

Dalton Transactions

An international journal of inorganic chemistry incorporating Acta Chemica Scandinavica
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 54(37) 13793-14228 (2025)



Cover
See Manabu Hagiwara *et al.*,
pp. 13869–13878.

Image reproduced by
permission of
Manabu Hagiwara from
Dalton Trans., 2025, **54**,
13869.



Inside cover
See Björn Schwarz,
Saurabh Kumar Singh,
Joydeb Goura *et al.*,
pp. 13879–13893.

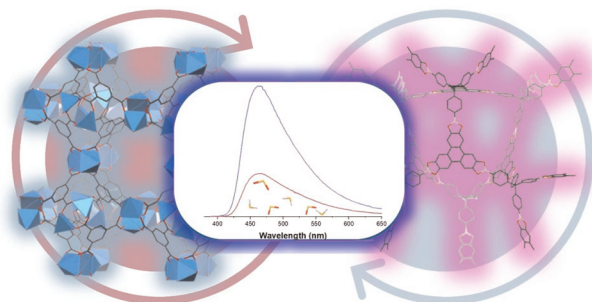
Image reproduced by
permission of Björn Schwarz,
Saurabh Kumar Singh and
Joydeb Goura from
Dalton Trans., 2025, **54**,
13879.

TUTORIAL REVIEW

13806

Fluorescence spectroscopy: detection and sensing of SO₂ and H₂S using MOFs and other emerging porous materials

Marco L. Martínez, Pablo Marín-Rosas,
Valeria B. López-Cervantes, Ariel Guzmán-Vargas,
Ricardo A. Peralta,* Diego Solís-Ibarra* and
Ilich A. Ibarra*



PERSPECTIVE

13820

Advances in nano-drug delivery systems for metallic compounds in cancer therapy: challenges and future perspectives

Subin Joseph, Rinku Chakrabarty and Priyanka Paira*



Royal Society of Chemistry approved training courses

Explore your options.
Develop your skills.
Discover learning
that suits you.

**Courses in the classroom,
the lab, or online**

Find something for every
stage of your professional
development. Search our
database by:

- subject area
- location
- event type
- skill level

Members **get at least 10% off**

Visit [rsc.li/cpd-training](https://www.rsc.li/cpd-training)

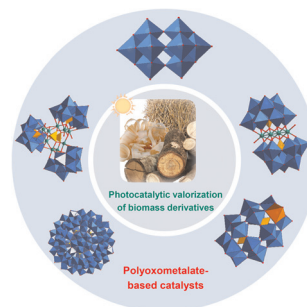


**SAVE
10%**

13851

Recent advances in polyoxometalate-based catalysts for light-driven valorization of biomass derivatives

Zheng Li, Xiaoyi Liu, Mengyun Zhao, Hongjin Lv* and Guo-Yu Yang*

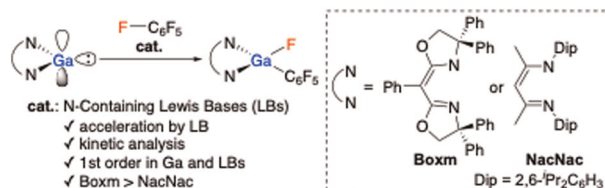


COMMUNICATIONS

13859

Cleaving a C–F bond of C₆F₆ at a gallium(i) centre catalyzed by nitrogen-containing Lewis bases and its kinetic analysis

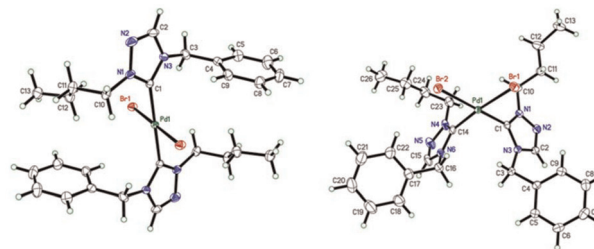
Tao Ding and Makoto Yamashita*



13863

Synthesis of Pd(II)–NHC complexes via C–H oxidative addition of triazolium salts to Pd(0)

