Open Access Article. Published on 06 February 2024. Downloaded on 12/4/2025 2:41:08 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

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 53(6) 2397–2878 (2024)

Cover
See M. Concepción Gimeno, Laura Rodríguez *et al.*, pp. 2475–2486.

Image reproduced by permission of María Gil-Moles from *Dalton Trans.*, 2024, **53**, 2475.

Cover design by María Gil-Moles.

PERSPECTIVE

2413

Coordination-induced bond weakening and small molecule activation by low-valent titanium complexes

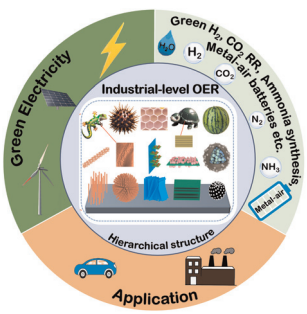
Ugochinyere N. Oloyede and Robert A. Flowers, II*

FRONTIER

2442

Recent progress in hierarchical nanostructures for Ni-based industrial-level OER catalysts

Haiyu Yao, Peijie Wang, Min Zhu and Xue-Rong Shi*



View Article Online

ROYAL SOCIETY OF CHEMISTRY

Advance your career in science

with professional recognition that showcases your **experience, expertise and dedication**

Stand out from the crowd
Prove your commitment to attaining excellence in your field

Gain the recognition you deserve
Achieve a professional qualification that inspires confidence and trust

Unlock your career potential
Apply for our professional registers (RSci, RSciTech) or chartered status (CChem, CSci, CEnv)

Apply now

rsc.li/professional-development

Registered charity number: 207890

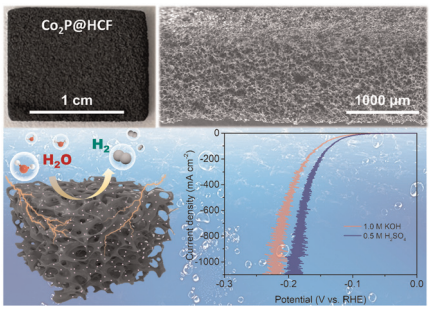
Open Access Article. Published on 06 February 2024. Downloaded on 12/4/2025 2:41:08 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

COMMUNICATIONS

2450

A hierarchical carbon foam-hosted Co_2P nanoparticles monolithic electrode for ampere-level and super-durable electrocatalytic hydrogen production

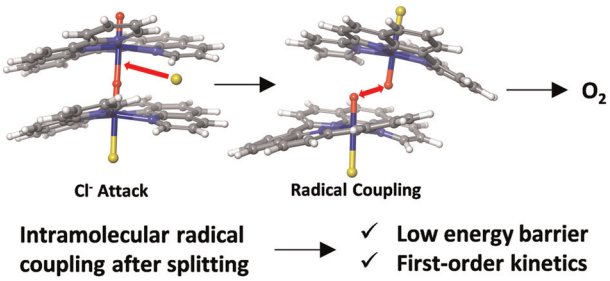
Yaoyao Zhao, Zhengguo Zhang,* Fang Wang and Shixiong Min*



2456

O–O bond formation *via* radical coupling in a dinuclear iron water oxidation catalyst with high catalytic activity

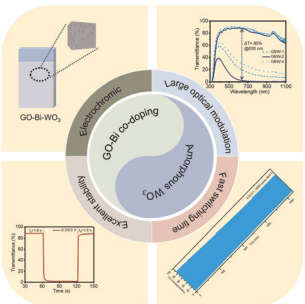
Ge Li and Mårten S. G. Ahlquist*



2460

Amorphous bismuth and GO co-doped WO_3 electrochromic film with fast-switching time and long-term stability

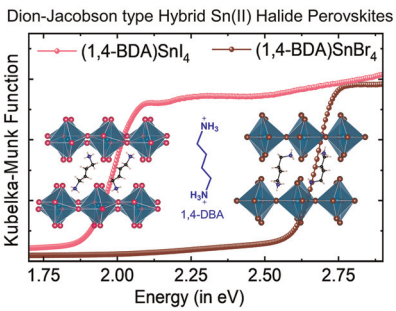
Jin You Zheng, Qimeng Sun, Huijing Yang, Shuang Yu, Mengsi Li, Xiaomei Yu,* Chengduo Wang, Tiantian Liu and Songjie Li*



2465

$[NH_3(CH_2)_4NH_3]SnX_4$ (X = Br, I): Dion–Jacobson type 2-D perovskites with short interlayer spacing

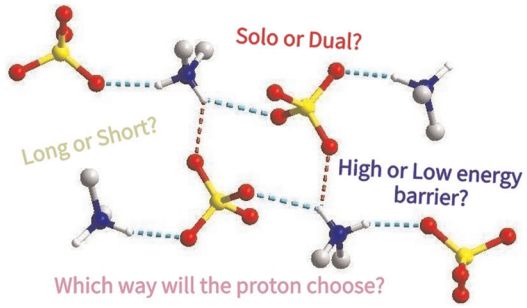
Nagale S. Vishwajith, Mridul Krishna Sharma, Isha Jain and Pratap Vishnoi*



Open Access Article. Published on 06 February 2024. Downloaded on 12/4/2025 2:41:08 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

