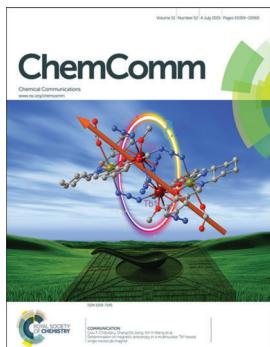


### IN THIS ISSUE

ISSN 1359-7345 CODEN CHCOFS 51(52) 10359–10560 (2015)



#### Cover

See Liviu F. Chibotaru,  
Shang-Da Jiang,  
Xin-Yi Wang *et al.*,  
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2015, **51**, 10373.



#### Inside cover

See Francisco J. Andrade  
*et al.*, pp. 10377–10380.  
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2015, **51**, 10377.

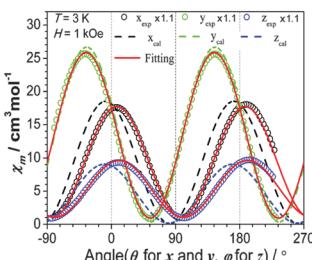
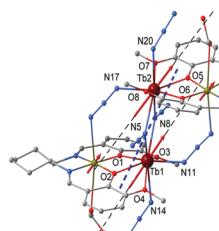
### COMMUNICATIONS

10373

#### Determination of magnetic anisotropy in a multinuclear $\text{Tb}^{III}$ -based single-molecule magnet

Xing-Cai Huang, Veacheslav Vieru, Liviu F. Chibotaru,\* Wolfgang Wernsdorfer, Shang-Da Jiang\* and Xin-Yi Wang\*

The magnetic anisotropy axis of the  $\text{Tb}^{3+}$  ion in a tetrานuclear  $[\text{CuTb}]_2$  SMM was established by magneto-structural relationship investigation.

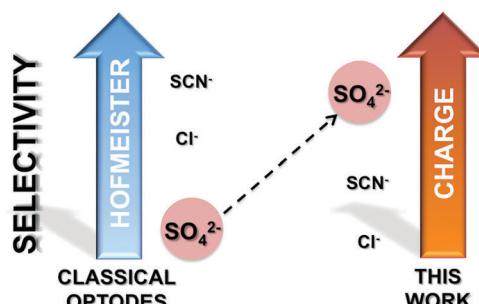


10377

#### Sulphate-selective optical microsensors: overcoming the hydration energy penalty

Tomàs Guinovart, Pascal Blondepau and Francisco J. Andrade\*

Novel membrane-free chemically modified polystyrene microspheres for the optical detection of sulphate in aqueous media are introduced.



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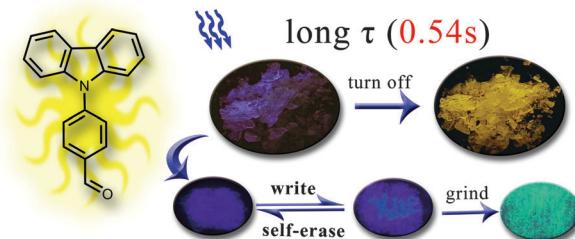
## COMMUNICATIONS

10381

**Luminescence switching of a persistent room-temperature phosphorescent pure organic molecule in response to external stimuli**

Pengchong Xue,\* Jiabao Sun, Peng Chen, Panpan Wang, Boqi Yao, Peng Gong, Zhenqi Zhang and Ran Lu

A metal- and heavy atom-free nonplanar organic molecule with persistent RTP was successfully fabricated and exhibited a multicolour phosphorescence-to-fluorescence switching property in response to mechanical force stimuli.

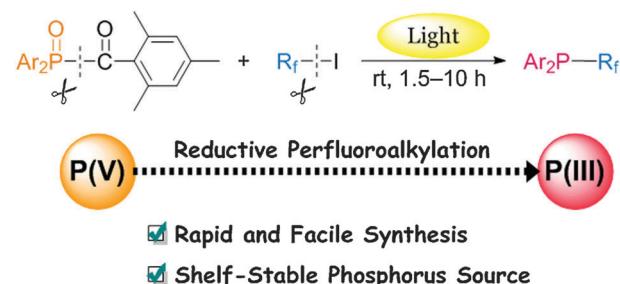


10385

**Photoinduced reductive perfluoroalkylation of phosphine oxides: synthesis of *P*-perfluoroalkylated phosphines using TMDPO and perfluoroalkyl iodides**

Yuki Sato, Shin-ichi Kawaguchi and Akiya Ogawa\*

*P*-Perfluoroalkylphosphines are synthesized by photoreaction between TMDPO and perfluoroalkyl iodides, with the reduction of phosphine oxides.



