# **NJC**

New Journal of Chemistry. A journal for new directions in chemistry

# rsc.li/njc

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 1144-0546 CODEN NJCHES 47(22) 10465-10894 (2023)



### Cover

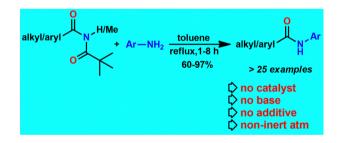
See Qianhong Shen, Hui Yang et al., pp. 10497-10505. Image reproduced by permission of Qianhong Shen and Hui Yang from New J. Chem., 2023, 47, 10497.

# COMMUNICATIONS

# 10480

One pot transamidation of N-pivaloyl activated amides with anilines in the absence of catalyst, base and additive

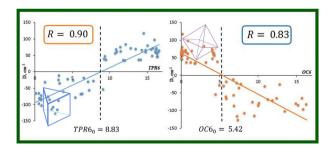
Ida Angel Priya Samuel Rajan and Saravanakumar Rajendran\*



### 10484

Can the continuous symmetry measure TPR6 measure the axial magnetic anisotropy in hexacoordinated Co(II) SIMs?

Yulia P. Tupolova, Vladimir E. Lebedev and Igor N. Shcherbakov\*



#### **Editorial Staff**

**Executive Editor** 

Sally Howells

**Deputy Editor** 

Mike Andrews

**Development Editors** 

Michelle Canning, Emily Cuffin-Munday

Assistant Editor

Eva Balentova

**Editorial Production Manager** 

Debora Giovanelli, Helen Lunn, Samuel Oldknow, Kate Tustain

Editorial Assistant

Daphne Houston

**Publishing Assistant** 

Huw Hedges

Publisher

Jeanne Andres

For queries about submitted articles please contact Susannah Davies, Editorial Production Manager in the first instance. E-mail njc@rsc.org

For pre-submission queries please contact

Sally Howells (RSC), Executive Editor. E-mail njc-rsc@rsc.org

New Journal of Chemistry (electronic: ISSN 1369-9261) is published 48 times a year by the Centre National de la Recherche Scientifique (CNRS), 3 rue Michel-Ange, 75794 Paris cedex 16, France, and the Royal Society of Chemistry (RSC), Thomas Graham House, Science Park, Milton Road, Cambridge, UK CB4 0WF.

All orders, with cheques made payable to the Royal Society of Chemistry, should be sent to the Royal Society of Chemistry Order Department, Royal Society of Chemistry,

Thomas Graham House, Science Park, Milton Road, Cambridge, CB4 0WF, UK

Tel +44 (0)1223 432398; E-mail orders@rsc.org

2023 Annual (electronic) subscription price: £2306; US\$3880. Customers in Canada will be subject to a surcharge to cover GST. Customers in the EU subscribing to the electronic version only will be charged VAT.

If you take an institutional subscription to any Royal Society of Chemistry journal you are entitled to free, site-wide web access to that journal. You can arrange access via Internet Protocol (IP) address at www.rsc.org/ip

Customers should make payments by cheque in sterling payable on a UK clearing bank or in US dollars payable on a US clearing bank.

Whilst this material has been produced with all due care, the Royal Society of Chemistry cannot be held responsible or liable for its accuracy and completeness, nor for any consequences arising from any errors or the use of the information contained in this publication. The publication of advertisements does not constitute any endorsement by the Royal Society of Chemistry or Authors of any products advertised. The views and opinions advanced by contributors do not necessarily reflect those of the Royal Society of Chemistry which shall not be liable for any resulting loss or damage arising as a result of reliance upon this material. The Royal Society of Chemistry is a charity, registered in England and Wales, Number 207890, and a company incorporated in England by Royal Charter (Registered No. RC000524), registered office:

Burlington House, Piccadilly, London W1J 0BA, UK,

Telephone: +44 (0) 207 4378 6556.

