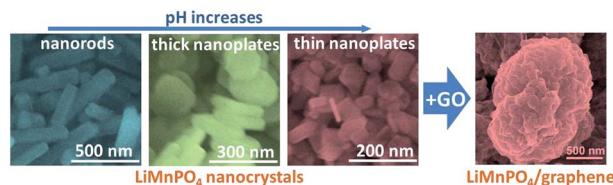


21144

Morphology controlled synthesis and modification of high-performance LiMnPO₄ cathode materials for Li-ion batteries

Zhihong Qin, Xufeng Zhou,* Yonggao Xia, Changlin Tang and Zhaoping Liu*

Monodispersed LiMnPO₄ nanocrystals with controllable morphology were prepared by a solvothermal method; and the nanocrystals were further modified with graphene, resulting in high performance cathode materials.

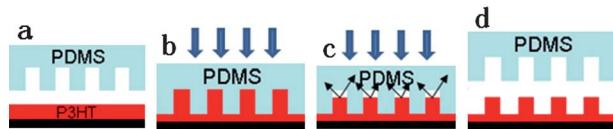


21154

Solvent-infiltration imprint lithography: a novel method to prepare large area poly(3-hexylthiophene) micro/nano-patterns

Jinhe Wang,* Guoquan Min, Zhitang Song, Xiuyuan Ni, Weimin Zhou, Jing Zhan, Yanping Zhang, Jianping Zhang and Liyi Shi*

A new method, based on solvent-infiltration imprint lithography (SIIL), is developed in this work to fabricate large area poly(3-hexylthiophene) (P3HT) micro/nano-patterns.

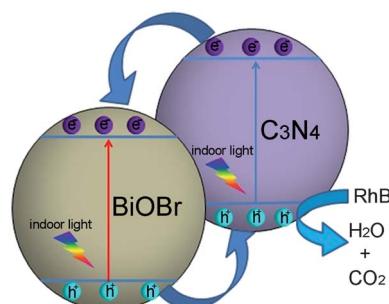


21159

BiOBr–carbon nitride heterojunctions: synthesis, enhanced activity and photocatalytic mechanism

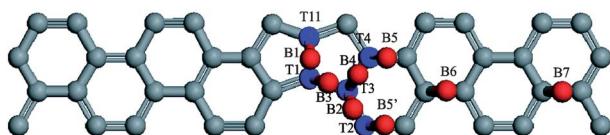
Jie Fu, Yanlong Tian, Binbin Chang, Fengna Xi and Xiaoping Dong*

Novel heterojunctions of BiOBr–C₃N₄ were fabricated by combining two visible light responsive semiconductors of BiOBr and C₃N₄, which possessed exceptional photocatalytic activities both under visible and indoor light irradiation.



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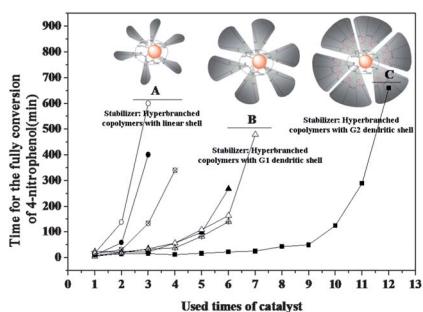
21167

**Atomic nitrogen chemisorption on graphene with extended line defects**

Yu Li, Ji-Chang Ren, Rui-Qin Zhang,* Zijing Lin* and Michel A. Van Hove*

Adsorption of N atoms onto a graphene substrate with extended line defects can substantially affect their electronic and magnetic properties, depending in particular on specific adsorption sites and density.

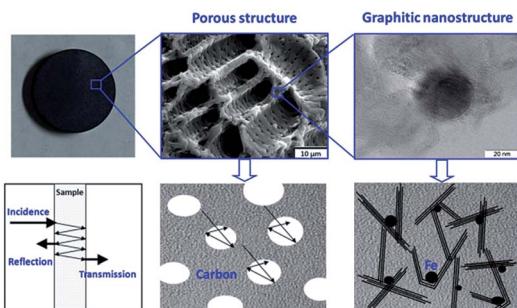
21173

**Amphiphilic hyperbranched copolymers bearing a hyperbranched core and a dendritic shell as novel stabilizers rendering gold nanoparticles with an unprecedentedly long lifetime in the catalytic reduction of 4-nitrophenol**

Yi Liu, You Fan, Yuan Yuan, Yu Chen,* Fa Cheng and Shi-Chun Jiang*

Compared with amphiphilic hyperbranched copolymers with a linear shell, those with a dendritic shell made AuNPs more robust in the catalytic reduction of 4-nitrophenol by NaBH₄.