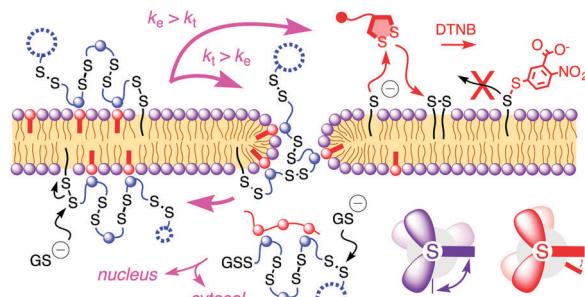
## FEATURE ARTICLES

10389

**Cellular uptake: lessons from supramolecular organic chemistry**

Giulio Gasparini, Eun-Kyoung Bang, Javier Montenegro and Stefan Matile\*

This Feature Article summarizes contemporary supramolecular chemistry approaches to find conceptually innovative ways to enter into cells.

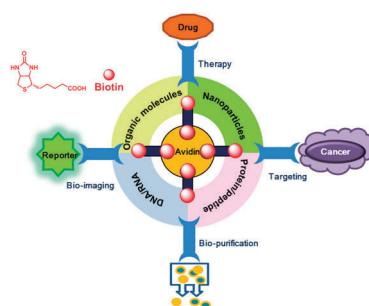


10403

**Recent development of biotin conjugation in biological imaging, sensing, and target delivery**

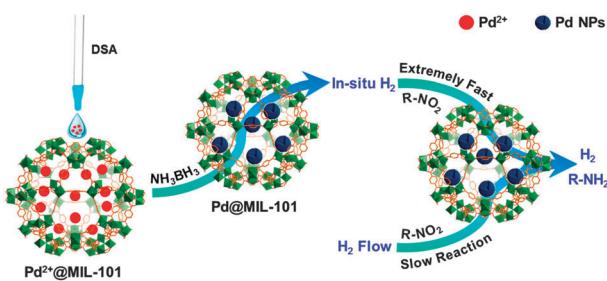
Wen Xiu Ren, Jiyou Han, Soojin Uhm, Yu Jin Jang, Chulhun Kang,\* Jong-Hoon Kim\* and Jong Seung Kim\*

Biotin is a promising targeting unit for carcinoma cell lines and the avidin–biotin technology is an exceedingly flexible tool for pretargeting and vector targeting. Thus, biotin conjugation is an attractive choice for achieving site-specific sensing, labeling, and delivery.



## COMMUNICATIONS

10419

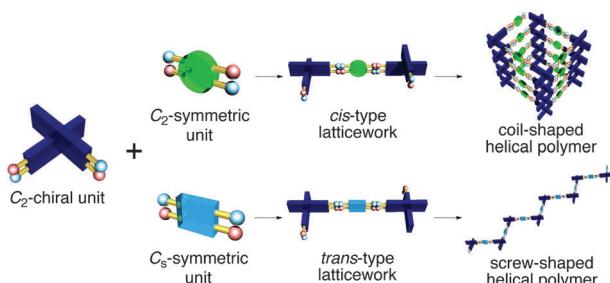


### One-pot tandem catalysis over $\text{Pd@MIL-101}$ : boosting the efficiency of nitro compound hydrogenation by coupling with ammonia borane dehydrogenation

Qihao Yang, Yu-Zhen Chen, Zhiyong U. Wang, Qiang Xu and Hai-Long Jiang\*

The hydrogenation efficiency of nitro compounds is greatly boosted by coupling with ammonia borane dehydrogenation over rationally synthesized  $\text{Pd@MIL-101}$  with Pd NPs in  $\sim 3$  nm.

10423

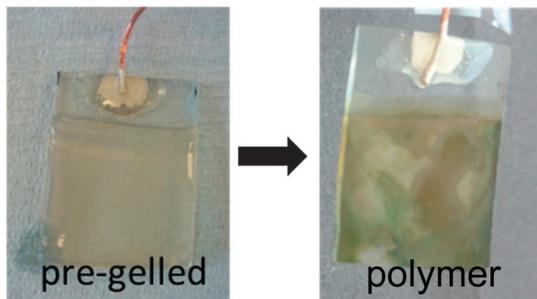


### Exact helical polymer synthesis by a two-point-covalent-linking protocol between $\text{C}_2$ -chiral spirobifluorene and $\text{C}_2$ - or $\text{C}_s$ -symmetric anthraquinone monomers

Zhaozhong Yi, Hitoshi Okuda, Yasuhito Koyama, Ryota Seto, Satoshi Uchida, Hiromitsu Sogawa, Shigeki Kuwata and Toshikazu Takata\*

Two types of one-handed exact helical polymers, coil- and screw-shaped polymers, were selectively synthesized by a two-point-covalent-linking protocol.

