

# Dalton Transactions

An international journal of inorganic chemistry incorporating Acta Chemica Scandinavica  
[rsc.li/dalton](http://rsc.li/dalton)

The Royal Society of Chemistry is the world's leading chemistry community. Through our high impact journals and publications we connect the world with the chemical sciences and invest the profits back into the chemistry community.

## IN THIS ISSUE

ISSN 1477-9226 CODEN DTARAF 53(35) 14507-14934 (2024)



### Cover

See Chiara Bisio, Jocelyne Brendlé, Morena Nocchetti, Fabrice Leroux *et al.*, pp. 14525–14550.

Image reproduced by permission of Chiara Bisio, Jocelyne Brendlé, Morena Nocchetti and Fabrice Leroux from *Dalton Trans.*, 2024, **53**, 14525.

Acknowledgement:  
Background images created by BRIA AI



### Inside cover

See Jordi Cirera *et al.*, pp. 14592–14601.

Image reproduced by permission of Lidia Garcia-Campmany, Laia Navarro, Arnau Garcia-Duran and Jordi Cirera from *Dalton Trans.*, 2024, **53**, 14592.

## EDITORIAL

14520

### Intercalation compounds: properties, mechanisms and advanced applications

Chiara Bisio,\* Sébastien Cahen\* and Fabrice Leroux\*

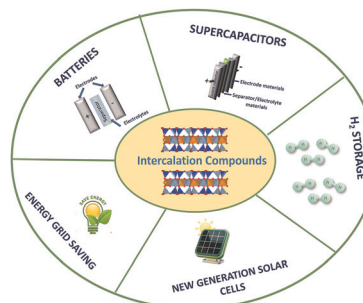


## PERSPECTIVES

14525

### Recent advances and perspectives on intercalation layered compounds part 1: design and applications in the field of energy

Chiara Bisio,\* Jocelyne Brendlé,\* Sébastien Cahen, Yongjun Feng, Seong-Ju Hwang, Klara Melanova, Morena Nocchetti,\* Dermot O'Hare, Pierre Rabu and Fabrice Leroux\*



**GOLD  
OPEN  
ACCESS**

# EES Solar

**Exceptional research on solar  
energy and photovoltaics**

Part of the EES family

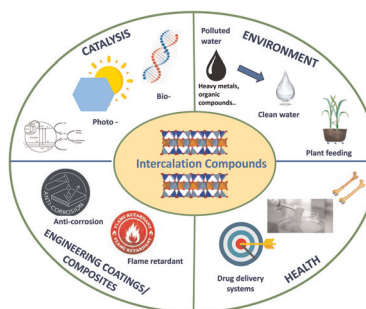
**Join  
in** | Publish with us  
[rsc.li/EESolar](https://rsc.li/EESolar)

## PERSPECTIVES

14551

## Recent advances and perspectives for intercalation layered compounds. Part 2: applications in the field of catalysis, environment and health

Chiara Bisio,\* Jocelyne Brendlé,\* Sébastien Cahen, Yongjun Feng, Seong-Ju Hwang, Morena Nocchetti,\* Dermot O'Hare, Pierre Rabu, Klara Melanova and Fabrice Leroux\*

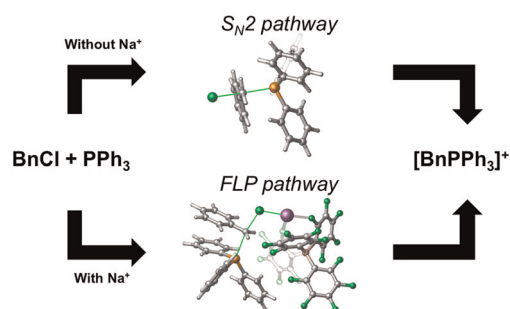


## COMMUNICATIONS

14582

## Evidence for a kinetic FLP reaction pathway in the activation of benzyl chlorides by alkali metal–phosphine pairs

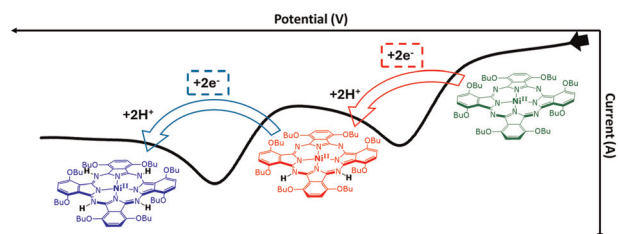
Dániel Csókás, Max Coles, Zhi Hao Toh and Rowan D. Young\*



