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ISSN 1359-7345 CODEN CHCOFS 60(97) 14291–14484 (2024)



#### Cover

See Rémi Maurice et al., pp. 14376–14379.  
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#### Inside cover

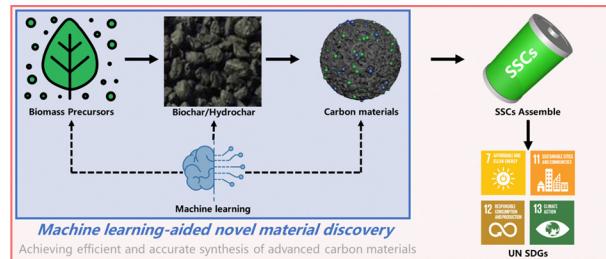
See Montree Sawangphruk et al., pp. 14380–14383.  
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### HIGHLIGHTS

14303

#### Sustainably transforming biomass into advanced carbon materials for solid-state supercapacitors: a review

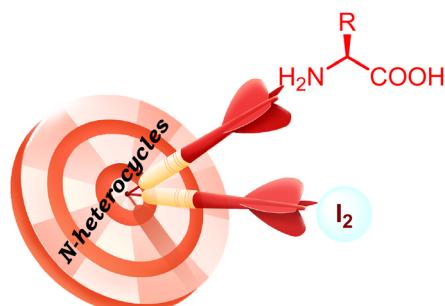
Ruibo Fan, Beichen Xue, Pengfei Tian, Xuesong Zhang, Xiangzhou Yuan\* and Huiyan Zhang



14318

#### Recent advances in the synthesis of N-heterocycles from $\alpha$ -amino acids mediated by iodine

Dong-Sheng Yang, Jia-Chen Xiang\* and An-Xin Wu\*



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Fundamental questions  
Elemental answers

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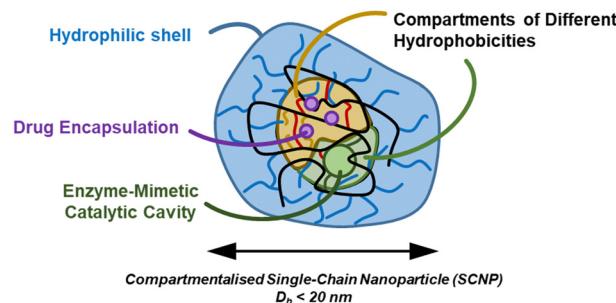


## FEATURE ARTICLES

14332

**Compartmentalised single-chain nanoparticles and their function**

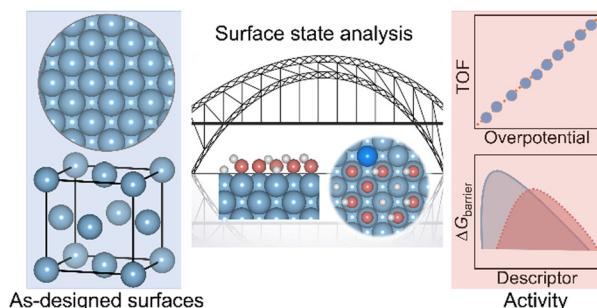
Justus F. Thümmeler and Wolfgang H. Binder\*



14346

**Surface coverage and reconstruction analyses bridge the correlation between structure and activity for electrocatalysis**

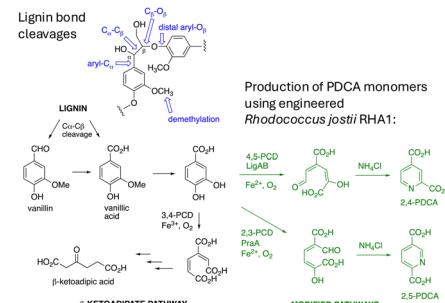
Zhongyuan Guo, Tianyi Wang, Jiang Xu,\* Ang Cao\* and Hao Li\*