10427

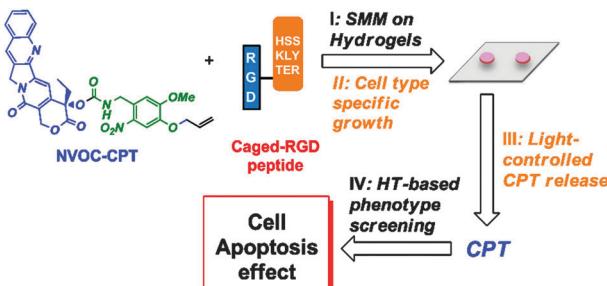


### Polymerization of low molecular weight hydrogelators to form electrochromic polymers

Peter S. Kubiak, Salmah Awhida, Christopher Hotchen, Wentao Deng, Ben Alston, Tom O. McDonald, Dave J. Adams\* and Petra J. Cameron\*

We show that it is possible to directly electropolymerize pre-assembled carbazole-based hydrogels to give electrochromic polymers with distinctive structure.

10431



### Controlled proliferation and screening of mammalian cells on a hydrogel-functionalized small molecule microarray

Biwei Zhu, Bo Jiang, Zhenkun Na and Shao Q. Yao\*

Controlled proliferation and selective growth of mammalian cells were achieved on a small molecule microarray functionalized by hydrogels.

## COMMUNICATIONS

10435

**A fluorescent probe for hypochlorite based on the modulation of the unique rotation of the N–N single bond in acetohydrazide**

Lingliang Long,\* Yanjun Wu, Lin Wang, Aihua Gong,\* Feilong Hu and Chi Zhang\*

A fluorescent probe for hypochlorite was developed based on a novel signaling mechanism of modulating the N–N bond rotation in acetohydrazide.

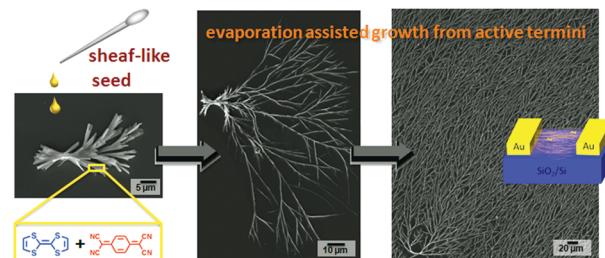


10439

**Seeded on-surface supramolecular growth for large area conductive donor–acceptor assembly**

Goudappagouda, Sundaresan Chithiravel, Kothandam Krishnamoorthy, Suresh W. Gosavi and Sukumaran Santhosh Babu\*

A seeded, on-surface, supramolecular growth leads to large area conductive donor–acceptor assembly *via* evaporation-assisted growth from active termini of solution-formed sheaf-like seeds.

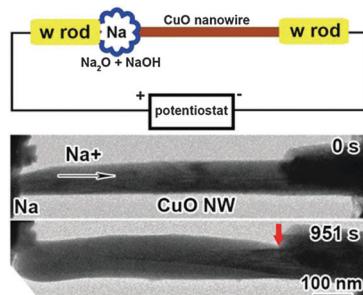


10443

***In situ* observation of the sodiation process in CuO nanowires**

Huihui Liu, Fan Cao, He Zheng, Huaping Sheng, Lei Li, Shujing Wu, Chun Liu and Jianbo Wang\*

We observed the dynamic evolution of the morphology and phase transformations of CuO nanowires during sodiation using *in situ* transmission electron microscopy. These results will facilitate our fundamental understanding of the sodiation mechanism of CuO nanostructures used as electrode materials in sodium ion batteries.

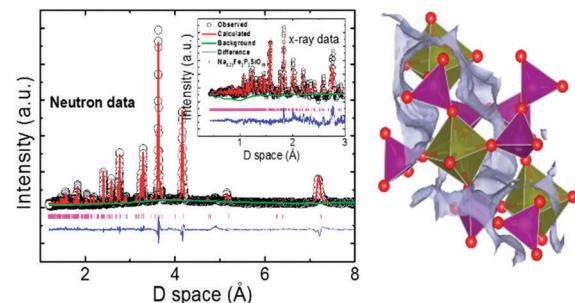


10447

**The first Fe-based Na<sup>+</sup>-ion cathode with two distinct types of polyanions: Fe<sub>3</sub>P<sub>5</sub>SiO<sub>19</sub>**

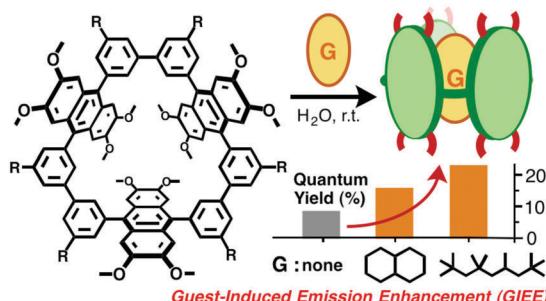
W. H. Kan, A. Huq and A. Manthiram\*

Herein, we report the synthesis, structure, and electrochemistry of the first Na<sup>+</sup>-ion cathode with two distinct types of polyanions: Fe<sub>3</sub>P<sub>5</sub>SiO<sub>19</sub>.