COMMUNICATIONS

2471

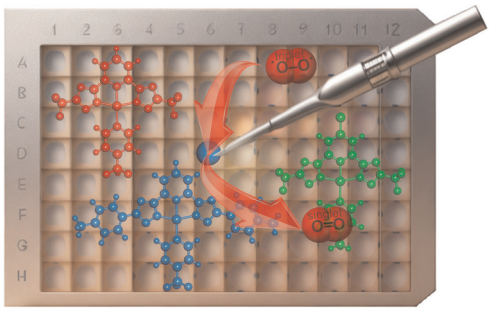


High anhydrous proton conductivity and a smart proton transportation approach of a sulfate coordination polymer

Xing Zhao, Jiasheng Wang, Bo Li,* Man Zhang* and Jingping Zhang*

PAPERS

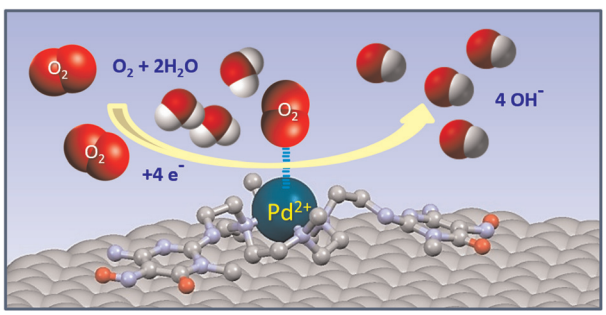
2475



Effect of substituents on the $^1O_2$ production and biological activity of (N^N^N)Pt(py) complexes

Guillermo Romo-Islas, María Gil-Moles, Arnav Saxena, Antonio Frontera, M. Concepción Gimeno* and Laura Rodríguez*

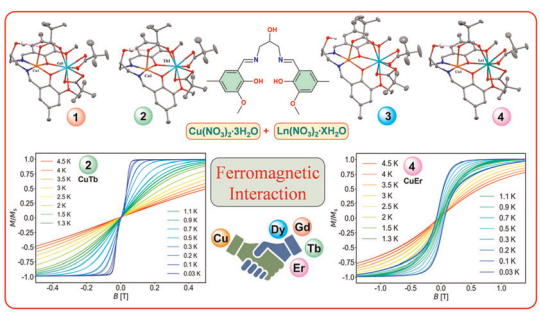
2487



Oxygen reduction reaction (ORR) in alkaline solution catalysed by an atomically precise catalyst based on a Pd(II) complex supported on multi-walled carbon nanotubes (MWCNTs). Electrochemical and structural considerations

Valeria Monini, Marco Bonechi,* Carla Bazzicalupi,* Antonio Bianchi, Pietro Gentilesca, Walter Giurlani, Massimo Innocenti, Arianna Meoli, Giammarco Maria Romano and Matteo Savastano*

2501



Insight into ferromagnetic interactions in Cu^{II}–Ln^{III} dimers with a compartmental ligand

Anangamohan Panja,* Sagar Paul,* Eufemio Moreno-Pineda, Radovan Herchel, Narayan Ch. Jana, Paula Brandão, Ghenadie Novitchi and Wolfgang Wernsdorfer*

This journal is © The Royal Society of Chemistry 2024

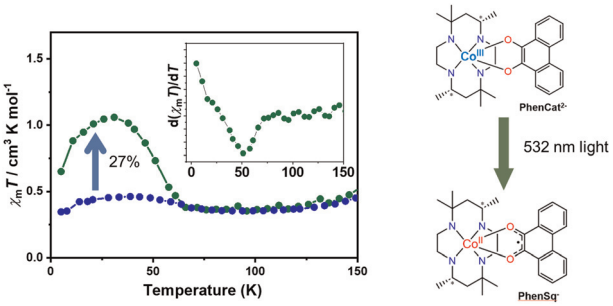
Open Access Article. Published on 06 February 2024. Downloaded on 12/4/2025 2:41:08 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

PAPERS

2512

Photo-induced valence tautomerism and polarization switching in mononuclear cobalt complexes with an enantiopure chiral ligand

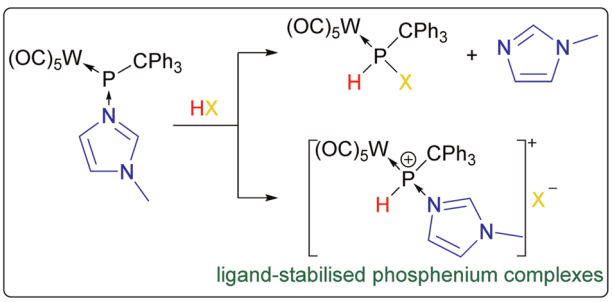
Wen-Huang Xu, Yu-Bo Huang, Wen-Wei Zheng, Sheng-Qun Su, Shinji Kanegawa, Shu-Qi Wu* and Osamu Sato*



2517

Access to ligand-stabilized PH-containing phosphenium complexes

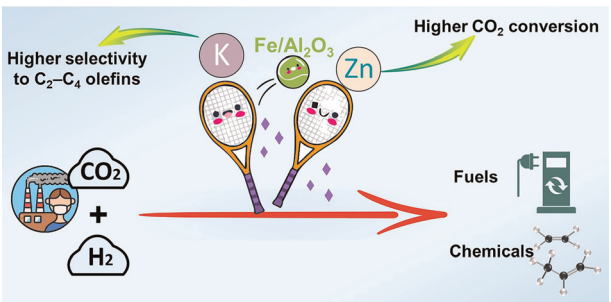
David Biskup, Gregor Schnakenburg, Arturo Espinosa Ferao* and Rainer Streubel*