14360

**Sustainable production of aromatic chemicals from lignin using enzymes and engineered microbes**

Victoria Sodré and Timothy D. H. Bugg\*

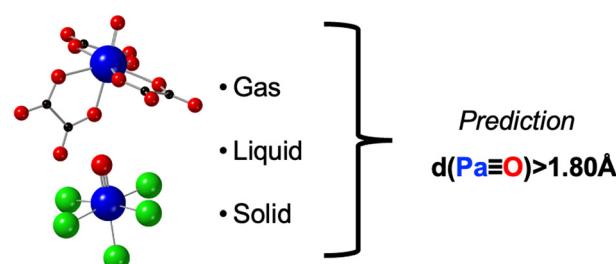


## COMMUNICATIONS

14376

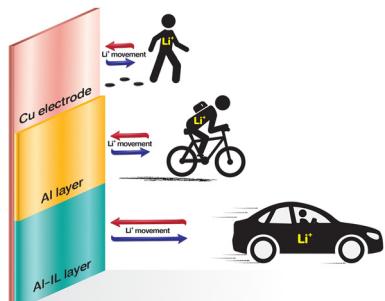
**Is the protactinium(v) mono-oxo bond weaker than what we thought?**

Tamara Shaaban, Hanna Oher, Jean Aupiais, Julie Champion, André Severo Peirera Gomes, Claire Le Naour, Melody Maloubier, Florent Réal, Eric Renault, Xavier Rocquefelte, Bruno Siberchicot, Valérie Vallet and Rémi Maurice\*



## COMMUNICATIONS

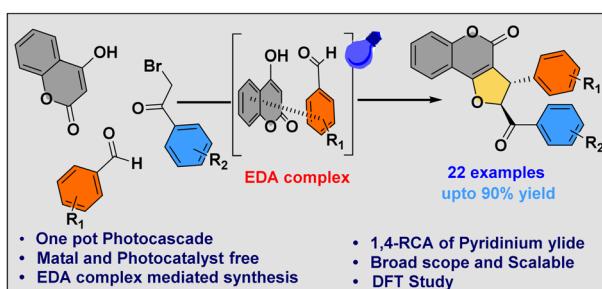
14380



### Preconcentration of lithium salt in nanoporous alumina on Cu foil as a concentrated lithium semi-solid layer for anode-free Li-metal batteries

Nichakarn Anansuksawat, Thitiphum Sangsanit, Surat Prempluem, Kan Homlamai, Poramane Chiochan, Ronnachai Songthan, Worapol Tejangkura and Montree Sawangphruk\*

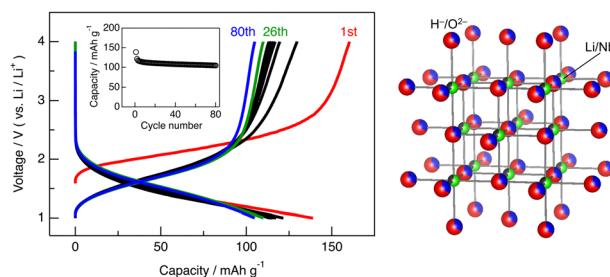
14384



### Electron donor–acceptor complex enabled photocascade strategy for the synthesis of *trans*-dihydrofuro[3,2-c]chromen-4-one scaffolds via radical conjugate addition of pyridinium ylide

Sovan Dey, Arindam Das, Ram Naresh Yadav, Palash Jyoti Boruah, Koushik Sarkar, Amit Kumar Paul and Md. Firoj Hossain\*

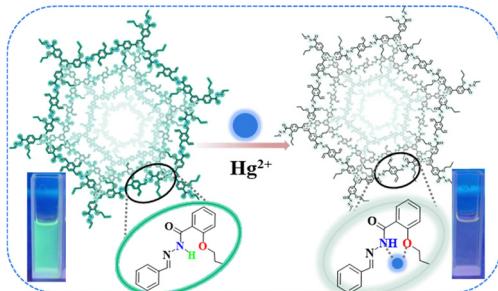
14388



### $\text{Li}_2\text{NbHO}_2$ : a new transition-metal oxyhydride with rock-salt-type structure

Fumitaka Takeiri, Keiko Kusumoto, Kosuke Kawai, Hiroshi Yaguchi, Takashi Saito, Kazuhiro Mori, Saburo Hosokawa, Masashi Okubo and Genki Kobayashi\*

14391



### Hydrazone-linked covalent organic frameworks for fluorescence detection of $\text{Hg}^{2+}$

Xuefeng Wang, Zhaowei Yang, Lingsuo Meng, Xuehui Li, Hongtao Wei, Jing Ning,\* Shitao Wang, Dapeng Cao\* and Long Hao