Advertisement sales:

Tel +44 (0) 1223 432246; Fax +44 (0) 1223 426017;

E-mail advertising@rsc.org

For marketing opportunities relating to this journal, contact marketing@rsc.org

# **NJC**

New Journal of Chemistry A journal for new directions in chemistry

# rsc.li/nic

NJC solicits innovative and cutting-edge reports of high quality and broad appeal that have a strong chemical component. Cross-disciplinary papers are welcome.

NJC contains reports of original research (Communications, Papers) as well as reviews (Focuses, Perspectives).

#### **Editorial Board**

#### Editor-in-chief

Jean-François Gérard, INSA Lyon, University of Yannick Guari, Université Montpellier, France Lyon, France

#### Associate Editors

Annie Castonguay, INRS (University of Quebec), Canada

Alexander J. Andre Cobb, Kings College London, UK

Vera R. L. Constantino, University of São Paulo, Brazil

Debbie Crans, Colorado State University, USA Catharine Esterhuysen, University of Stellenbosch, South Africa David Farrusseng, IRCELYON, France

Suman L. Jain, CSIR Indian Institute of Petroleum, India

Peter Junk, James Cook University, Australia Hee-Je Kim, Pusan National University, Korea Dai-Wen Pang, Wuhan University, China Karine Philippot, LCC, France Luca Prodi, University of Bologna, Italy

Maarten Roeffaers, Katholieke Universiteit Leuven, Belgium Edina Rosta, University College London, UK

Akhila K. Sahoo, University of Hyderabad, India

Jianji Wang, Henan Normal University, China Gregory Welch, University of Calgary, Canada Kazunari Yoshizawa, Kyushu University, Japan Jinghua Yu, University of Jinan, China

#### Consulting Editor

Odile Eisenstein, Université Montpellier,

### **Advisory Board**

Qiang Cui, Boston University, USA Hendrik Heinz, University of Colorado Boulder USA

Mir Wais Hosseini, Université de Strasbourg, France

Takashi Kato, University of Tokyo, Japan Jean-Pierre Majoral, University of Toulouse. David Reinhoudt, Universitry of Twente, The Netherlands

Jean-Pierre Sauvage, Université de Strasbourg, France

Ionathan W. Steed, Durham University, UK Lin Xu, East China Normal University, China Yi-Jun Xu. Fuzhou University, China Vivian Yam, University of Hong Kong, PR

Davit Zargarian, Université de Montréal, Canada

Founding Editor Lionel Salem

#### Information for Authors

Full details on how to submit material for publication in New Journal of Chemistry are given in the Instructions for Authors (available from http://www.rsc.org/authors). Submissions should be made via the journal's homepage: rsc.li/njc

Authors may reproduce/republish portions of their published contribution without seeking permission from the Royal Society of Chemistry, provided that any such republication is accompanied by an acknowledgement in the form: (Original Citation)-Reproduced with permission from the Centre National de la Recherche Scientifique (CNRS) and the Royal Society of Chemistry.

This journal is @ The Royal Society of Chemistry and the Centre National de la Recherche Scientifique 2023.

Apart from fair dealing for the purposes of research or private study for non-commercial purposes, or criticism or review, as permitted under the Copyright, Designs and Patents Act 1988 and the Copyright and Related Rights Regulation 2003, this publication may only be reproduced, stored or transmitted, in any form or by any means, with the prior permission in writing of the Publishers or in the case of reprographic reproduction in accordance with the terms of licences issued by the Copyright Licensing Agency in the UK. US copyright law is applicable to users in the USA.