2526

Synergistic effect of K and Zn on Fe-based catalysts for efficient CO_2 hydrogenation

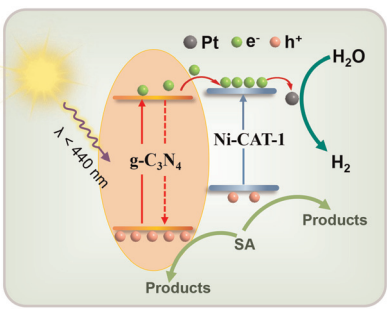
Jia-Min Lyu, Shen Yu,* Zhan Liu, He-You Du, Ming-Hui Sun, Chun-Mu Guo, Yi-Long Wang, Yu Li, Li-Hua Chen* and Bao-Lian Su*



2534

Controlled synthesis of 2D–2D conductive metal–organic framework/g-C_3N_4 heterojunctions for efficient photocatalytic hydrogen evolution

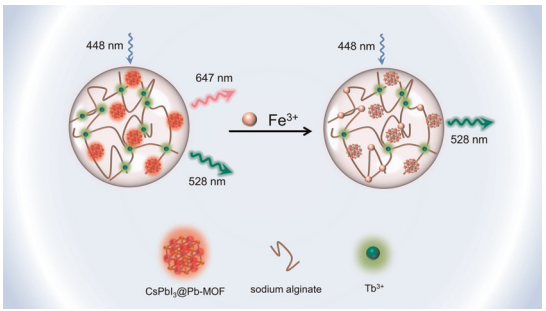
Xiaoyu Chu,* Bing-Bing Luan, Ao-Xiang Huang, Yongkuo Zhao, Hongxia Guo, Yang Ning, Haojian Cheng, Guiling Zhang* and Feng-Ming Zhang*



Open Access Article. Published on 06 February 2024. Downloaded on 12/4/2025 2:41:08 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

PAPERS

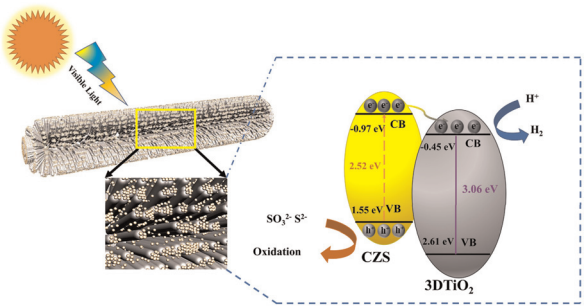
2541



Terbium alginate encapsulated $CsPbI_3$@Pb-MOF: a ratiometric fluorescent bead for detection and adsorption of Fe^{3+}

Yangwen Hou, Hua Feng, Jingting He, Fanfei Meng, Jing Sun, Xiao Li, Xinlong Wang, Zhongmin Su* and Chunyi Sun*

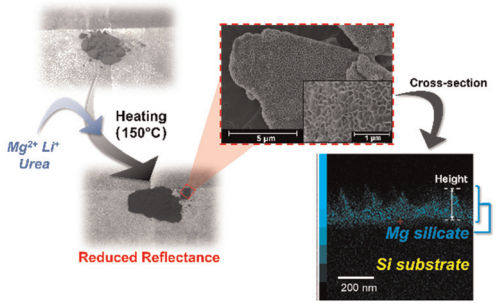
2551



A rationally designed $3DTiO_2$@CdZnS heterojunction photocatalyst for effectively enhanced visible-light-driven hydrogen evolution

Zhuoyang Li, Hao Ji, Ziwen Feng, Zelin Li, Hang Gao, Yipeng Tan, Lingmin Yao,* Qinglin Deng,* Yu Sun and Mengmeng Shao

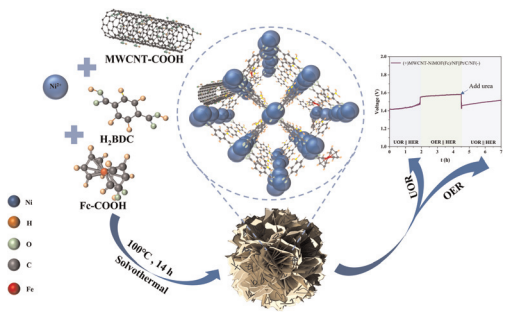
2558



Formation of moth-eye-like structures on silicon through *in situ* crystallization of layered Mg silicate

Yuki Nakauchi, Hikari Minamisawa and Tomohiko Okada*

2565



A NiMOF integrated with conductive materials for efficient bifunctional electrocatalysis of urea oxidation and oxygen evolution reactions

Xiaopei Xie, Liqiang Xu, Qingsheng Zeng, Zhaona Zhang, Zhiqi Xu, Chuanxia Yin and Xinxing Wang*

This journal is © The Royal Society of Chemistry 2024

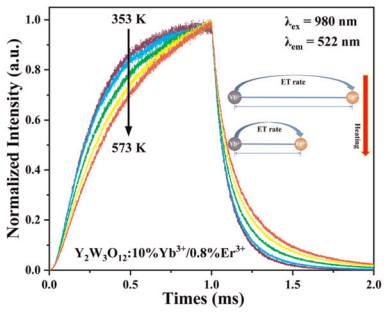
Open Access Article. Published on 06 February 2024. Downloaded on 12/4/2025 2:41:08 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