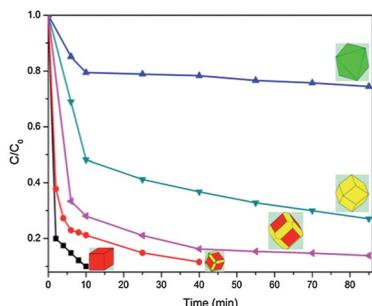
21183

**Biomorphic porous graphitic carbon for electromagnetic interference shielding**

Qinglei Liu, Jiajun Gu, Wang Zhang, Yoshinari Miyamoto, Zhixin Chen and Di Zhang*

Using plant biomass as raw materials, we prepared biomorphic porous carbon materials with tunable electrical conductivity and EMI shielding capacity.

21189

**Controlled synthesis of Ag₂O microcrystals with facet-dependent photocatalytic activities**

Gang Wang, Xiangchao Ma, Baibiao Huang,* Hefeng Cheng, Zeyan Wang, Jie Zhan,* Xiaoyan Qin, Xiaoyang Zhang and Ying Dai

Different morphologies of Ag₂O microcrystals were prepared by a facile method. The as-synthesized samples exhibit facet-dependent photocatalytic activities.

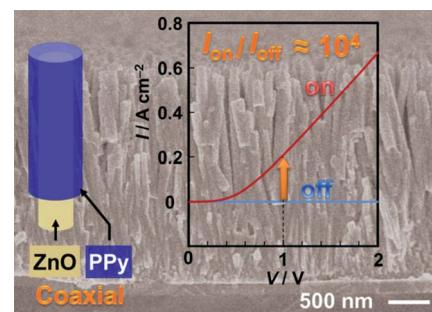
PAPERS

21195

Enhanced photoconductive properties of a simple composite coaxial nanostructure of zinc oxide and polypyrrole

Yuya Oaki,* Takahiro Oki and Hiroaki Imai*

The coaxial nanostructures of zinc oxide and polypyrrole are synthesized through the low-temperature solution processes. Compared with the reference structures, the enhanced photoconductive properties with high on-off ratio comparable to 10^4 are found for the coaxial nanostructures. The results indicate that the simple composites and nanostructures lead to the enhanced performance applicable for photoswitches and photodetectors.

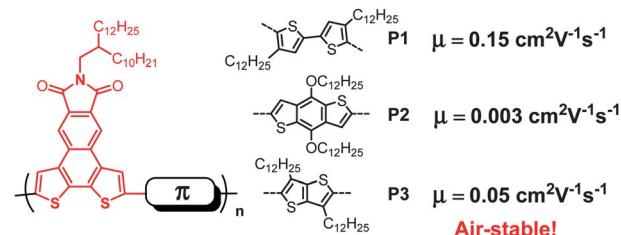


21201

Dithieno-naphthalimide based copolymers for air-stable field effect transistors: synthesis, characterization and device performance

Gaole Dai, Jingjing Chang, Jishan Wu and Chunyan Chi*

A new dithieno-naphthalimide building block was synthesized and three copolymers **P1–P3** were prepared and used for OFETs with good air-stability.

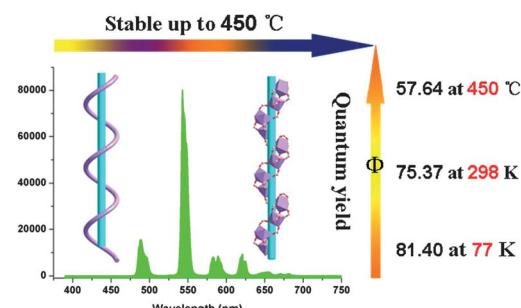


21210

Highly luminescent and thermostable lanthanide-carboxylate framework materials with helical configurations

Huabin Zhang, Liujiang Zhou, Jing Wei, Zhihua Li, Ping Lin and Shaowu Du*

Highly luminescent and thermostable lanthanide-carboxylate frameworks with helical configurations were solvo(hydro) thermally synthesized. The terbium compound has highly efficient emission quantum yields of 81.40% at 77 K and 75.37% at RT.