## COMMUNICATIONS

10451

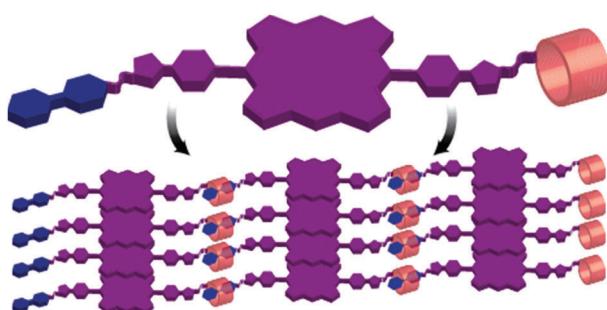


**Polyaromatic molecular tubes with a subnanometer pore and the guest-induced emission enhancement behavior**

Keita Hagiwara, Masafumi Otsuki, Munetaka Akita and Michito Yoshizawa\*

New polyaromatic molecular tubes with a subnanometer pore (0.8 nm) can bind one molecule of hydrocarbon guests in water with accompanying guest-induced emission enhancement (up to  $\sim 3$  times).

10455

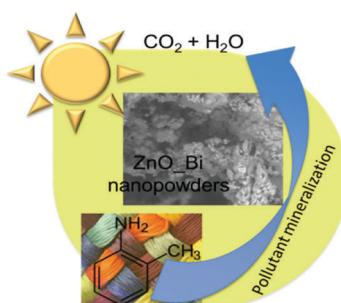


**Porphyrinic supramolecular daisy chains incorporating pillar[5]arene–viologen host–guest interactions**

Maher Fathalla, Nathan L. Strutt, Srinivasan Sampath, Khabiboulakh Katsiev, Karel J. Hartlieb, Osman M. Bakr and J. Fraser Stoddart\*

Daisy chains and organogels have been prepared by utilising noncovalent interactions between viologens and pillar[5]arenes together with stacked porphyrins.

10459

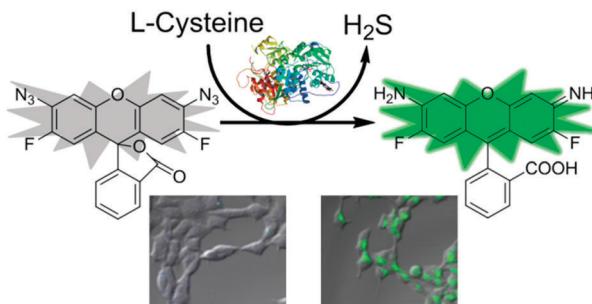


**Hazardous *o*-toluidine mineralization by photocatalytic bismuth doped ZnO slurries**

G. Cappelletti,\* V. Pifferi, S. Mostoni, L. Falciola, C. Di Bari, F. Spadavecchia, D. Meroni, E. Davoli and S. Ardizzone

Photocatalytic mineralization of *o*-toluidine in aqueous media under UV/solar irradiation was achieved by bare and bismuth doped zinc oxide nanoparticles.

10463



**A highly selective and fast-response fluorescent probe for visualization of enzymatic H<sub>2</sub>S production *in vitro* and in living cells**

Lv Wei, Zhentao Zhu, Yanyan Li, Long Yi\* and Zhen Xi\*

The *o*-fluorinated-azido-capped rhodamine probe was developed for visualization of enzymatic H<sub>2</sub>S production both *in vitro* and in living cells.

## COMMUNICATIONS

10467

**Nanoparticle–sulphur “inverse vulcanisation” polymer composites**

Joseph C. Bear, William J. Peveler, Paul D. McNaughton, Ivan P. Parkin, Paul O’Brien and Charles W. Dunnill\*

Sulfur based mouldable nanocomposite polymers by “inverse vulcanisation”. Functional materials from waste.

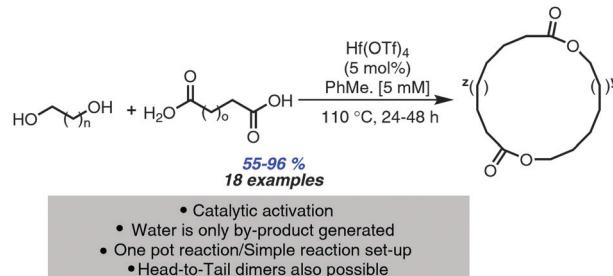


10471

**Direct synthesis of macrodiolides via hafnium(IV) catalysis**

Mylène de Léséleuc and Shawn K. Collins\*

Efficient direct synthesis of macrodiolides *via* catalysis using Hf(OTf)<sub>4</sub> is possible in high yields, forming water as the sole by-product.