PAPERS

2575

Anti-thermal quenching of luminescence in $Y_2W_3O_{12}$:Yb^{3+}/RE^{3+} (RE = Er/Ho/Tm) and its temperature sensing application

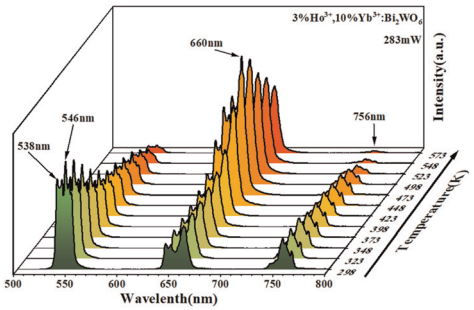
Yuhong Zhang,* Wentong Cai, Jian Liu, Ziyi Zhang, Bo Sun and Hang Liu*



2591

Upconversion luminescence and temperature sensing properties of Ho^{3+},Yb^{3+}-codoped Bi_2WO_6

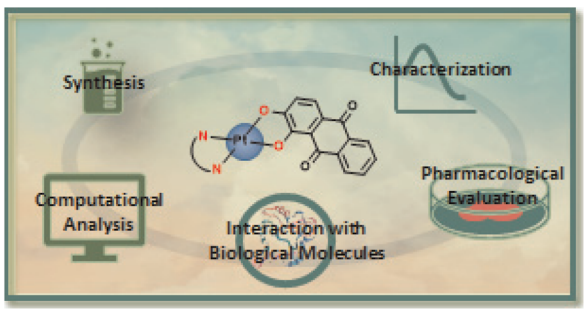
Mengliang Jiang, Linxiang Wang,* Munire Maimaiti, Xin Feng and Yan Zhang



2602

Cytotoxic Pt(II) complexes containing alizarin: a selective carrier for DNA metalation

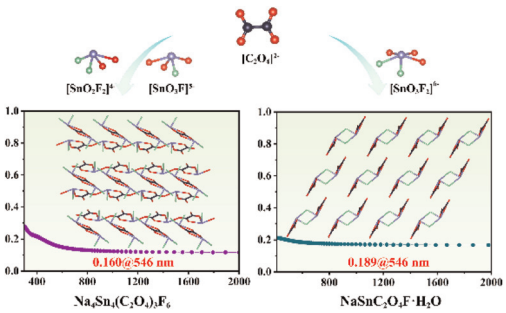
Rossella Caligiuri, Lara Massai, Andrea Geri, Loredana Ricciardi, Nicolas Godbert, Giorgio Facchetti,* Maria Giovanna Lupo, Ilaria Rossi, Giulia Coffetti, Martina Moraschi, Emilia Sicilia, Vincenzo Vigna, Luigi Messori, Nicola Ferri, Gloria Mazzone,* Iolinda Aiello* and Isabella Rimoldi



2619

$Na_4Sn_4(C_2O_4)_3F_6$ and $NaSnC_2O_4F{\cdot}H_2O$: two tin(II) fluoride oxalates display large birefringence

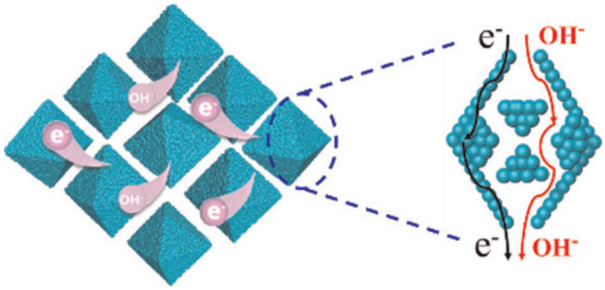
Liying Ren, Zeqiao Yin, Shiyi Wang, Zhengyan Lin, Liling Cao,* Xuehua Dong, Ling Huang, Yuqiao Zhou, Daojiang Gao and Guohong Zou*



Open Access Article. Published on 06 February 2024. Downloaded on 12/4/2025 2:41:08 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

PAPERS

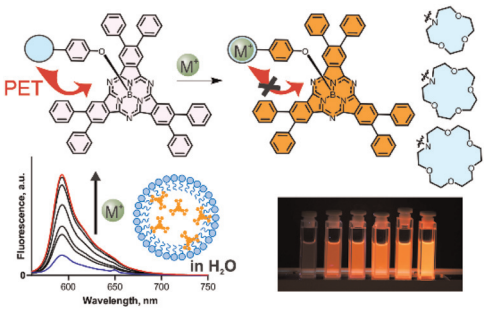
2626



Prussian blue analogue-derived Co_3O_4/Fe_2O_3 with a partially hollow and octahedral structure for high-performance supercapacitors

Hui Ju, Jixiang Yang, Xiaoyang Guo, Hongli Lang, Sheng Wang, Chenjin Pu, Ling Zhao, Lirong Yang* and Wenjing Han*