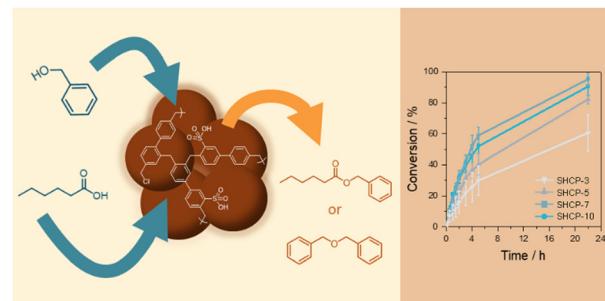


## COMMUNICATIONS

14395

**Tuneable sulfonated hypercrosslinked polymers for selective esterification: insights into performance and stability**

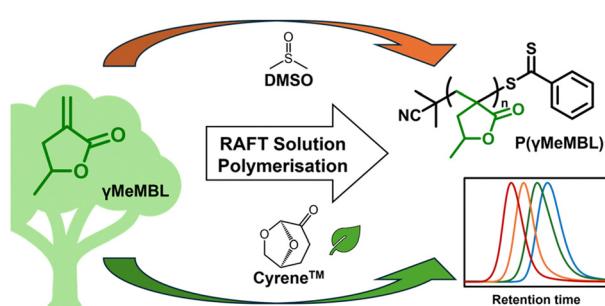
Paul Schweng, Dorian Guerin-Faucheur, Freddy Kleitz\* and Robert T. Woodward\*



14399

**RAFT solution polymerisation of bio-based  $\gamma$ -methyl- $\alpha$ -methylene- $\gamma$ -butyrolactone monomer in DMSO and Cyrene**

Oliver J. Harris, Ryan R. Larder, Beth Jordan, Imogen Prior, Rita El-Khoury, Khaled O. Sebakhy and Fiona L. Hatton\*



14403

**Simple generation of cleavable labels for multiplexed imaging**

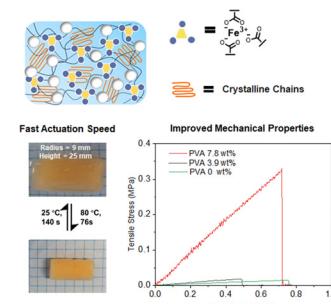
Vincent Van Deuren,\* Silke Denis, Robin Van den Eynde, Jonathan Sai-Hong Chui, Francesca Bosisio, Frederik De Smet, Wim Dehaen, Wim Vandenberg and Peter Dedecker



14407

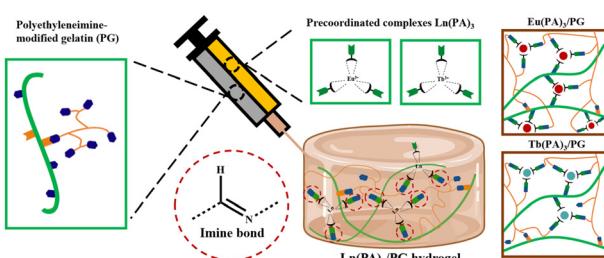
**Designing fast-response porous hydrogel actuators with improved toughness**

Maryam Adavoudi Jolfaei, Yufeng Zhao, Geoffrey M. Spinks\* and Zhen Jiang\*



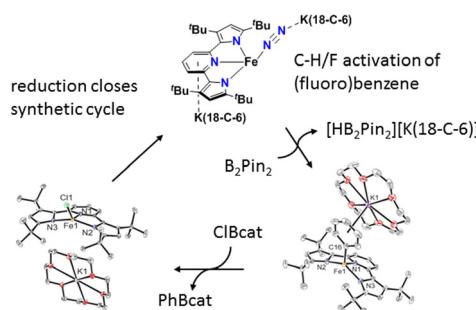
## COMMUNICATIONS

14411

**Fabrication of gelatin hydrogels using pre-coordinated lanthanide complexes via imine crosslinking**

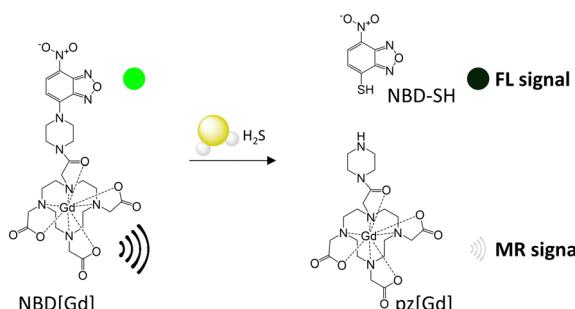
Chen-Cheng Yu, Yu Yun Hsu, Yu-Chia Su, Yi-Chen Yang, Tzu-Ying Wang and Yi-Cheun Yeh\*