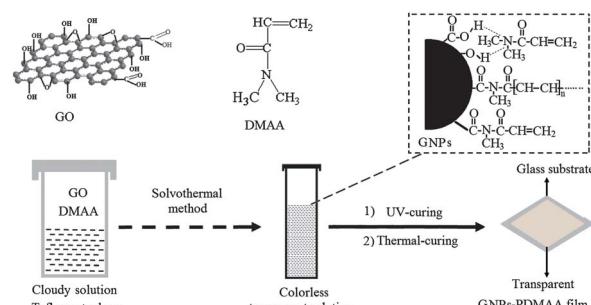


21218

Embedding graphene nanoparticles into poly(*N,N*-dimethylacrylamine) to prepare transparent nanocomposite films with high refractive index

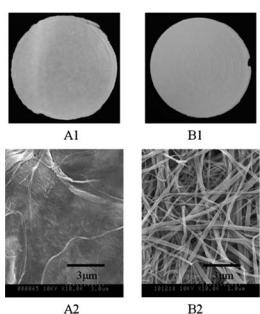
Guoyan Zhang, Hao Zhang, Xiaoran Zhang, Shoujun Zhu, Liang Zhang, Qingnan Meng, Mingyang Wang, Yunfeng Li and Bai Yang*

Transparent nanocomposite films of GNPs-PDMAA with a high refractive index are prepared via a facile *in situ* polymerization method.



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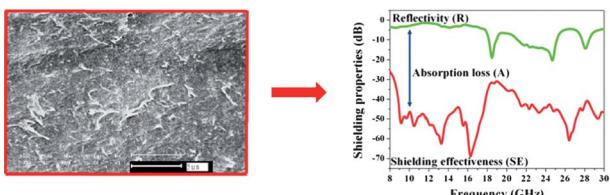
21225

**Fabrication of boehmite and Al_2O_3 nonwovens from boehmite nanofibres and their potential as the sorbent**

Naofumi Nagai, Kazuaki Ihara, Ayaka Itoi, Tetsuya Kodaira, Hiroshi Takashima, Yukiya Hakuta, Kyoko K. Bando, Naotsugu Itoh and Fujio Mizukami*

Boehmite nonwovens with hierarchical texture could be fabricated by a simple procedure consisting of mixing a boehmite nanofibre sol with an organic solvent and filtering the mixture.

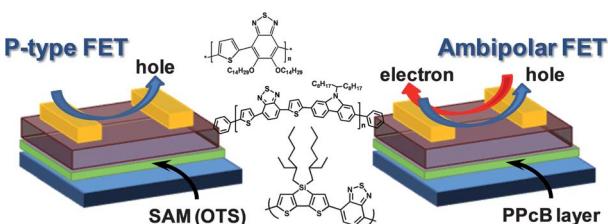
21232

**A material with high electromagnetic radiation shielding effectiveness fabricated using multi-walled carbon nanotubes wrapped with poly(ether sulfone) in a poly(ether ether ketone) matrix**

Hongsong Wang, Guibin Wang, Wenlei Li, Qitong Wang, Wei Wei, Zhenhua Jiang and Shuling Zhang*

A material with high electromagnetic radiation shielding effectiveness fabricated using MWCNTs wrapped with PES in a PEEK matrix was successfully prepared.

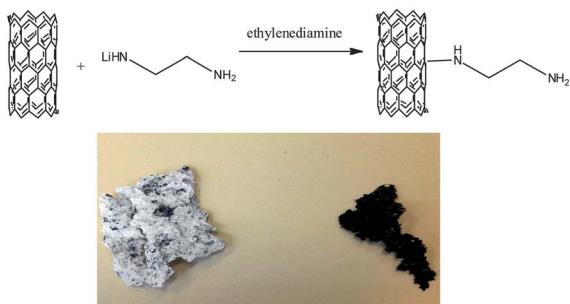
21238

**Observation of ambipolar field-effect behavior in donor–acceptor conjugated copolymers**

Shinuk Cho,* Jung Hwa Seo, Gi-Hwan Kim, Jin Young Kim* and Han Young Woo

Ambipolar field-effect behavior was derived from general D–A conjugated copolymers, believed to be a typical p-type material, by introducing a functional passivation layer between the gate dielectric layer and the active layer using polypropylene-*co*-1-butene (PPcB).