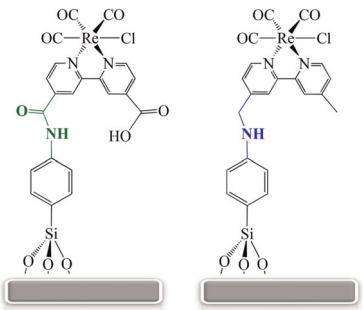
2635



Subphthalocyanines as fluorescence sensors for metal cations

Mary Angelia Alfred, Kamil Lang, Kaplan Kirakci, Pavel Stuzhin, Petr Zimcik, Jan Labuta* and Veronika Novakova*

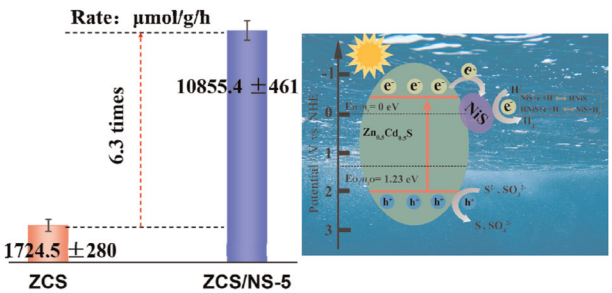
2645



Solar CO_2 reduction using a molecular Re(I) catalyst grafted on SiO_2 *via* amide and alkyl amine linkages

Thomas Fenton, Esraa Ahmad and Gonghu Li*

2653



One-pot hydrothermal synthesis of noble-metal-free NiS on $Zn_{0.5}Cd_{0.5}S$ nanosheet photocatalysts for high H_2 evolution from water under visible light

Linfen Yang, Yong Peng* and Yuhua Wang*

This journal is © The Royal Society of Chemistry 2024

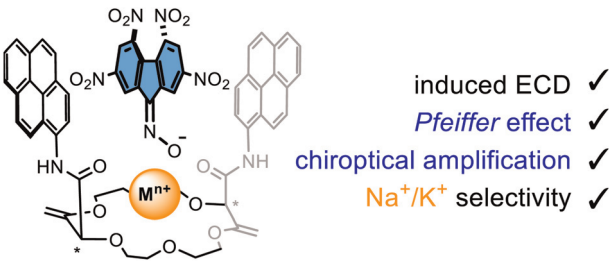
Open Access Article. Published on 06 February 2024. Downloaded on 12/4/2025 2:41:08 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

PAPERS

2665

_Pfeiffer_effect on configurationally labile dyes within ternary complexes with metal ions and enantiopure macrocycles

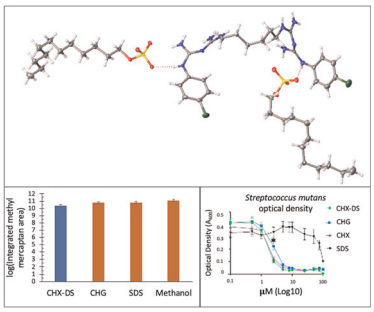
Dávid Pál and Jérôme Lacour*



2670

Novel anionic surfactant-modified chlorhexidine and its potent antimicrobial properties

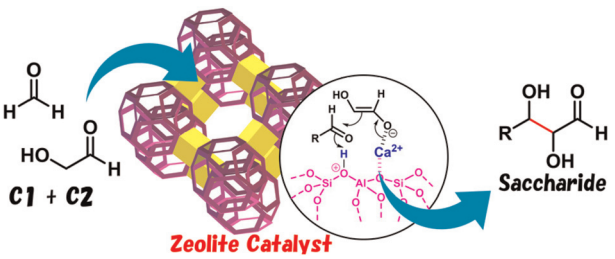
Zilma Pereira Muneeswaran, Baran Teoman, Yu Wang, Haroon Chaudhry, Tatiana V. Brinzari, Gaurav Verma, Lomaani Ranasinghe, Kylie Ryan Kaler, Xiaoyi Huang, Xing He, Belvin Thomas, Shiyou Xu, Chi-Yuan Cheng, Jeffrey M. Boyd, Dailin Chen, Zhigang Hao, Shengqian Ma, Tewodros Asefa, Long Pan* and Viktor Dubovoy*



2678

Saccharide formation by sustainable formose reaction using heterogeneous zeolite catalysts

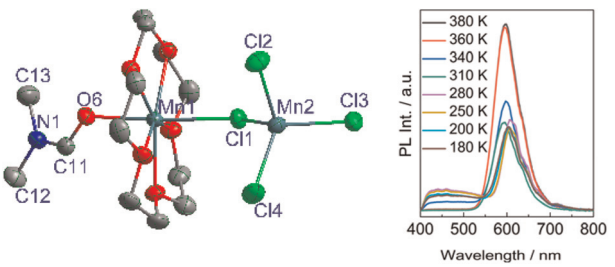
Minoru Waki,* Soichi Shirai and Yoko Hase



2687

Supramolecular crystals of Mn(15-crown-5)($MnCl_4$)(DMF) with dielectric phase transition, high quantum yield and phase transition-induced luminescence enhancement behavior

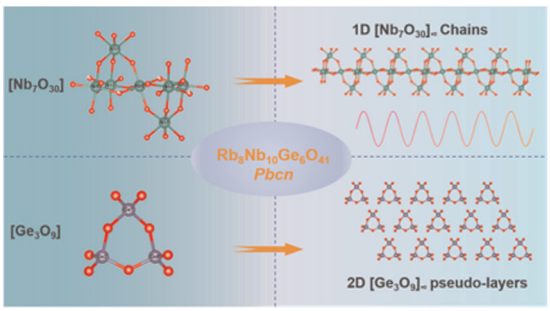
Guo-Jun Yuan,* Xue-Wei Pan, Li Chen, Chao Chen and Xiao-Ming Ren*