Registered charity number: 207890

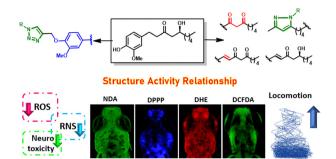


#### **COMMUNICATIONS**

#### 10488

# 6-Gingerol-derived semisynthetic analogs mitigate oxidative stress, and reverse acrylamide induced neurotoxicity in zebrafish

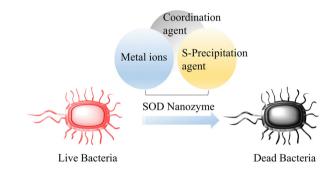
Tamilvelan Manjunathan, Ajay Guru, B. Haridevamuthu, Rambabu Dandela, Jesu Arokiaraj and Pushparathinam Gopinath\*



# 10493

# An Fe-Mn-S SOD-like nanozyme as an efficient antibacterial agent

Xiaowan Fan, Miaomiao Cheng, Saiyu Ma, Kexu Song, Ye Yuan\* and Yuan Liu\*

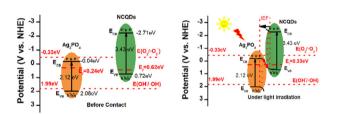


#### **PAPERS**

# 10497

Preparation of Ag<sub>3</sub>PO<sub>4</sub> tetrapods anchored to nitrogen-doped carbon quantum dots for enhanced photocatalytic performance

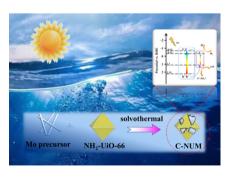
Yu Yao, Qianhong Shen,\* Chenyan Wu, Chengqi Lu, Jiansong Sheng, Yue Li and Hui Yang\*



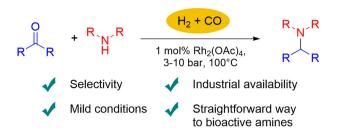
# 10506

Optimization of the NH2-UiO-66@MoS2 heterostructure for enhanced photocatalytic hydrogen evolution performance

Zenghuan Ren, Xinghao Zhang, Xiaofan Shi, Di Yang, Mei-Hui Yu, Wenjun Zheng and Jijie Zhang\*



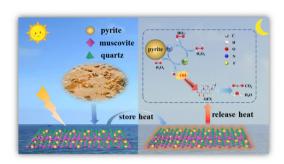
### 10514



# Syngas as a synergistic reducing agent for selective reductive amination—a mild route to bioactive amines

Evgeniya Podyacheva, Alexandra I. Balalaeva, Oleg I. Afanasyev, Sofiya A. Runikhina, Olga Chusova, Andrey S. Kozlov, Saihu Liao and Denis Chusov\*

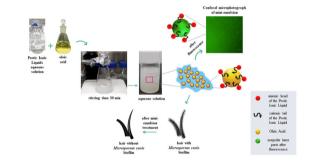
#### 10519



# An excellent sensible heat storage and photothermal conversion pyrite waste material for pollutant removal

Qian Zhang, Dan Zheng, Bo Bai,\* Meng Mei and Feiying Yang

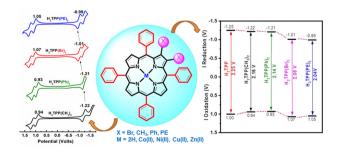
# 10529



# Mini-emulsions based on protic ionic liquids and oleic acid for treatment of dermatophytosis caused by Microsporum canis

Rogério Freitas dos Santos, Bárbara da Costa, Leandra Franciscato Campo, Virgínia Serra de Souza, Sandra Cerqueira Pereira, Felipe Lange Coelho, Alexandre Meneghello Fuentefria and Roberta Bussamara\*

# 10541



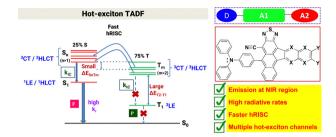
# Regioselective 2,3-disubstituted porphyrins: synthesis, spectral, structural and electrochemical properties

Waseem Arif and Ravi Kumar\*

#### 10552

# Computational design of efficient near-infrared TADF emitters with hot-exciton characteristics

Jesni M. Jacob, Pralok K. Samanta and Mahesh Kumar Ravva\*



#### 10564

Green synthesis of shape-tunable CuFe<sub>2</sub>O<sub>4</sub> NPs: a magnetically retrievable and efficient catalyst for Chan-Lam type C-N coupling reactions under base-free conditions