14415

**C<sub>sp</sub><sup>2</sup>-H/F bond activation and borylation with iron**

Ethan Zars, Lisa Pick, Achala Kankamamge, Michael R. Gau, Karsten Meyer and Daniel J. Mindiola\*

14419

**A water-soluble Gd(III)-based fluorescence/T<sub>1</sub>-MR dual-modality probe for H<sub>2</sub>S sensing**

Ho-Nam Mak, Xuanyi Lu, Siyu Pan, Yanjuan Gu, Lijun Jiang\* and Wing-Tak Wong\*

14423

**A liquid-infiltrated Al<sub>2</sub>O<sub>3</sub> framework electrolyte enables aqueous zinc batteries**

Rongyu Deng, Yi Yuan, Zixuan Li, Alex W. Robertson\* and Feixiang Wu\*



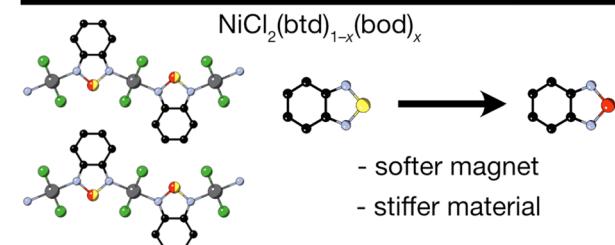
## COMMUNICATIONS

14427

**Ligand solid-solution tuning of magnetic and mechanical properties of the van der Waals metal–organic magnet  $\text{NiCl}_2(\text{btd})_{1-x}(\text{bod})_x$**

Emily Myatt, Simrun Lata, Jem Pitcairn, Dominik Daisenberger, Silva M. Kronawitter, Sebastian A. Hallweger, Gregor Kieslich, Stephen P. Argent, Jeremiah P. Tidey and Matthew J. Cliffe\*

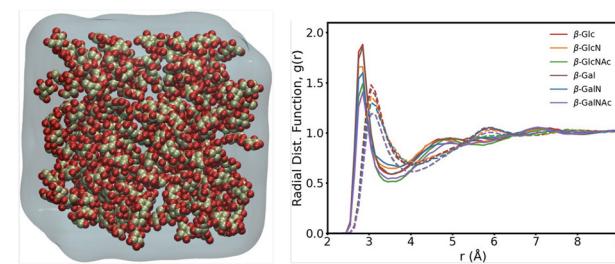
**Ligand solid-solution tuned function**



14431

**Polarizable AMOEBA force field predicts thin and dense hydration layer around monosaccharides**

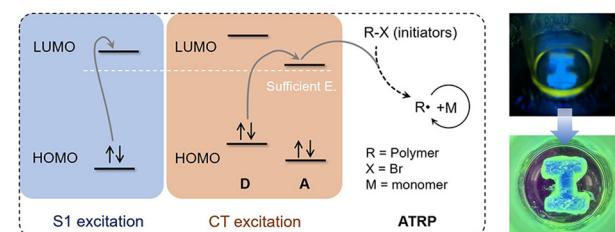
Luke A. Newman, Mackenzie G. Patton, Breyanna A. Rodriguez, Ethan W. Sumner and Valerie Vaissier Welborn\*



14435

**Metal-free photocatalysts with charge-transfer excited states enable visible light-driven atom transfer radical polymerization**

Yuchen Huang, Yangxin Liu, Yingde Yan, Yanjun Gong, Yifan Zhang,\* Yanke Che and Jincai Zhao

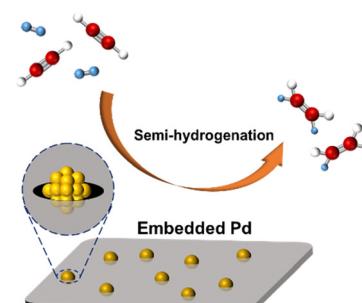


Metal-free donor-acceptor type photocatalysts:  
Lower excitation energy; Visible light driven O-ATRP; Low polymerization dispersity.