Open Access Article. Published on 06 February 2024. Downloaded on 12/4/2025 2:41:08 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

PAPERS

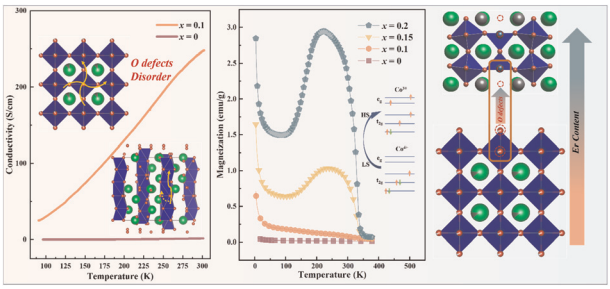
2696



$Rb_8Nb_{10}Ge_6O_{41}$: a new niobium-germanate crystal featuring unique one-dimensional $[Nb_7O_{30}]_\infty$ chains and wide mid-IR transparency

Jing Chai, Yuheng She, Jinmiao Jiao, Lili Li, Ning Ye, Zhanggui Hu, Yicheng Wu and Conggang Li*

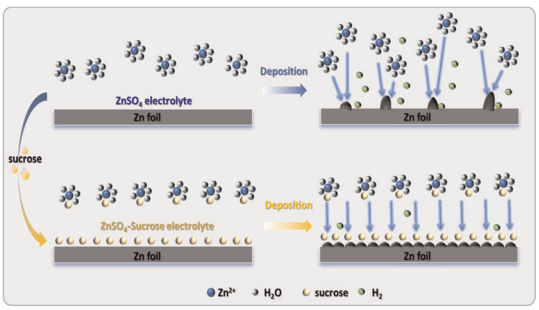
2703



Introducing gradient Er ions and oxygen defects into $SrCoO_3$ for regulating structural, electrical and magnetic transport properties

Hongyuan Song, Xuesong Wang, Haorong Wu, Kun Dong, Kun Meng, Ju Rong, Xiaohua Yu, Liangwei Chen, Bin Liu, Zhenhua Ge and Lan Yu*

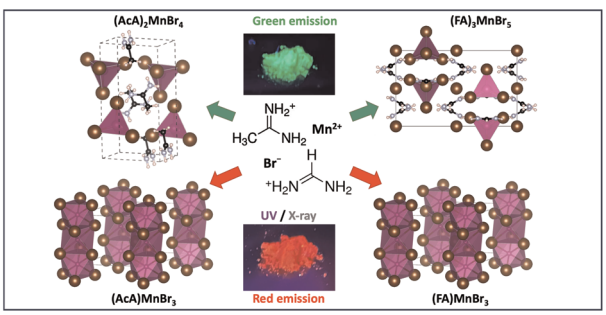
2714



Highly stable and reversible Zn anodes enabled by an electrolyte additive of sucrose

Ming Song, Shan Li, Yi Zhu, Hongri Wan,* Xuena Xu, Lu Li, Limei Sun, Lin Tian* and Yan Xu*

2722



Optical and scintillation properties of hybrid manganese(II) bromides with formamidinium and acetamidinium cations

Sergey A. Fateev, Vladislava Y. Kozhevnikova, Kirill M. Kuznetsov, Daria E. Belikova, Victor N. Khrustalev, Eugene A. Goodilin and Alexey B. Tarasov*

This journal is © The Royal Society of Chemistry 2024

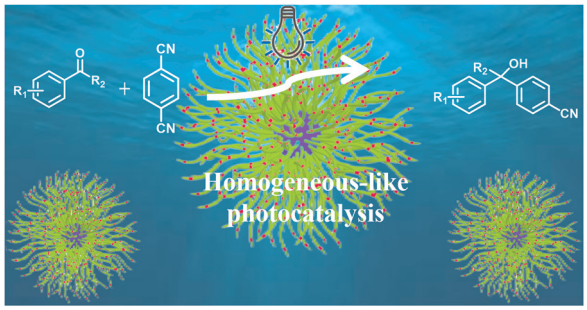
Open Access Article. Published on 06 February 2024. Downloaded on 12/4/2025 2:41:08 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

PAPERS

2731

Homogeneous-like photocatalysis: covalent immobilization of an iridium(III) complex onto polystyrene brushes grafted on SiO_2 nanoparticles as a mass/charge transfer-enhanced platform

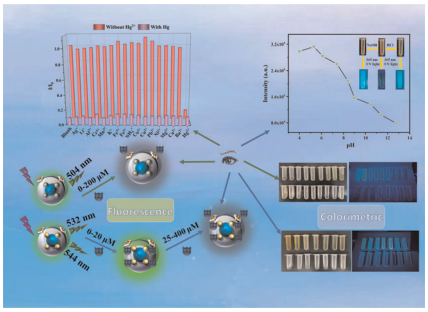
Shaoqi Chen, Yang Zhou and Xuebing Ma*



2741

A series of viologen complexes containing thiophene and Br^- dual fluorescent chromophores for continuous visual sensing of pH and Hg^{2+}