Anes Kovacevic,* Sean Parkin and Jay H. Baltisberger

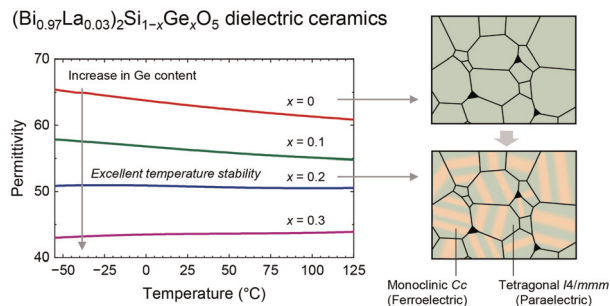


PAPERS

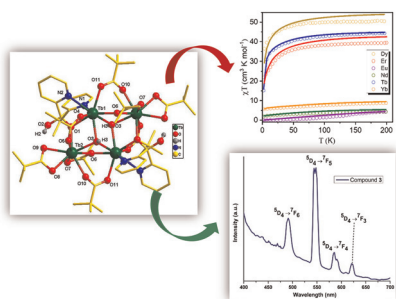
13869

Improving the dielectric temperature stability of Bi₂SiO₅-based ceramics through the spontaneous formation of paraelectric–ferroelectric nanocomposite structures

Yoji Yasumoto, Taro Kuwano, Hiroki Taniguchi, Shinobu Fujihara and Manabu Hagiwara*



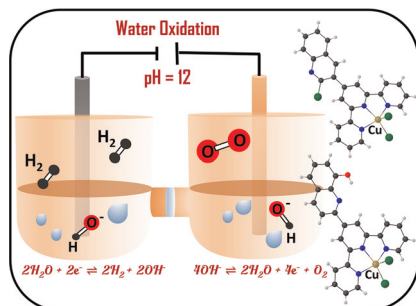
13879



Tetranuclear $\{\text{Ln}^{\text{III}}\}_4$ complexes possessing homometallic *O*-capped structural subunits: study of magnetic and photoluminescent properties

Purbashree Halder, Nandini Barman, Ibtesham Tarannum, Subrata Mukhopadhyay, Björn Schwarz,* Saurabh Kumar Singh* and Joydeb Goura*

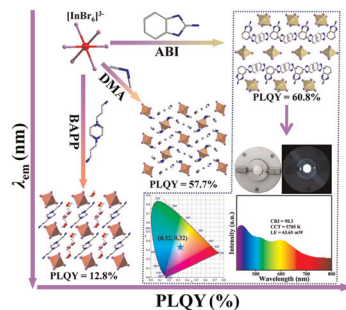
13894



Electrochemical water oxidation using single-site $\text{Cu}(\text{II})$ molecular complexes: a mechanism elucidated by computational studies

Dev Raj, Koushik Makhal, Manaswini Raj, Aman Mishra, Rohan Mahapatra, Tanya Pattnaik, Bhabani S. Mallik and Sumanta Kumar Padhi*

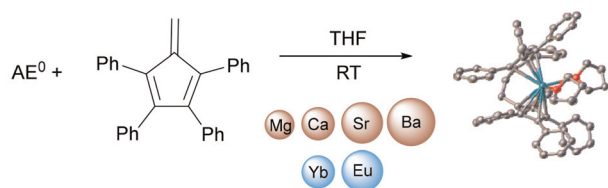
13909



Stable zero-dimensional hybrid indium-based halides with yellow to orange light emission

Hong-Zhao Zan, Xiao-Zhong Wang, Hai-Xin Zhao, Shou-Wang Wang, Lei Chen, Hao-Yuan Wang, Lai-Zhi Zhao, Xiao-De Zhang and Xiang-Wen Kong*

13918



Ansa-effects in alkaline earth metal octaphenylmetallocenophanes and a derived *ansa*-ferrocene

Angus C. G. Shephard, Amal Bouammali, Aymeric Delon, Zhifang Guo, Sylviane Chevreux, Claude Niebel, Olivier Dautel, Thomas Simler, Glen B. Deacon, Peter C. Junk* and Florian Jaroschik*