14587

Exploring ligand-centered electrocatalytic H<sub>2</sub>O reduction: hydrogen generation with a soluble Ni(II) octabutoxyphthalocyanine complex

Josh Brown and Darrin Richeson\*

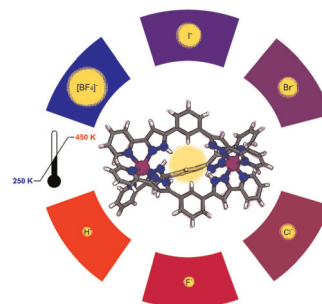


## PAPERS

14592

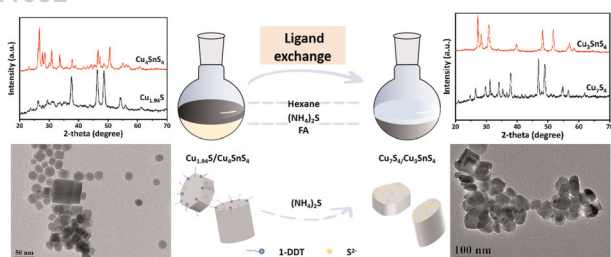
Tuning the spin-crossover properties of [Fe<sub>2</sub>] metal–organic cages

Laia Navarro, Arnau Garcia-Duran and Jordi Cirera\*



## PAPERS

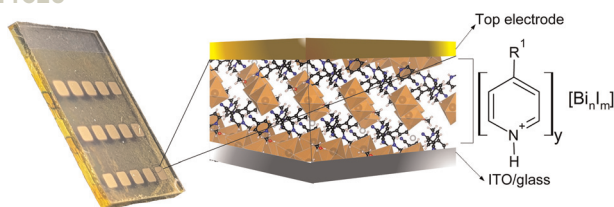
14602



### Ligand exchange induced crystal structure and morphology evolution of copper–tin–sulfur binary and ternary compounds

Suqin Chen, Ying Xu, Yangyang Weng, Pengfei Lou, Xiaoyan Zhang\* and Ningzhong Bao\*

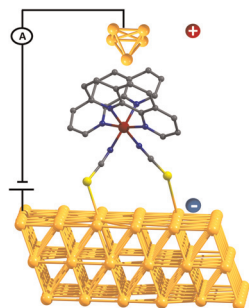
14610



### Memristive properties and synaptic plasticity in substituted pyridinium iodobismuthates

Gisya Abdi,\* Tomasz Mazur, Ewelina Kowalewska, Andrzej Sławek, Mateusz Marzec and Konrad Szaciłowski\*

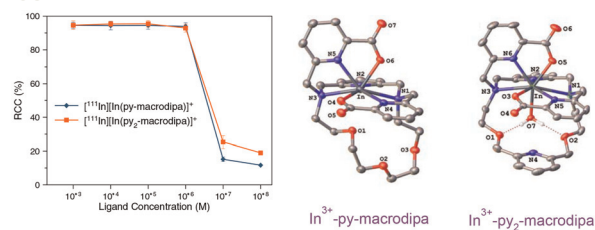
14623



### Investigating the influence of oriented external electric fields on modulating spin-transition temperatures in Fe(II) SCO complexes: a theoretical perspective

Rupesh Kumar Tiwari, Rajdeep Paul and Gopalan Rajaraman\*

14634



### Chelation of [<sup>111</sup>In]In<sup>3+</sup> with the dual-size-selective macrocycles py-macrodipa and py<sub>2</sub>-macrodipa

Kevin K. Lee, Mou Chakraborty, Aohan Hu, Thines Kanagasundaram, Daniel L. J. Thorek and Justin J. Wilson\*

✓ mild radiolabeling conditions    ✓ remarkable kinetic stability    ✓ high in vivo stability

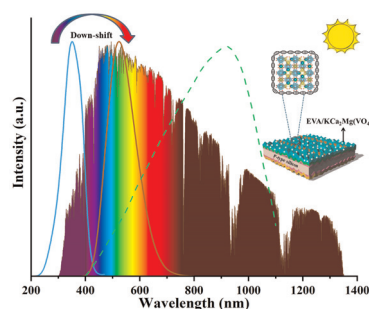


## PAPERS

14648

Enhanced photovoltaic performance of silicon solar cells using a down-shift  $\text{KCa}_2\text{Mg}_2(\text{VO}_4)_3$  phosphor