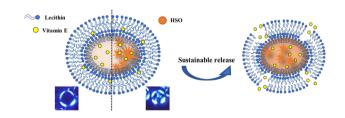
Saddam Iraqui, Babul Kalita, Rei Star, Mukul Gupta and Md. Harunar Rashid\*



# 10576

# Novel delivery system: a liquid crystal emulsion containing HSO crystals

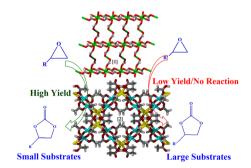
Lin Ding, Hanglin Li, Zhicheng Ye, Yazhuo Shang,\* Xiong Wang\* and Honglai Liu



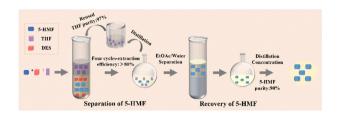
### 10585

Synthetic, spectral, structural and catalytic activities of 3-D metal format/acetate framework materials for CO<sub>2</sub> conversion

Manoj Trivedi,\* Gurmeet Singh, Raj Kishore Sharma, Nigam P. Rath\* and Ahmad Husain



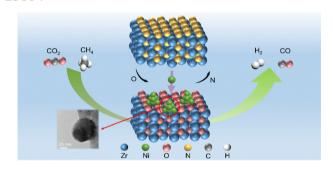
#### 10593



A green process for separation and recovery of 5-hydroxymethylfurfural from carboxylic acid-choline chloride deep eutectic solvents

Hui Han, Man Zhang, Yingming Zhu, Kejing Wu, Yingying Liu, Binshen Wang, Houfang Lu\* and Bin Liang

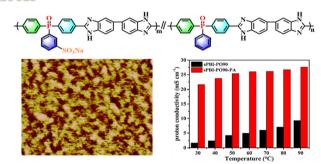
#### 10604



Emergent Ni catalysts induced by nitride-to-oxide transformation for coking and sintering resistant dry reforming of methane

Yuying Liu, Jiajia Zheng, Tingting Yan, Jiang Deng,\* Jianhui Fang\* and Dengsong Zhang\*

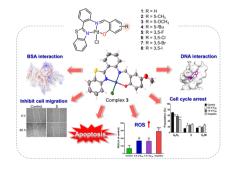
#### 10613



# Soluble sulfonated polybenzimidazoles containing phosphine oxide units as proton exchange membranes

Gang Wang,\* Shuai Yang, Bing-yan Hua, Ming-xia Lu, Jia-qi Kang, Wen-shuai Tang, Hong-liang Wei, Xian-xian Liu, Li-feng Cui\* and Xiao-dong Chen\*

### 10624



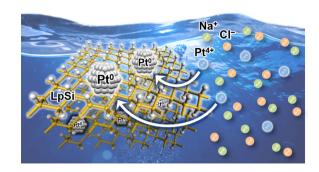
Novel Pd(II) pincer complexes bearing salicylaldimine-based benzothiazole derivatives: synthesis, structural characterization, DNA/BSA binding, and biological evaluation

Sutthida Wongsuwan, Jaruwan Chatwichien, Weekit Sirisaksoontorn, Kittipong Chainok, Apisit Songsasen\* and Ratanon Chotima\*

#### 10638

Efficient reducibility of layered polysilane (SiH)<sub>n</sub> for selective recovery of platinum ions from aqueous media

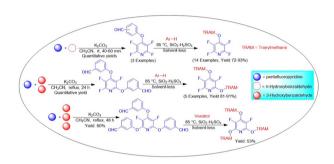
Masataka Ohashi,\* Yasutomo Goto and Hideyuki Nakano



#### 10645

Site-selective nucleophilic substitution reactions of pentafluoropyridine with hydroxybenzaldehydes: synthesis of triarylmethanes comprising perfluoropyridine moieties

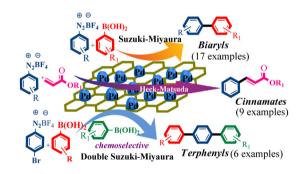
Zahra Vari, Reza Ranjbar-Karimi\* and Kazem Mohammadiannejad\*