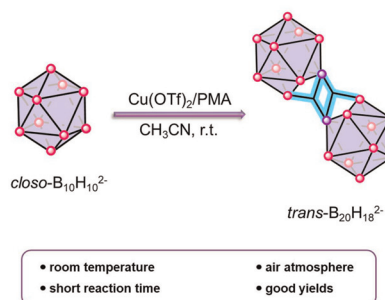


PAPERS

13929

A simple and efficient method to synthesize metal salts of $M_2[trans-B_{20}H_{18}]$ ($M = Li, Na, K, \text{ and } Cu$)

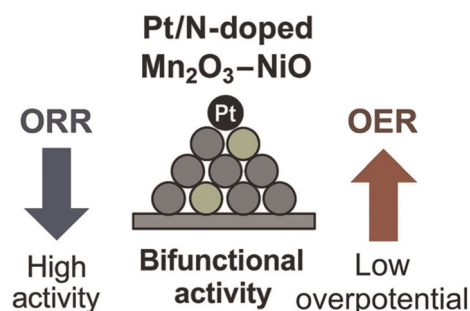
Xin-Ru Yin, Zhi-Wei Lu, Xi-Meng Chen, Li-Qing He* and Xuenian Chen*



13934

Advanced nitrogen-doped transition metal oxides decorated with Pt: synthesis and composition strategies for maximised electrochemical performance

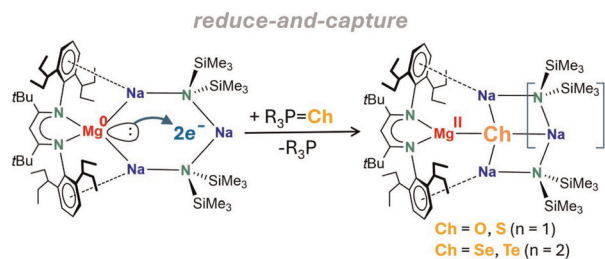
Kristina Gočanin, Yasemin Aykut, Dušan Mladenović,* Diogo M. F. Santos, Ayşe Bayrakçeken, Gulin S. P. Soyulu and Biljana Šljukić



13950

Redox-active inverse crowns – pockets for heavier chalcogenides

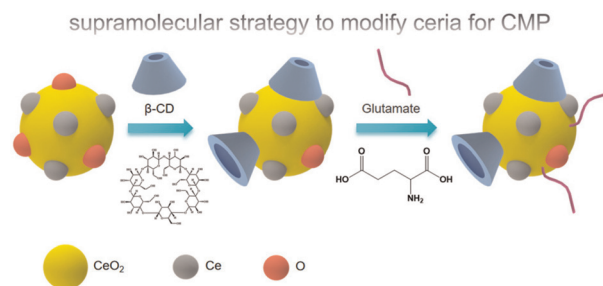
Johannes Maurer, Lukas Klerner, Jens Langer and Sjoerd Harder*



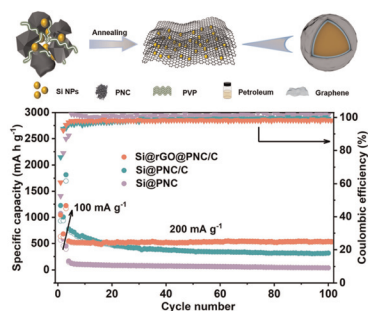
13958

Supramolecular surface modification of ceria nanoparticles for enhanced chemical mechanical planarization performance in shallow trench isolation

Haining Zhang, Chenyan Zhao, Xueli Sun, Chengrui Xin, Fangwei Lu, Shuming Wu, Xin-Ping Qu, Song Wang,* Simin Li,* Hui Shen* and Fan Zhang



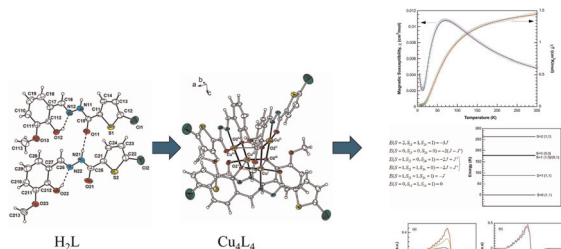
13967



An enhanced double carbon layer-coated silicon-based anode for lithium-ion batteries