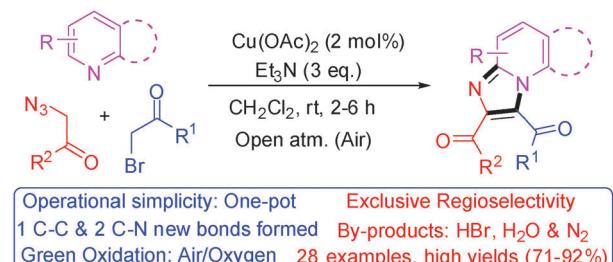


10475

**Cu(OAc)<sub>2</sub>–Et<sub>3</sub>N mediated oxidative coupling of  $\alpha$ -azido ketones with pyridinium ylides: utilizing *in situ* generated imines for regioselective synthesis of imidazo[1,2-a]pyridines**

Ahmed Kamal,\* Chada Narsimha Reddy, Malasala Satyaveni, D. Chandrasekhar, Jagadeesh Babu Nanubolu, Kiran Kumar Singaraju and Ram Awatar Maurya\*

Imidazo[1,2-a]pyridines are synthesized *via* Cu(OAc)<sub>2</sub>–Et<sub>3</sub>N mediated one-pot coupling of pyridines,  $\alpha$ -bromo ketones and  $\alpha$ -azido ketones.

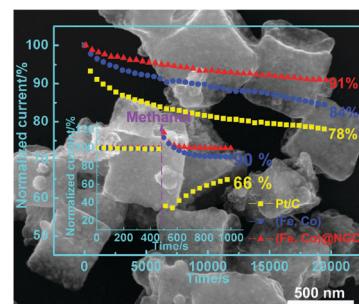


10479

**(Fe,Co)@nitrogen-doped graphitic carbon nanocubes derived from polydopamine-encapsulated metal–organic frameworks as a highly stable and selective non-precious oxygen reduction electrocatalyst**

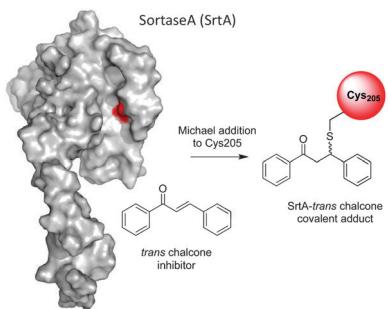
Jiangbo Xi, Yating Xia, Yangyang Xu, Junwu Xiao\* and Shuai Wang\*

A facile approach is reported to synthesize (Fe,Co)@nitrogen-doped graphitic carbon (NGC) nanocubes (NCs) *via* the pyrolysis of polydopamine-encapsulated Fe<sub>3</sub>[Co(CN)<sub>6</sub>]<sub>2</sub> NCs at 700 °C.



## COMMUNICATIONS

10483

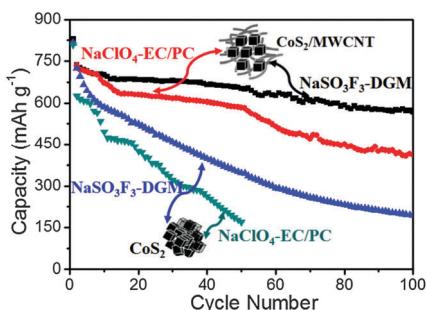


**Molecular basis of *Streptococcus mutans* sortase A inhibition by the flavonoid natural product *trans*-chalcone**

Daynea J. Wallock-Richards, Jon Marles-Wright, David J. Clarke, Amarnath Maitra, Michael Dodds, Bryan Hanley and Dominic J. Campopiano\*

Sortase A (SrtA) from Gram positive pathogens is an attractive target for inhibitors due to its role in the attachment of surface proteins to the cell wall.

10486



**Improved electrochemical performance of CoS<sub>2</sub>-MWCNT nanocomposites for sodium-ion batteries**

Zulipiya Shadike, Ming-Hui Cao, Fei Ding, Lin Sang and Zheng-Wen Fu\*

The CoS<sub>2</sub>-MWCNT electrode delivers superior cyclic stability with a capacity retention of 568 mA h g<sup>-1</sup> after 100 cycles in NaSO<sub>3</sub>F<sub>3</sub>-DGM.

10490

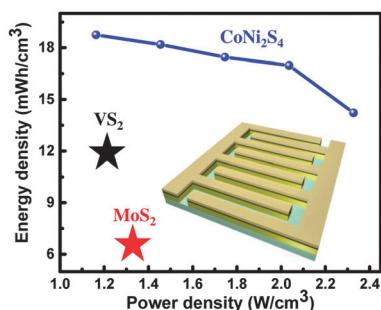


**A facile strategy to synthesize three-dimensional Pd@Pt core–shell nanoflowers supported on graphene nanosheets as enhanced nanoelectrocatalysts for methanol oxidation**

Yi Chen, Jia Yang, Ying Yang, Zhiyao Peng, Jinhua Li, Tao Mei, Jianying Wang, Ming Hao, Yalin Chen, Weilai Xiong, Liu Zhang and Xianbao Wang\*

A water-based surfactant-free synthesis of three-dimensional porous Pd@Pt core–shell nanoflowers on graphene with substantially enhanced electrocatalytic activity was reported.