14439

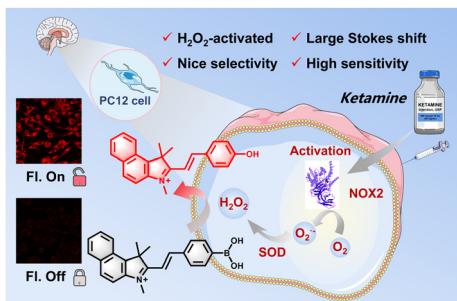
**Semi-hydrogenation of alkynes to alkenes over Pd nanoparticles embedded in  $\text{Mo}_2\text{C}$  prepared from a high-temperature pulse**

Chang Zhou, Haitao Han, Jian Zhang,\* Xiaoxue Mu, Jianbin Huang, Dongquan Lin and Feng-Shou Xiao\*



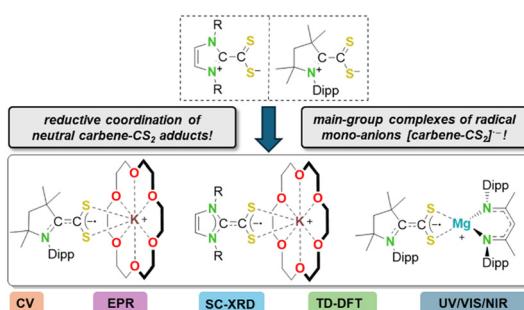
## COMMUNICATIONS

14443

**A red turn-on fluorescent probe reveals elevated H<sub>2</sub>O<sub>2</sub> in cell anesthesia**

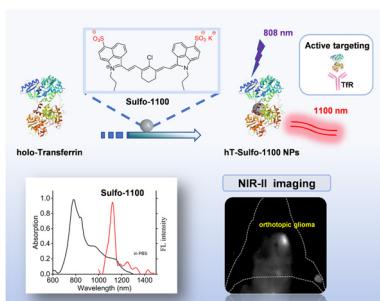
Longjie Du, Yu Ning, Wentao Li, Jianfei Kan, Jianchun Li, Jinhong Wang,\* Min Wang,\* Yanxiang Li and Jin Zhou\*

14447

**Radical anions of 1,1-azoliumdithiocarboxylates**

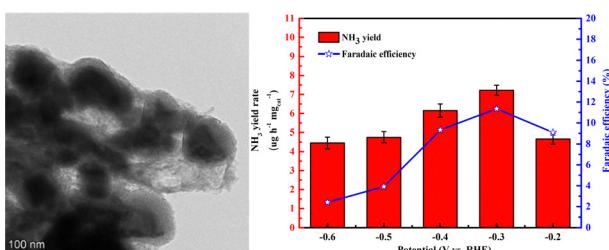
M. S. Luff, K. Oppel, I. Krummenacher, H. Braunschweig and U. Radius\*

14451

**A novel water-soluble NIR-II cyanine dye for fast targeted through-skull fluorescence imaging of orthotopic glioma**

Qian Wei, Huixian Jia, Haoyuan Zhao, Wei Tang\* and Xinrui Duan\*

14455

**Electrocatalytic reduction of N<sub>2</sub> to NH<sub>3</sub> by MIL-88-derived pod-like Fe<sub>7</sub>Se<sub>8</sub>/C nanomaterials under ambient conditions**

Gongyao Nie, Huanhuan Zhang, Lanhua Yi,\* Xiao Ma, Wei Yi,\* Jiawei Wan, Yebo Lu\* and Xingzhu Wang\*

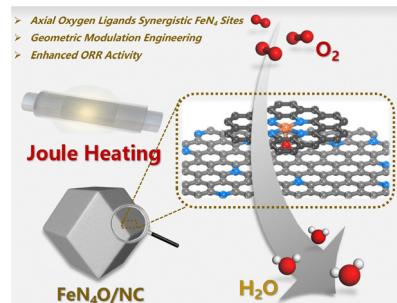


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**Axial oxygen-bridged  $\text{FeN}_4\text{O}/\text{NC}$  produced by ultrafast Joule heating for efficient oxygen reduction reaction**