Xingyue Qian, Siqi Hou, Weiyan Li, Dafang He, Junfeng Shi, Jiawei Xia, Guangyu He* and Haiqun Chen*

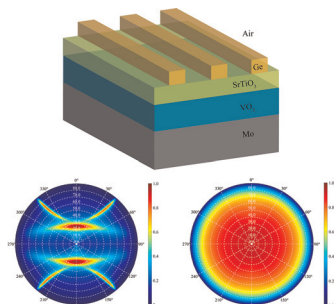
13976



Structural, spectroscopic, theoretical, and magnetic investigations of a novel cubane-like tetranuclear copper(II)-hydrazone complex

Lucía Santa María de la Parra, Leonardo E. Riafrecha, Gustavo A. Echeverría, Luis Lezama, Oscar E. Piro, Diego M. Gil, Antonio Frontera and Ignacio E. León*

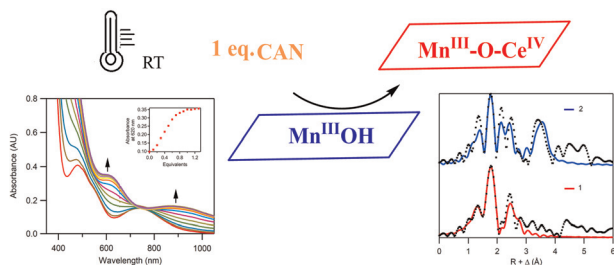
13990



Angle-robust and tunable mid-infrared absorption in a Ge grating/SrTiO₃/VO₂ hybrid metastructure on a metallic substrate

Xin Cui, Yangyang Dai, Fenglin Xian, Liming Qian and Gaige Zheng*

14001



Formation of a Mn^{III}-O-Ce^{IV} species from a Mn^{III}-hydroxo complex and ceric ammonium nitrate

Anagha Puthiyadath, Patrick Murphy, Delara Mafi, Purni Patel and Timothy A. Jackson*

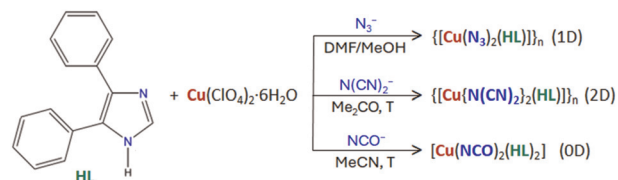


PAPERS

14013

Structural diversities and magnetic properties of azido- and dicyanamido-bridged coordination polymers with 4,5-diphenylimidazole as a terminal ligand

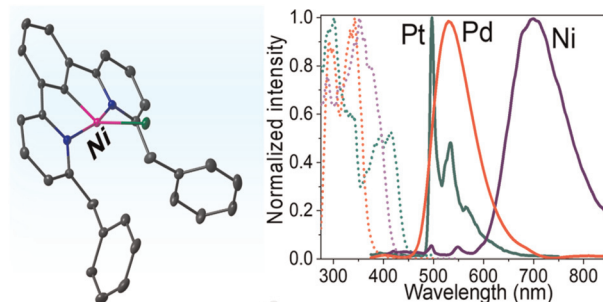
Evangelia-Spyridoula Fotopoulou, Nikos Panagiotou, Anastasios J. Tasiopoulos, Mark M. Turnbull,* Spyros P. Perlepes* and Vassilios Nastopoulos*



14025

A tight binding pocket in photoluminescent N⁴C²N cyclometalated Pt(II), Pd(II), and Ni(II) complexes

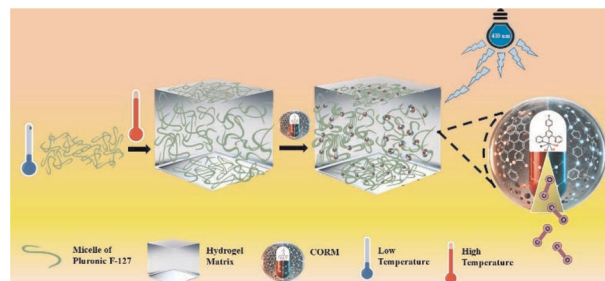
Maryam Niazi, Iván Maisuls, Cristian A. Strassert,* Pablo González-Herrero and Axel Klein*