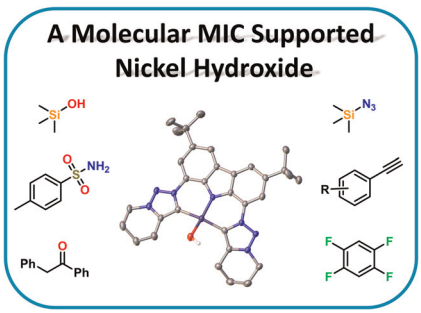
Kai Li, Jun Ying,* Tao Liu, Aixiang Tian and Xiuli Wang*



2749

A mesoionic carbene stabilized nickel(II) hydroxide complex: a facile precursor for C–H activation chemistry

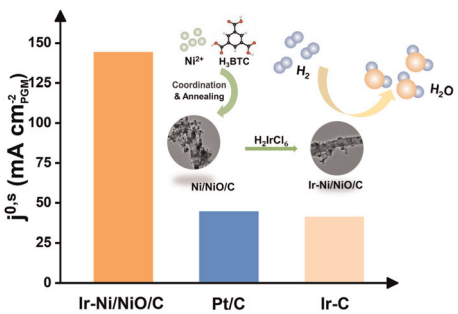
Anna Pavun, Raffael Niess, Lucas A. Scheibel, Michael Seidl and Stephan Hohloch*



2762

A trinary support of Ni/NiO/C to immobilize Ir nanoclusters for alkaline hydrogen oxidation

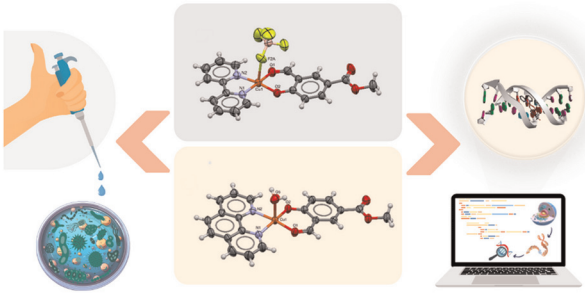
Ziliang Kang, Yao Peng, Zi Wei, Yuanjun Liu,* Xiaoyang Song, Zhenyuan Ji, Xiaoping Shen, Ning Yao, Xinhang Du and Guoxing Zhu*



Open Access Article. Published on 06 February 2024. Downloaded on 12/4/2025 2:41:08 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

PAPERS

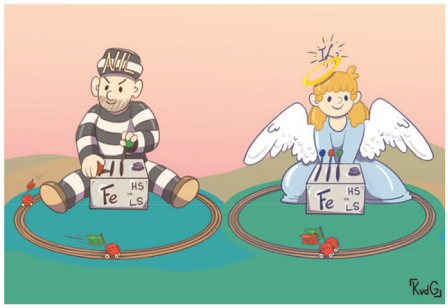
2770



Cu(II) complexes with a salicylaldehyde derivative and α-diimines as co-ligands: synthesis, characterization, biological activity. Experimental and theoretical approach

Snežana Selaković, Marko V. Rodić, Irena Novaković, Ivana Z. Matić, Tatjana Stanojković, Andrea Pirković, Lada Živković, Biljana Spremo-Potparević, Miloš Milčić, Vesna Medaković, Filitsa Dimiza, George Psomas, Katarina Anđelković and Maja Šumar-Ristović*

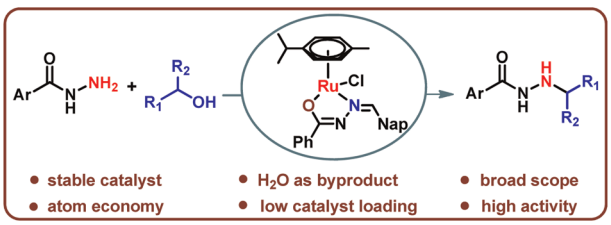
2789



Changes in aromaticity of spin-crossover complexes: a signature for non-innocent ligands

Ana V. Cunha,* Francesca Milocco, Edwin Otten and Remco W. A. Havenith*

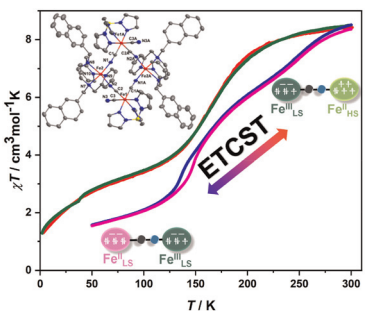
2797



Half-sandwich ruthenium complexes with acylhydrazone ligands: synthesis and catalytic activity in the *N*-alkylation of hydrazides

Heng Li, Ke Wang, Lin Yang, Yu-Zhou Luo* and Zi-Jian Yao*

2807



Electron transfer coupled spin transition in cyano-bridged mixed-valence $\{Fe_2^{III}Fe_2^{II}\}$ molecular squares

Shuwen Jia, Mengjia Shang, Sai Jin, Xinrui Zhu, Yuanyuan Cai and Dongfeng Li*

This journal is © The Royal Society of Chemistry 2024

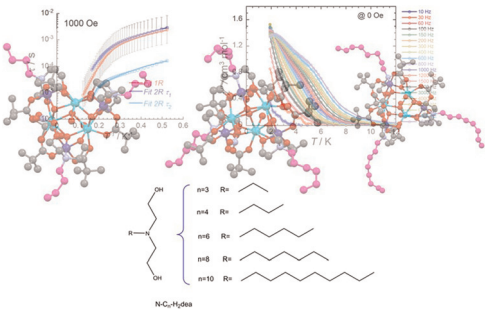
Open Access Article. Published on 06 February 2024. Downloaded on 12/4/2025 2:41:08 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