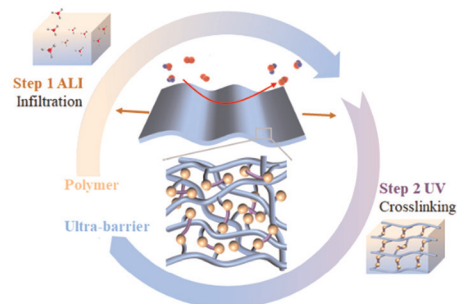
Hong Su, Cong Dou, Fan Dou, Wen Li, Jiachen Li, Xiaolian Chao, Zupei Yang, Xiaoming Wang\* and Huan Jiao\*



14656

Two-step construction of KPDMS/ $\text{Al}_2\text{O}_3$  ultra-barriers for wearable sensors

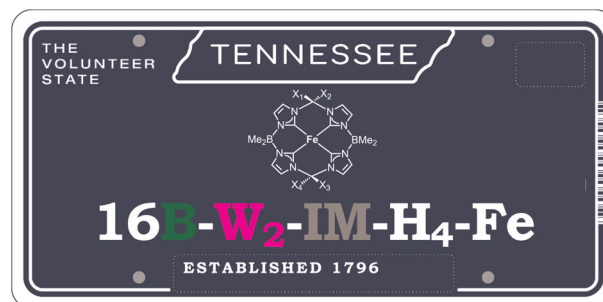
Di Wen, Ruige Yuan, Fan Yang\* and Rong Chen\*



14665

## Ligand engineering of tetra N-heterocyclic carbenes for boosting catalytic aziridination

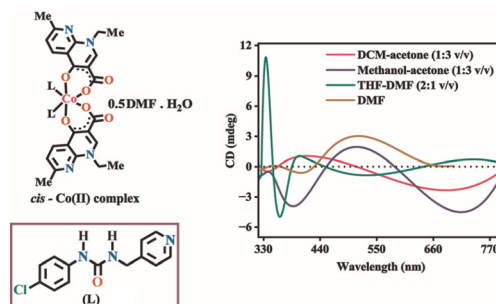
Brett A. Smith, Somon Hakimov, David M. Jenkins\* and Konstantinos D. Vogiatzis\*



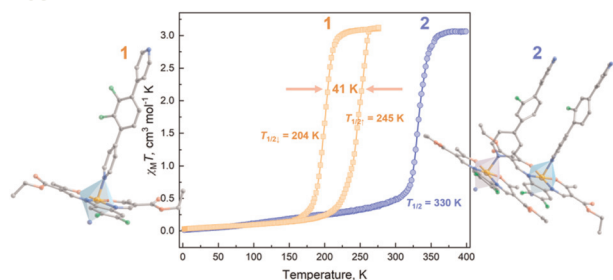
14678

Synthesis and characterization of *cis* and *trans* cobalt(II) nalidixate complexes having a 1-(4-chlorophenyl)-3-(pyridin-4-ylmethyl)urea ligand

Rinki Brahma, Abhay Pratap Singh and Jubaraj Bikash Baruah\*



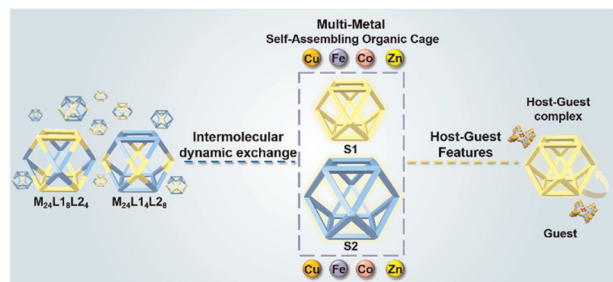
14692



### Effects of mono- or di-fluoro-substitution on spin crossover behavior in a pair of Schiff base-like Fe<sup>II</sup>-coordination polymers

Yu Luo, Ren-He Zhou, Zhen Shao, Dan Liu, Han-Han Lu, Meng-Jia Shang, Liang Zhao,\* Tao Liu and Yin-Shan Meng\*