14040

Thermoreversible hydrogel containing photoactivatable tricarbonyl Mn(I) terpyridine complexes for therapeutic carbon monoxide (CO) release

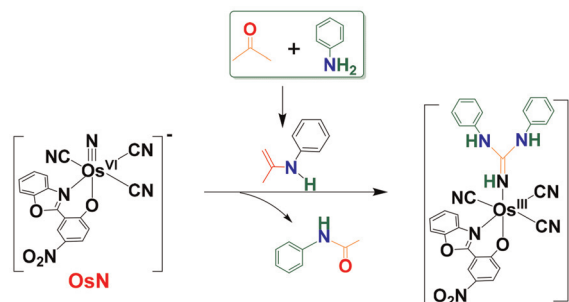
M. Aakshika Sree and D. Amilan Jose*



14052

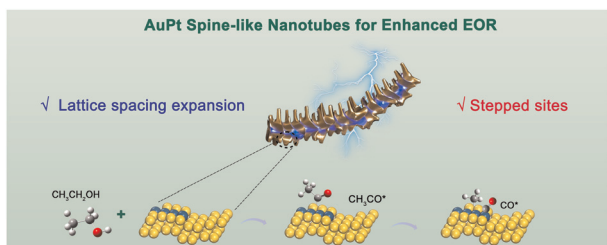
Reaction of an osmium(VI) nitrido complex with enamines generated *in situ* from ketones and anilines

Lei Wang, Li-Xin Wang, Zhao-Long Liu, Fang Xu, Rui-Yue Qi, Wai-Lun Man, Jing Xiang,* Ji-Yan Liu and Tai-Chu Lau*



PAPERS

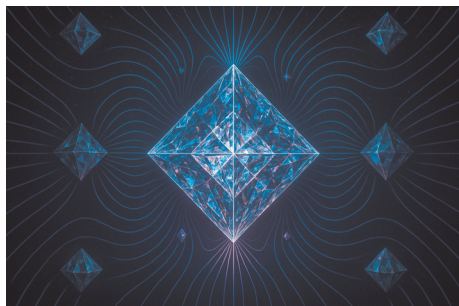
14059



One-pot synthesis of lattice-strained AuPt spine-like nanotubes for high-efficiency ethanol electrooxidation

Li Wang, Fang Sun,* Yuying Sun, Yanyun Ma, Yiqun Zheng* and Yuanyuan Min*

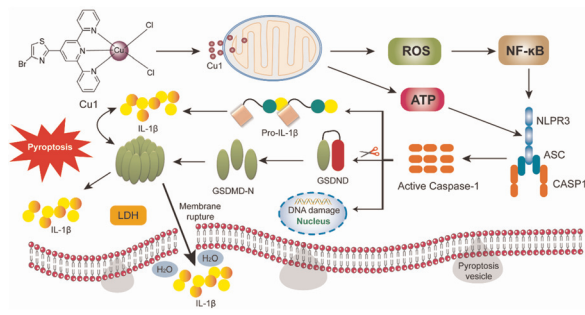
14070



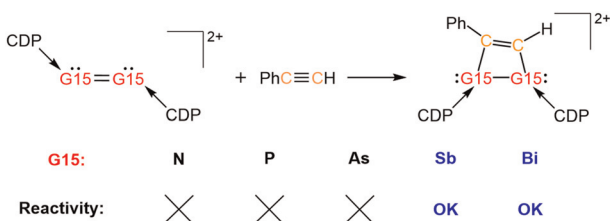
Leveraging anion selection to modulate crystallographic symmetry in Yb(III) single-molecule magnets

Ethan Lowe, Hamish Hourston, Tanu Sharma, Sarah K. Dugmore, Claire Wilson, Gopalan Rajaraman* and Mark Murrie*