10494



**Ternary chalcogenide micro-pseudocapacitors for on-chip energy storage**

Narendra Kurra, Chuan Xia, M. N. Heddili and H. N. Alshareef\*

Ternary nickel cobalt sulfide micro-pseudocapacitors exhibit superior electrochemical performance over binary sulfide micro-electrodes reported in the literature.

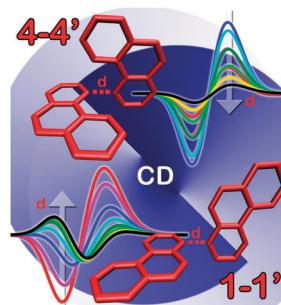
## COMMUNICATIONS

10498

**The role of magnetic–electric coupling in exciton-coupled ECD spectra: the case of bis-phenanthrenes**

Sandro Jurinovich, Ciro A. Guido, Torsten Bruhn, Gennaro Pescitelli\* and Benedetta Mennucci\*

The intrinsic magnetic moment of phenanthrene  $^1\text{B}_0$  transition has a strong impact on exciton-coupled CD spectra of some bis(phenanthrenes).

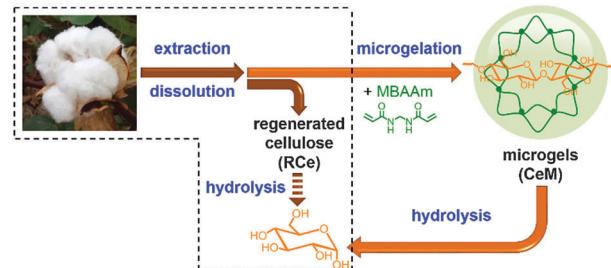


10502

**Enhanced enzymatic hydrolysis of cellulose in microgels**

Aiping Chang, Qingshi Wu, Wenting Xu, Jianda Xie and Weitai Wu\*

The physical trapping of cellulose in microgels leads to a low-ordered cellulose, favoring enzymatic hydrolysis of cellulose to generate glucose.

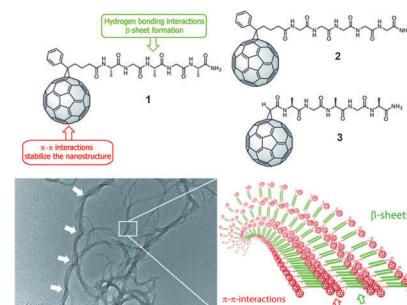


10506

**Supramolecular pentapeptide-based fullerene nanofibers: effect of molecular chirality**

Alberto Insuasty, Carmen Atienza, Juan Luis López and Nazario Martín\*

The supramolecular organization of new fullerene derivatives endowed with peptides as biomolecular templates affords ordered nanofibers of several micrometres length based on hydrogen bonds and  $\pi$ - $\pi$  interactions.

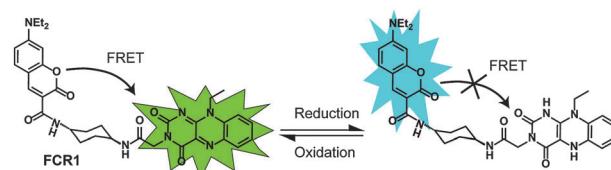


10510

**A FRET-based ratiometric redox probe for detecting oxidative stress by confocal microscopy, FLIM and flow cytometry**

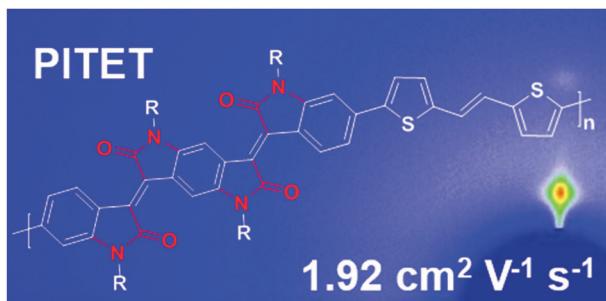
Amandeep Kaur, Mohammad A. Haghaghbin, Conor F. Hogan and Elizabeth J. New\*

A FRET-based, ratiometric redox probe undergoes a fluorescence colour change upon reduction, and can be used to study cellular oxidative capacity using confocal microscopy, fluorescence lifetime imaging and flow cytometry.