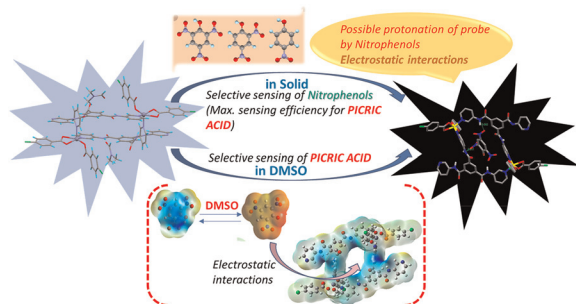
14701



### Self-assembly and dynamic exchange of cuboctahedral metal–organic cages

Jialin Liu, Yan Huang, Qixia Bai,\* Qiaoan Yang, Xinyi Wu, Limin Zhang, Tun Wu, Pingshan Wang, Jianqiao Wang\* and Zhe Zhang\*

14710



### Selective sensing of picric acid using a Zn(II)-metallacycle: experimental and theoretical validation of the sensing mechanism and quantitative analysis of sensitivity in contact mode detection

Vishakha Jaswal, Sanya Pachisia, Jagrity Chaudhary, Krishnan Rangan and Madhushree Sarkar\*

14725



### A cobalt porphyrin-bridged covalent triazine polymer-derived electrode for efficient hydrogen production

Aijian Wang,\* Xin Yang, Fengqiang Zhang, Qitao Peng, Xiaoyu Zhai and Weihua Zhu\*

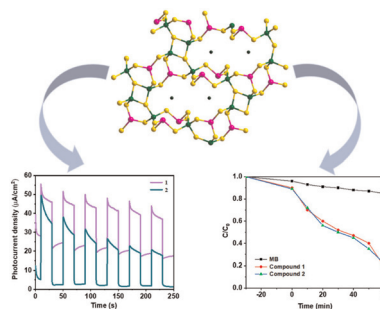


## PAPERS

14735

### Syntheses, crystal structure, and photoelectric properties of two selenoantimonates A–Zn–Sb–Se (A = Rb and Cs)

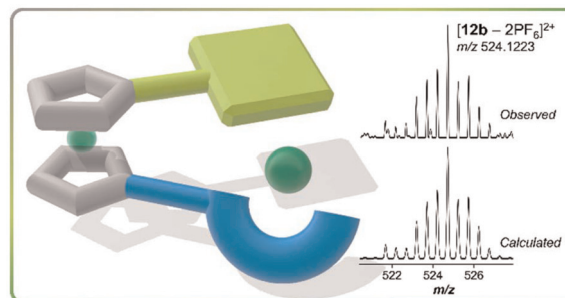
Lirong Zhang, Gele Teri, Liming Qi, Sagala Bai, Xin Liu\* and Menghe Baiyin\*



14742

### Towards building blocks for metallocupramolecular structures: non-symmetrically-functionalised ferrocenyl compounds

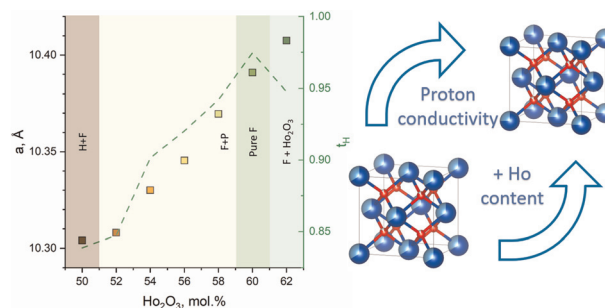
William D. J. Tremlett, James D. Crowley, L. James Wright and Christian G. Hartinger\*



14752

### Proton conductivity of fluorite based rare earth titanates (Ln<sub>x</sub>Ti<sub>1-x</sub>)<sub>4</sub>O<sub>8-2x</sub> (Ln = Yb, Er, Ho, 0.667 ≤ x ≤ 0.765)

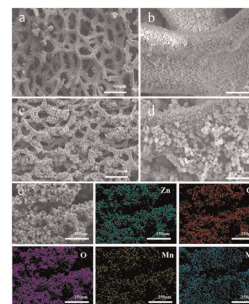
Nikolay Gorshkov, Egor Baldin, Dmitry Stolbov, Galina Vorobieva, Alexander Shatov and Anna Shlyakhtina\*