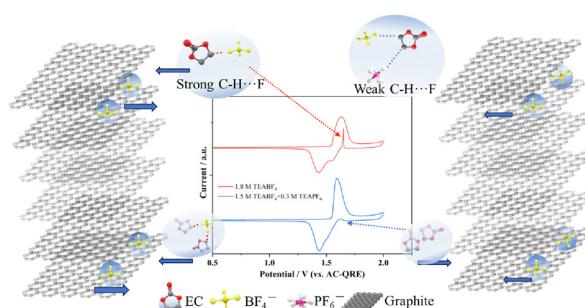
Feng Liu, Xinyu Guo, Yan Zhong, Shaqi Fu, Jingsha Li, Chunmei Zhang, Heng Zhang, Fenghui Ye, Shuai Yuan, Chuangang Hu\* and Chunxian Guo\*



14463

**Uncovering the unusual anodic current during tetrafluoroborate anion deintercalation from a graphite cathode in ethylene carbonate**

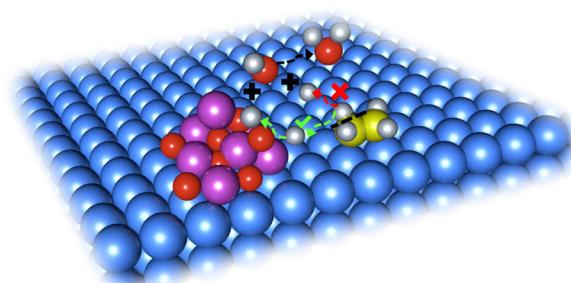
Haibo Liu, Yunju Wang, Guobao Xu\* and Hongyu Wang\*



14467

**Hydrogen spillover for boosted catalytic activity towards hydrazine oxidation**

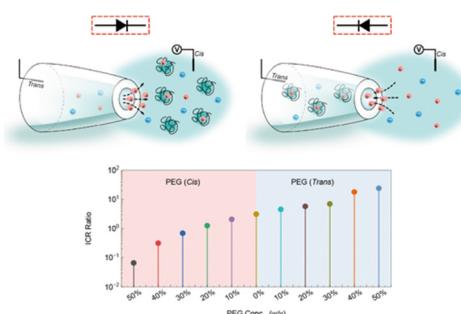
Shuyuan Pan, Yuhua Xie, Chen Li,\* Chunsheng Li, Yan Sun\* and Zehui Yang\*



14471

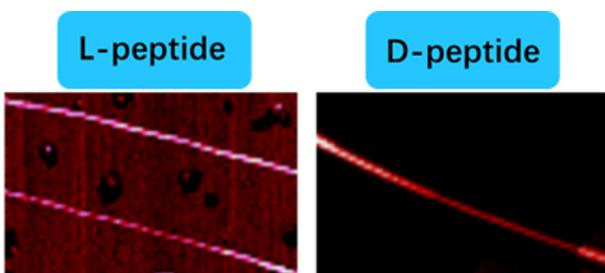
**A switchable and facile ionic diode modulated by polyethylene glycol**

Fei Zheng, HongLuan Li, Jun Yang, Haiyan Wang, Guangle Qin, Dapeng Chen and Jingjie Sha\*



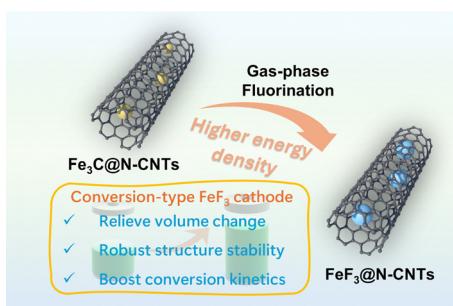
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14475

**Enantiomeric peptides self-assembling into fibrils with the same handedness**

YongFang Zheng, ShiXian Chen, KeJing Mao and Hu Zhu\*

14479

**Spatially confined  $\text{FeF}_3$  cathodes in N-doped carbon nanotubes for lithium storage**

Jun Li, Xifei Li,\* Mengyao Li, Qinting Jiang, Junqian Liu, Ruixian Duan, Guiqiang Cao, Jingjing Wang and Wenbin Li