## COMMUNICATIONS

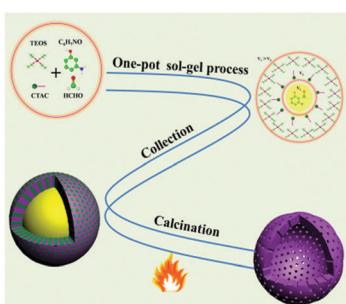
10514

**N-Fused BDOPV: a tetralactam derivative as a building block for polymer field-effect transistors**

Yue Cao, Jing-Song Yuan, Xu Zhou, Xiao-Ye Wang, Fang-Dong Zhuang, Jie-Yu Wang and Jian Pei\*

Based on a  $\pi$ -extended isoindigo derivative **NBDOPV**, the conjugated polymer **PITET** shows a hole mobility of  $1.92 \text{ cm}^2 \text{ V}^{-1} \text{ s}^{-1}$ .

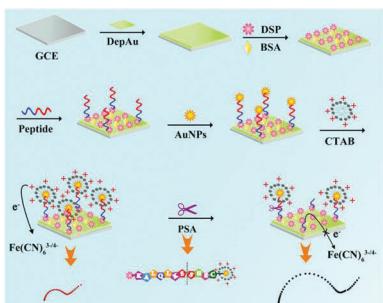
10517

**Controllable synthesis of hollow mesoporous silica particles by a facile one-pot sol-gel method**

Jing-Chuan Song, Fei-Fei Xue, Zhong-Yuan Lu and Zhao-Yan Sun\*

A simple and facile one-pot sol-gel method is proposed for the fabrication of hollow mesoporous silica particles. Both the particle size and the shell thickness can be well controlled.

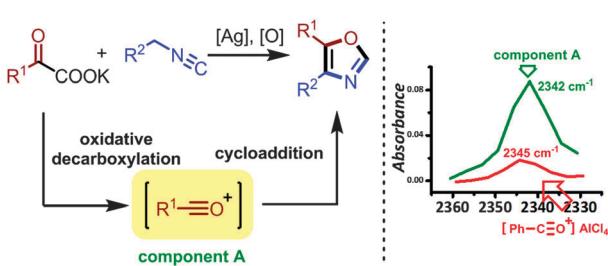
10521

**Target protein induced cleavage of a specific peptide for prostate-specific antigen detection with positively charged gold nanoparticles as signal enhancer**

Ding Wang, Yingning Zheng, Yaqin Chai, Yali Yuan\* and Ruo Yuan\*

A "signal-on" electrochemical biosensor based on target protein induced cleavage of a specific peptide with positively charged gold nanoparticles (AuNPs) as signal enhancer was developed to determine prostate-specific antigen (PSA).

10524

**Synthesis of oxazoles by silver catalysed oxidative decarboxylation–cyclization of  $\alpha$ -oxocarboxylates and isocyanides**

Yiyang Ma, Zhiyuan Yan, Changliang Bian, Ke Li, Xiaowen Zhang, Mengfan Wang, Xinlong Gao, Heng Zhang\* and Aiwen Lei\*

This work developed a silver catalysed synthesis of oxazoles by the oxidative decarboxylation–cyclization of  $\alpha$ -oxocarboxylates and isocyanides.

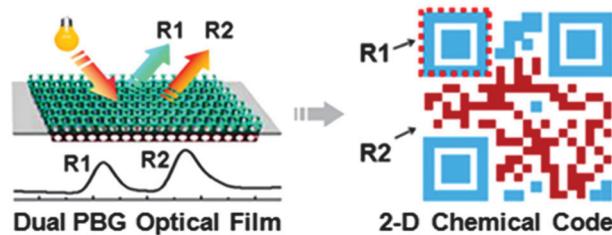
## COMMUNICATIONS

10528

**Dual photonic-bandgap optical films towards the generation of photonic crystal-derived 2-dimensional chemical codes**

Jing Zhang, Shengyang Yang, Yu Tian, Cai-Feng Wang and Su Chen\*

Chemical-oriented 2-dimensional optical codes with diverse dual-photonic bandgap (dual-PBG) signals are designed for high-capacity encoding and anti-jamming sensing applications.

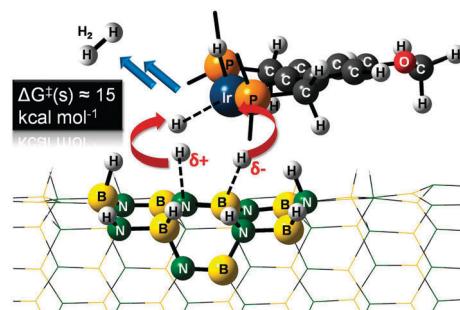


10532

**Computational design of an Iridium based catalyst for releasing H<sub>2</sub> from hydrogenated BN nanotubes**

Lisa Roy\* and Ankan Paul\*

Theoretical investigations reveal that Ir pincer complexes can release molecular hydrogen from hydrogenated boron nitride nanotubes at room temperature accessible free energy barriers.