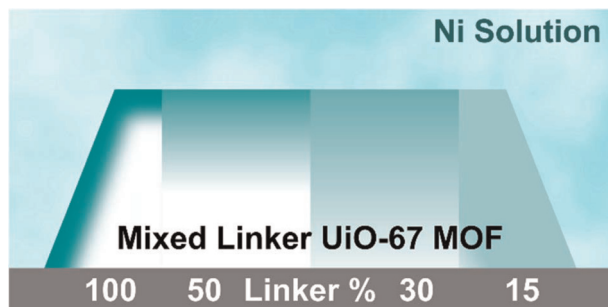
14767

### Synthesis and performances of a ZnCo<sub>2</sub>O<sub>4</sub>@MnMoO<sub>4</sub> composite for a hybrid supercapacitor

Xuan Liao, Hang Yang, Xiaolong Hou, Caini Yi, Ying Yang, Guimao Wang, Shuo Wang, Yuping Liu, Changguo Chen, Danmei Yu\* and Xiaoyuan Zhou\*



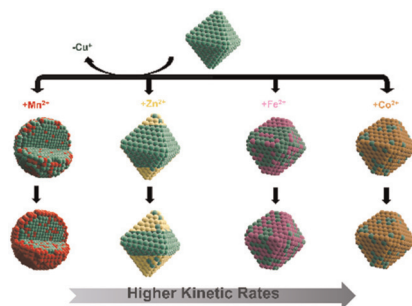
14779



### Optimizing post-synthetic metal incorporation in mixed-linker MOFs: insights from metalation studies on bipyridine-containing UiO-67 single crystals

Wanja Gschwind, Gyula Nagy, Daniel Primetzhofer and Sascha Ott\*

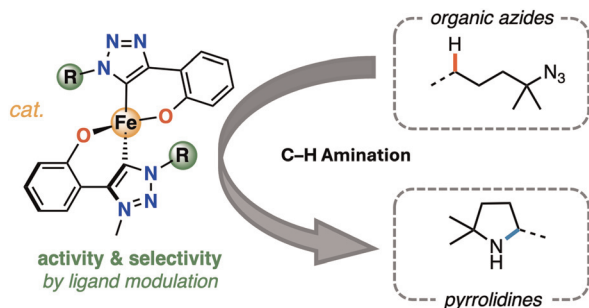
14786



### Kinetically controlled morphology and composition of colloidal nanoparticles: cation exchange reactions from copper sulfide to transition metal (Mn, Zn, Fe, and Co) sulfides

Boeun An, Wooseok Jeong, Yun Jae Hwang, Hyeonseok Lee, Yeongbin Lee, Heesoo Jeong, Gyuhyeon Kim and Don-Hyung Ha\*

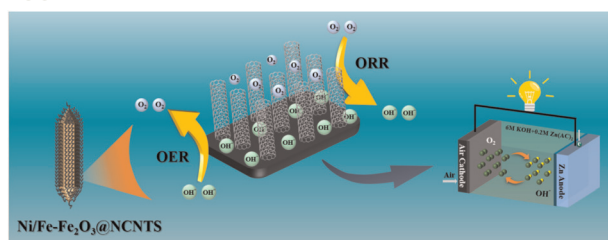
14795



### Tailoring C–H amination activity *via* modification of the triazole-derived carbene ligand

Luke A. Hudson, Wowa Stroek and Martin Albrecht\*

14801



### Ni-doping optimized d-band center in bifunctional Fe<sub>2</sub>O<sub>3</sub> modified by bamboo-like NCNTs as a cathode material for Zn–air batteries

Yang Shi, Songhan Hu, Xinxin Xu\* and Jin Chen

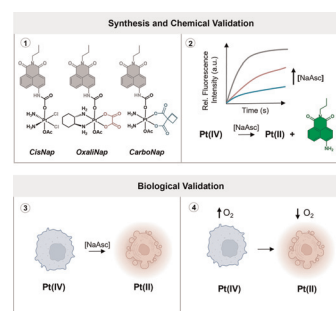


## PAPERS

14811

### Fluorogenic platinum(IV) complexes as potential predictors for the design of hypoxia-activated platinum(IV) prodrugs

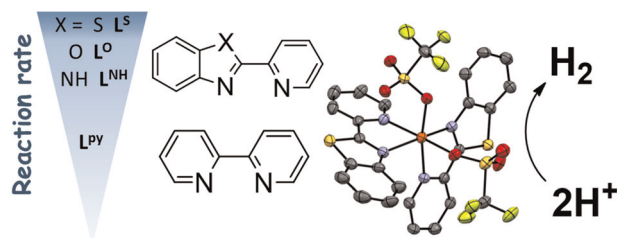
Jevon W. Marsh, Lina Hacker, Shitong Huang, Marie H. C. Boulet, Jhanelle R. G. White, Louise A. W. Martin, Megan A. Yeomans, Hai-Hao Han, Ismael Diez-Perez, Rebecca A. Musgrave, Ester M. Hammond\* and Adam C. Sedgwick\*