21242

**Direct grafting of carbon nanotubes with ethylenediamine**

Andrei V. Gromov,* Nia Gray, Petra Ágota Szilágyi and Eleanor E. B. Campbell

Singlewall and multiwall carbon nanotubes were covalently functionalised with ethylenediamine (EDA) in a simple one-pot process providing a good surface coverage.

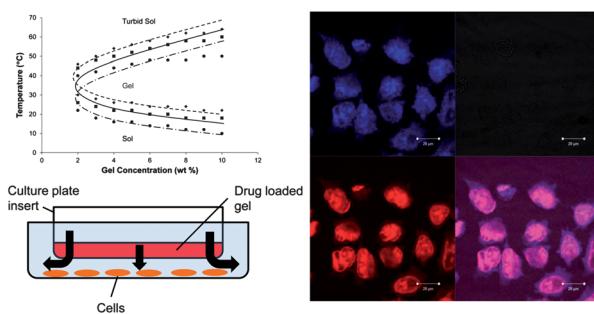
PAPERS

21249

Sustained delivery of doxorubicin from thermogelling poly(PEG/PPG/PTMC urethane)s for effective eradication of cancer cells

Xian Jun Loh,* William Guerin and Sophie M. Guillaume

A series of multiblock poly(ether carbonate urethane)s comprising poly(trimethylene carbonate), poly(ethylene glycol), and poly(propylene glycol) segments with gelation concentrations as low as 2 wt% were studied. The doxorubicin-loaded gels were effective in controlling the growth of HeLa cells demonstrating that the copolymers could be potentially used in chemotherapeutic applications.

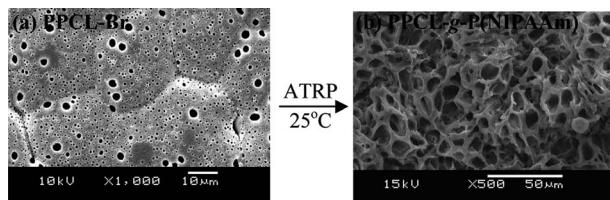


21257

Temperature-responsive porous polycaprolactone-based films via surface-initiated ATRP for protein delivery

Y. Hu, N. N. Zhao, J. S. Li, W. T. Yang and F. J. Xu*

The inherent hydroxyl groups on the porous polycaprolactone films could be used to produce a sufficient concentration of surface-coupled ATRP initiators for the surface-initiated ATRP of thermo-responsive NIPAAm at room temperature.

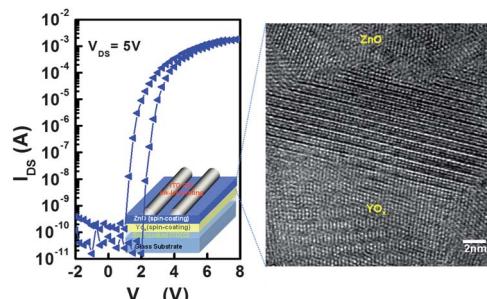


21265

A solution-processed yttrium oxide gate insulator for high-performance all-solution-processed fully transparent thin film transistors

Keunkyu Song, Wooseok Yang, Yangho Jung, Sunho Jeong and Jooho Moon*

All-solution-processed fully transparent ZnO thin film transistors on glass substrates were demonstrated for the first time. The resulting device exhibits an exceptionally high field-effect mobility of $135 \text{ cm}^2 \text{ V}^{-1} \text{ s}^{-1}$ and an on-off current ratio of 5.7×10^7 as well as low-voltage operation.