PAPERS

2815

Alkyl chain length influence of the functionalized diethanolamine ligand on the slow relaxation of the magnetization in $\{Co_3^{III}Dy_3^{III}\}$ complexes

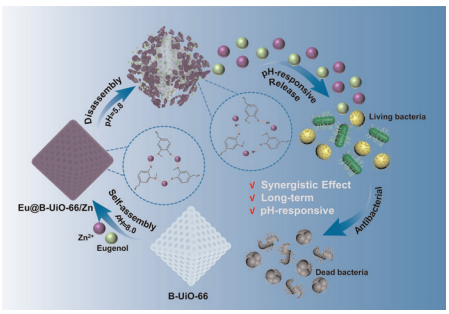
Chloë Bonnenfant, Nahir Vadra, Mathieu Rouzières, Rodolphe Clérac, Fabio D. Cukiernik* and Pablo Alborés*



2826

pH-responsive on-demand release of eugenol from metal–organic frameworks for synergistic bacterial killing

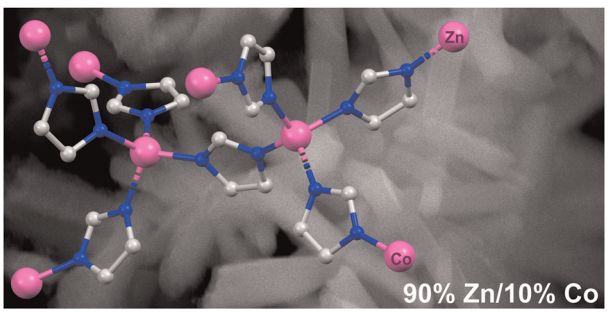
Jing Wang, Lin Li, Xingyu Hu, Lulu Zhou* and Jing Hu*



2833

New heterometallic Co/Zn, Ag/Co, and Ag/Zn imidazolates: structural characterization and catalytic activity in the oxidation of organic compounds

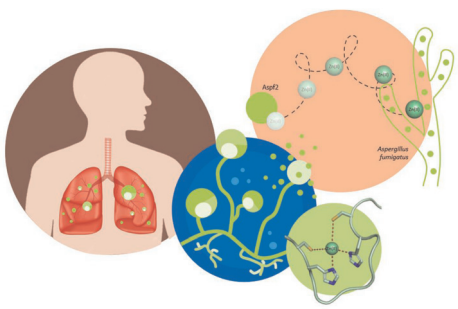
Mattia Lopresti, Łukasz Kurowski, Luca Palin, Marco Milanesio,* Magdalena Siedzielnik, Karolina Gutmańska, Adriana Dobrenko, Tomasz Klimczuk, Ewelina Pawelczyk and Anna Dołęga*



2848

***Aspergillus fumigatus* ZrfC Zn(II) transporter scavengers zincophore-bound Zn(II)**

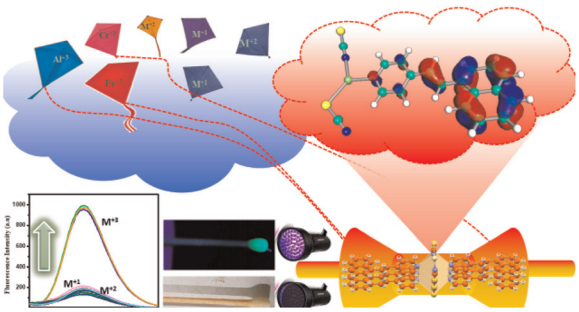
Kinga Garstka, Gabriela Potoczniak, Henryk Kozłowski and Magdalena Rowińska-Żyrek*



Open Access Article. Published on 06 February 2024. Downloaded on 12/4/2025 2:41:08 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

PAPERS

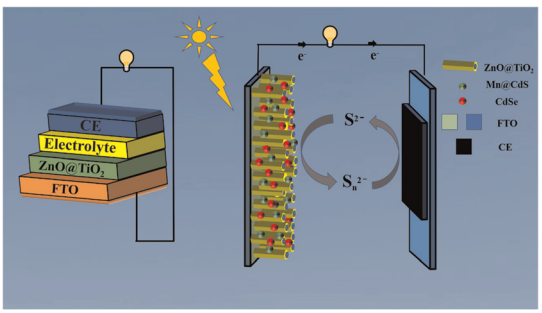
2859



Exploitation of a 1D coordination polymer as a portable kit for an eye-catching fluorometric response towards sensing of trivalent cations

Sourav Datta, Sunanda Dey, Chittaranjan Sinha, Basudeb Dutta,* Priyabrata Banerjee* and Mohammad Hedayetullah Mir*

2867



Core–shell ZnO@TiO_2 hexagonal prism heterogeneous structures as photoanodes for boosting the efficiency of quantum dot sensitized solar cells

Quanhang Li, Tingting Zhang, Donghui Cui, Lin Xu and Fengyan Li*

This journal is © The Royal Society of Chemistry 2024