14817

### Hydrogen evolution driven by heteroatoms of bidentate N-heterocyclic ligands in iron(II) complexes

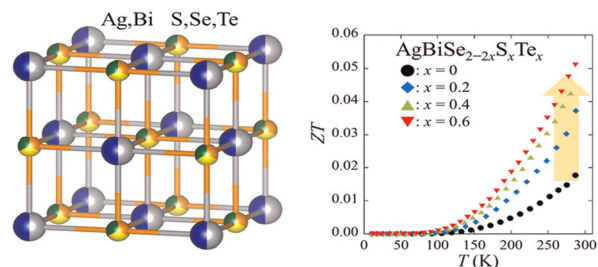
Soma Keszei,\* Yiqing Wang, Haotian Zhou, Tamás Ollár, Éva Kováts, Krisztina Frey, Levente Tapasztó, Shaohua Shen and József Sándor Pap



14830

### High entropy effect on thermoelectric properties of the nonequilibrium cubic phase of $\text{AgBiSe}_{2-2x}\text{S}_x\text{Te}_x$ with $x = 0-0.6$

Asato Seshita, Aichi Yamashita,\* Takayoshi Katase and Yoshikazu Mizuguchi

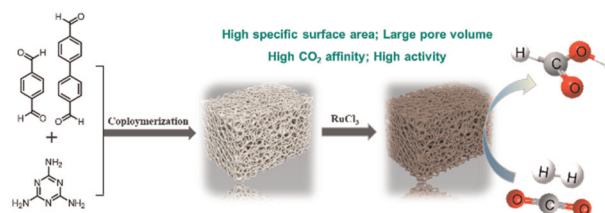


High-entropy-type  $\text{AgBiSe}_{2-2x}\text{S}_x\text{Te}_x$  with cubic structure

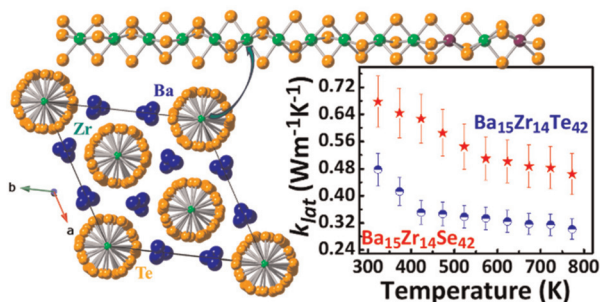
14839

### Hydrogenation of $\text{CO}_2$ to formate catalyzed by a Ru catalyst supported on a copolymerized porous organic polymer

Yang Ding, Yuxuan Yang, Kefan Huo, Yang Li, Jiasheng Wang, Yuichiro Himeda, Wan-Hui Wang\* and Ming Bao\*



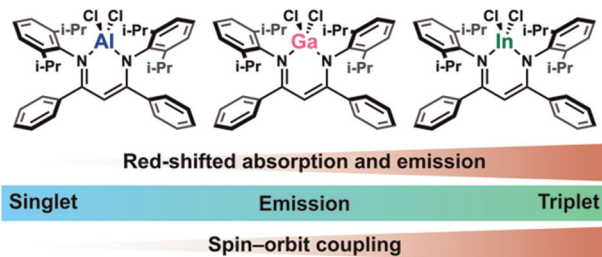
14848



### $\text{Ba}_{15}\text{Zr}_{14}\text{Te}_{42}$ : a new complex ternary telluride structure with low thermal conductivity

Sweta Yadav, Manish K. Niranjan and Jai Prakash\*

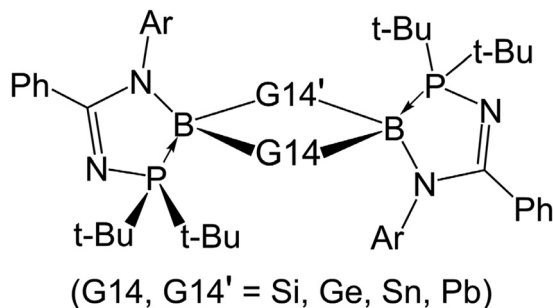
14858



### Effects of a central element on the photoluminescence properties of $\beta$ -diketiminato complexes composed of group 13 elements