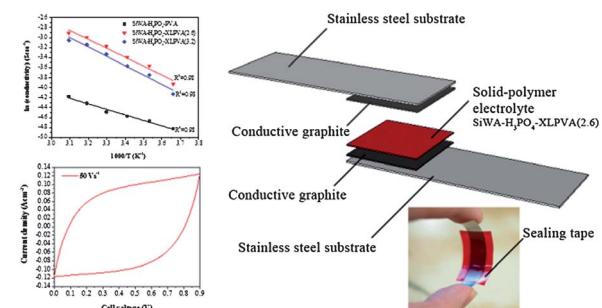


21272

Advanced proton conducting membrane for ultra-high rate solid flexible electrochemical capacitors

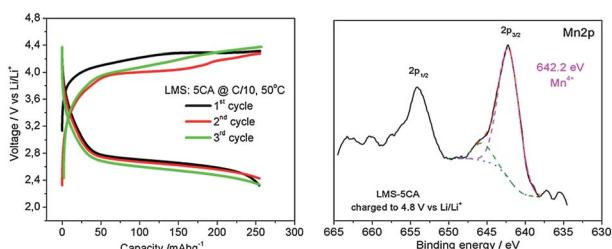
Han Gao and Keryn Lian*

A novel polymer electrolyte using silicotungstic acid and chemically cross-linked polyvinyl alcohol was characterized for ultra-high rate thin/flexible supercapacitors.



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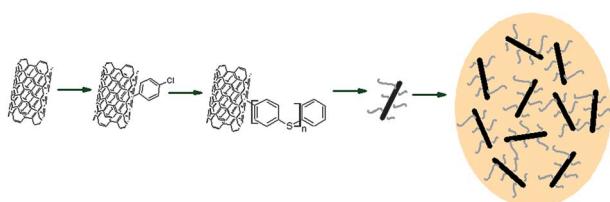
21279

**Li₂MnSiO₄ obtained by microwave assisted solvothermal method: electrochemical and surface studies**

M. Kuezma, S. Devaraj and P. Balaya*

Nanostructured Li₂MnSiO₄ is successfully synthesized by microwave assisted solvothermal method followed by successful conductive carbon coating. For the first time, we confirm the presence of Mn⁴⁺ by XPS studies upon charging Li₂MnSiO₄.

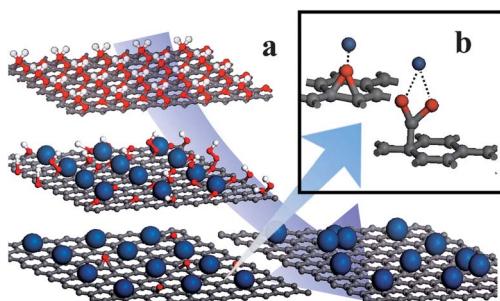
21285

**Covalent functionalization of MWCNTs with poly(*p*-phenylene sulphide) oligomers: a route to the efficient integration through a chemical approach**

J. M. González-Domínguez, P. Castell,* S. Bespín-Gascón, A. Ansón-Casaos, A. M. Díez-Pascual, M. A. Gómez-Fatou, A. M. Benito, W. K. Maser and M. T. Martínez

Schematic representation of the preparation route of CNT/PPS composites.

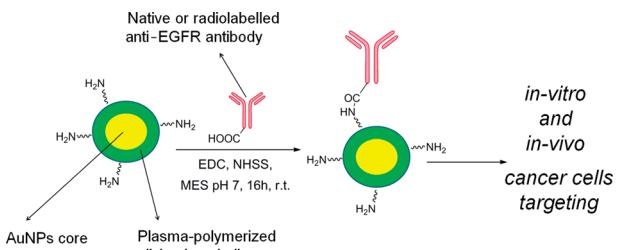
21298

**Bifunctional effect of reduced graphene oxides to support active metal nanoparticles for oxygen reduction reaction and stability**

Daping He, Kun Cheng, Tao Peng, Xueling Sun, Mu Pan and Shichun Mu*

Highly active and stable Pt/reduced graphene oxide (RGO) electrocatalysts for the application of PEM fuel cells can be developed by tuning the O/C atom ratio of RGO supports.

21305

**Antibody-functionalized polymer-coated gold nanoparticles targeting cancer cells: an *in vitro* and *in vivo* study**

Riccardo Marega, Linda Karmani, Lionel Flamant, Praveen Ganesh Nageswaran, Vanessa Valembois, Bernard Masereel, Olivier Feron, Thierry Vander Borgh, Stephane Lucas,* Carine Michiels,* Bernard Gallez* and Davide Bonifazi*

Gold nanoparticles (~5 nm) coated with plasma-polymerized allylamine were produced through plasma vapor deposition and bioconjugated with a monoclonal antibody targeting the epidermal growth factor receptor.