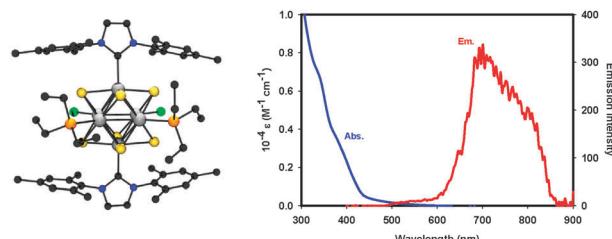


10536

**Organometallic rhenium(III) chalcogenide clusters: coordination of N-heterocyclic carbenes**

Jessica L. Durham, Wade B. Wilson, Daniel N. Huh, Robert McDonald and Lisa F. Szczepura\*

NHCs were coordinated to [Re<sub>6</sub>Q<sub>8</sub>]<sup>2+</sup> (Q = S or Se) cluster cores and their photophysical properties investigated.

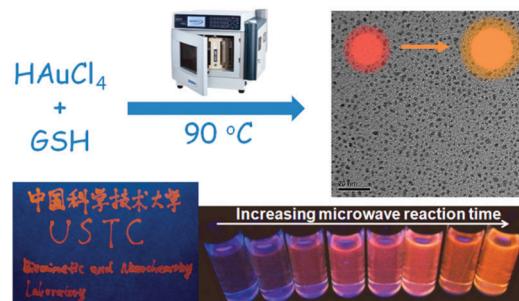


10539

**A microwave-facilitated rapid synthesis of gold nanoclusters with tunable optical properties for sensing ions and fluorescent ink**

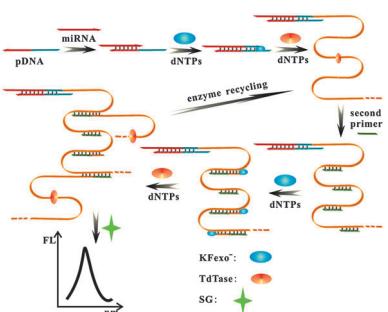
Jia Zhang,\* Yue Yuan, Gaolin Liang, Muhammad Nadeem Arshad, Hassan A. Albar, Tariq R. Sobahi and Shu-Hong Yu\*

Luminescent gold nanoclusters with tunable emissions for sensing ions and fluorescent ink can be efficiently synthesized using a solution-based microwave method.



## COMMUNICATIONS

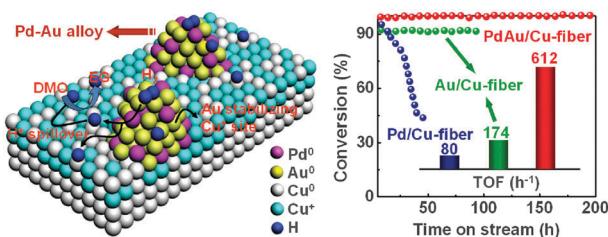
10543

**Sensitive and homogeneous microRNA detection using branched cascade enzymatic amplification**

Bao-Zhu Chi, Ru-Ping Liang, Li Zhang and Jian-Ding Qiu\*

A novel and straightforward method for sensitive microRNA detection is developed based on branched cascade enzymatic amplification.

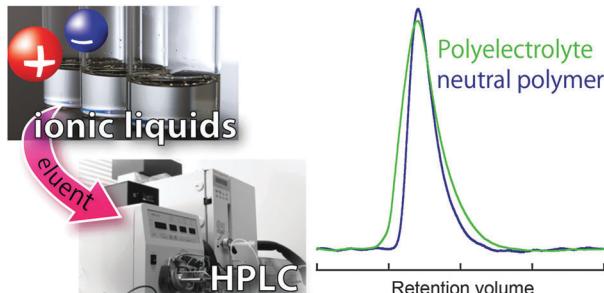
10547

**Structured Pd–Au/Cu-fiber catalyst for gas-phase hydrogenolysis of dimethyl oxalate to ethylene glycol**

Li Zhang, Lupeng Han, Guofeng Zhao,\* Ruijuan Chai, Qiaofei Zhang, Ye Liu and Yong Lu\*

A structured Pd–Au/Cu-fiber with a ternary Pd–Au–Cu<sup>+</sup> complex is active, selective and stable for the gas-phase hydrogenolysis of dimethyl oxalate to ethylene glycol.

10551

**Ionic liquids enable accurate chromatographic analysis of polyelectrolytes**

Kosuke Kuroda and Hiroyuki Ohno\*

The use of high performance liquid chromatography with ionic liquids as eluents enables the accurate analysis of polyelectrolytes without false results.

10554

**Catalytic asymmetric desymmetrization of *N*-arylmaleimides: efficient construction of both atom chirality and axial chirality**

Jianlin Zhang, Yulong Zhang, Lili Lin, Qian Yao, Xiaohua Liu and Xiaoming Feng\*

The asymmetric Michael addition/desymmetrization reaction catalyzed by a *N,N'*-dioxide-Sc(III) complex was realized, leading to the succinimides with two kinds of stereogenic elements—atom chirality and axial chirality in up to 99% yield, 99% ee and >19:1 d.r.