Shunichiro Ito, Kazuo Tanaka\* and Yoshiki Chujo

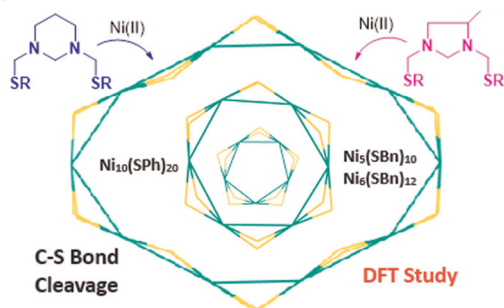
14866



### Four-membered heterocyclic molecules featuring boron and heavy group 14 elements that exhibit both $\sigma$ -aromatic and $\pi$ -aromatic properties: a new synthetic target

Zheng-Feng Zhang, Cheuk-Wai So\* and Ming-Der Su\*

14875



### Selective synthesis of the missing tiara-like $\text{Ni}_{10}$ , $\text{Ni}_5$ and $\text{Ni}_6$ thiolates by the C–S bond cleavage of bis(thioether) molecules with a DFT study

Suparno Debnath, Sandip Giri and Ganesan Mani\*

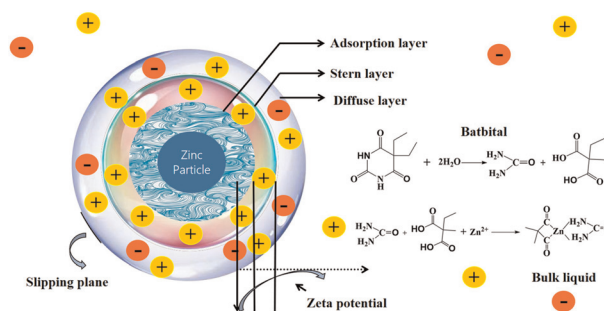


## PAPERS

14887

### Barbital-derived chelating ligands for interface regulation and stabilization of Zn metal anodes for aqueous zinc-ion batteries

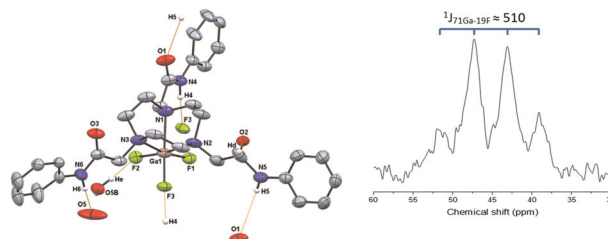
Pengju Wu, Wenbin Jia, BeiBei Sun, Shengnan Yang, Ying Wu,\* Fengqin Tang\* and Libing Hu\*



14897

### Synthesis and properties of metal trifluoride complexes with amide-functionalised tacn macrocycles and radiofluorination of [GaF<sub>3</sub>(L<sup>1</sup>)] by <sup>18</sup>F/<sup>19</sup>F isotopic exchange

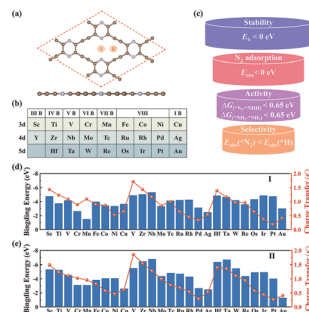
Charley O'Callaghan, Victoria K. Greenacre, Rhys P. King, Julian Grigg, Julie M. Herniman, Graeme McRobbie and Gillian Reid\*



14910

### Computational screening of pyrazine-based graphene-supported transition metals as single-atom catalysts for the nitrogen reduction reaction

Min Zhang, Caijuan Xia, Lianbi Li, Anxiang Wang, Dezhong Cao, Baiyu Zhang, Qinglong Fang\* and Xumei Zhao\*



14922

### Structural modification of nickel tetra(thiocyano)corroles during electrochemical water oxidation

Panisha Nayak, Ajit Kumar Singh, Manisha Nayak, Subhajt Kar, Kasturi Sahu, Kiran Meena, Dinesh Topwal, Arindam Indra\* and Sanjib Kar\*