14079



14093



Electronic and mechanistic insights into the role of group 15 elements in the reactivity of dipnictogen dications featuring group 15=group 15 double bonds in [2 + 2] cycloaddition reactions with phenylacetylene

Zheng-Feng Zhang and Ming-Der Su*

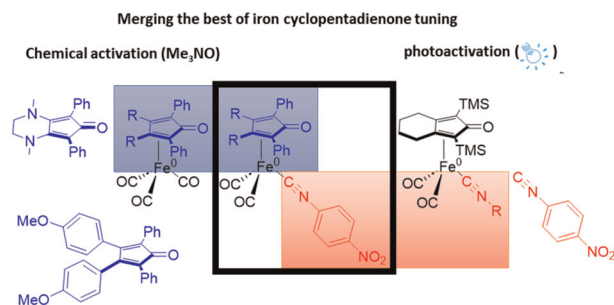


PAPERS

14111

Merging cyclopentadienone tuning and CO to isonitrile substitution to develop photo-activated iron cyclopentadienone catalysts

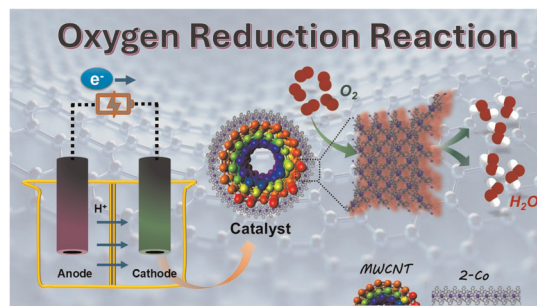
Clémence Gounon, Gaëtan Quintil, Jacques Pécaut, Martin Clémancey, Ragnar Bjornsson, Adrien Quintard* and Amélie Kochem*



14123

2D self-assembly of twisted porphyrins appended on multiwalled carbon nanotubes for the oxygen reduction reaction

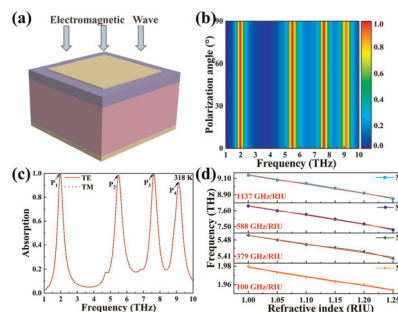
Varusha Bhardwaj, Varsha Singh, Vellaichamy Ganesan* and Muniappan Sankar*



14132

A temperature-controlled switching terahertz perfect absorption device based on a VO_2 phase change metamaterial

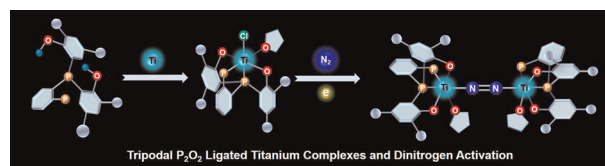
Zhuoyu Zheng, Chenyu Gong, Huafeng Zhang,* Mengsi Liu, Shubo Cheng and Zao Yi*



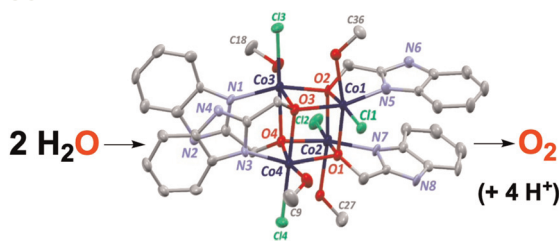
14142

Tripodal bisphenolate–bisphosphine ligands with hybrid hard/soft donors: titanium complexes and dinitrogen activation

Chunyan Xiong, Jinwei Zhang, Jingyi An, Zhiqiang Yuan, Zhaoxin Li, Yanhong Liu and Shaowei Hu*



14150

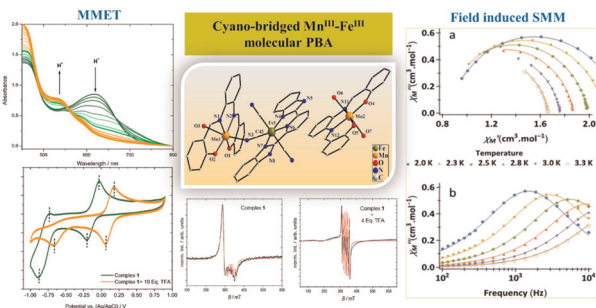


Self-assembled, bench stable
Co(II) water oxidation catalysts

Electrocatalytic water oxidation with bioinspired cubane-type Co^{II} complexes

Roberto Favela-Mendoza, Elizabeth Rul-Ramírez, Ana Cristina García-Alvarez, Eduardo Sánchez-Lara, Stefani Gamboa-Ramírez, Marcos Flores-Álamo, Sylvain Bertaina, Maylis Orío, Isabel Guerra-Tschuschke and Ivan Castillo*

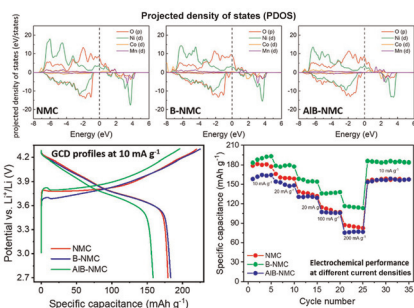
14161



Investigation of protonation induced metal-to-metal electron transfer in a cyano-bridged Mn^{III}-Fe^{III} dinuclear complex

Prashurya Pritam Mudoi, Niku Ahmed, Anup Choudhury, Yanling Li, Rodrigue Lescouëzec, Benjamin Kintzel, Oluseun Akintola, Winfried Plass, Marimuthu Rajendiran and Nayanmoni Gogoi*

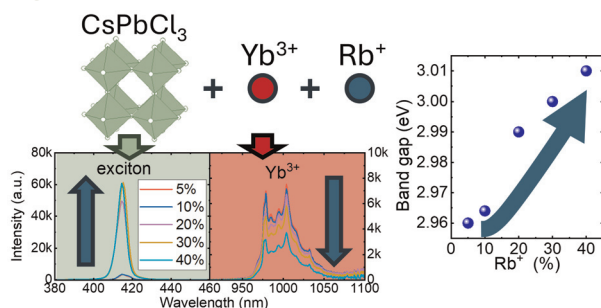
14173



Co-doping aluminum and boron enhances the stability and electrochemical properties of nickel-rich cathode materials for lithium-ion batteries

Nguyen To Van, Nguyen Vo Anh Duy, Nguyen Hoang Hieu, Quy Quyen Ngo, Trung Son Luong, Thi Lan Ngo, Yohandys A. Zulueta, Minh Tho Nguyen, An-Giang Nguyen, Phi Long Nguyen, Chan-Jin Park and Minh Triet Dang*

14191



Effect of Rb⁺ co-doping on the optical properties in VIS and NIR emitting CsPbCl₃:Yb³⁺ perovskite powder

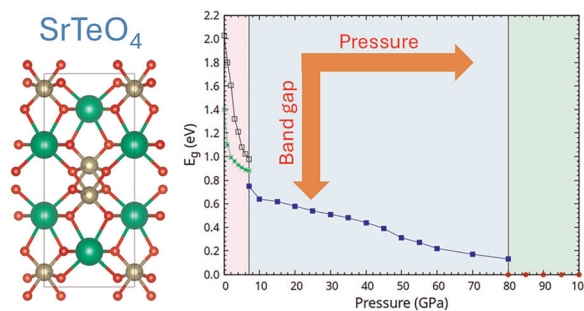
Weronika Jagietowicz, Bartosz Bondzior, Kamila Rajfur, Maciej Ptak and Mariusz Stefanski*



14199

Engineering the crystal structure and band gap of SrTeO₄: inducing bonding changes and metallization through compression

Ertuğrul Karaca and Daniel Errandonea*



14214

Controllable synthesis of *ortho*-hexagonal ZnAl-LDHs nanosheets for high-performance room-temperature ethanol gas sensing

Kun Li, Xia Zhao, Yalin Zhang, Zhen Sun, Wanru Xu, Lanxiang Yao and Xueli Yang*