# 10659

Palladium nanoparticles supported on reduced graphene oxide (Pd@rGO): an efficient heterogeneous catalyst for Suzuki-Miyaura, Heck-Matsuda and Double Suzuki-Miyaura cross-coupling reactions

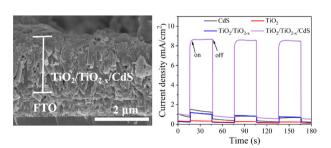
Rajib Sarkar, Fillip Kumar Sarkar, Sushmita Gajurel, Lenida Kyndiah, Mithu Saha and Amarta Kumar Pal\*



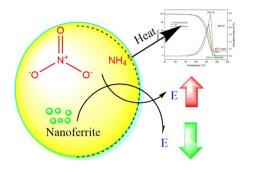
#### 10672

Enhanced solar absorption and photoelectrochemical properties of Al-reduced TiO<sub>2</sub>/TiO<sub>2-x</sub>/CdS heterojunction nanorods

Xiao Li, Jingshan Hou, Jing Wang, Yanwei Huang, Guoying Zhao, Ganghua Zhang\* and Yongzheng Fang\*



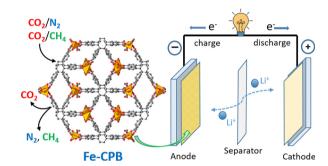
#### 10679



# Investigation of the catalytic effect of nano ferrite CoCuNiFe<sub>2</sub>O<sub>4</sub> on the thermal decomposition behavior of ammonium nitrate

Pragnesh N. Dave,\* Shalini Chaturvedi and Ruksana Sirach

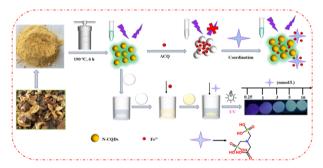
### 10687



# An iron-based metal-organic framework for selective CO2 adsorption and as an efficient anode material for lithium-ion batteries

Y B. N. Tran, Phuong T. K. Nguyen\* and Tuan Loi Nguyen

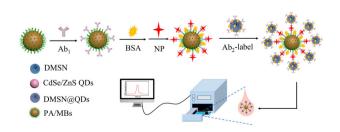
# 10696



# A fluorescence visual detection for glyphosine based on a biomass carbon quantum dot paper-based sensor

Xiaoyan Wang, Yiju Lv, Xiangfei Kong, Zhiyuan Ding, Xia Cheng, Zheng Liu\* and Guo-Cheng Han\*

# 10706



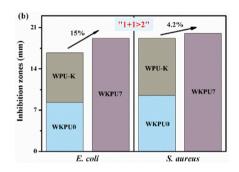
# An ultrasensitive electrochemiluminescence immunosensor for SARS-CoV-2 nucleocapsid protein detection based on signal amplification strategy of DMSN@QDs

Shasha Feng, Fubin Pei, Wei Hu, Zhiwei Liu, Bin Du, Xihui Mu, Bing Liu, Qingli Hao, Wu Lei\* and Zhaoyang Tong\*

#### 10715

Preparation and antibacterial study of waterborne polyurethane modified with lysine and quaternary ammonium salt

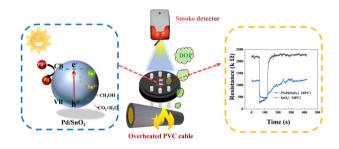
Mengting Xu, Yu Wang,\* Jichao Shi, Dandan Wu, Lin Lin, Runping Jia,\* Yinghao Zhai and Hongxiang Qian



# 10727

Photochemical fabrication of defect-abundant Pd/SnO<sub>2</sub> with promoted performance for dioctyl phthalate gas sensing

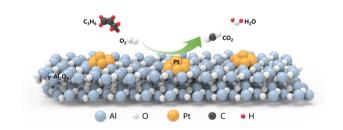
Yue Fu, Chaozhong Li, Xue Chen, Yidan Liu, Haocheng Wu, Rongrong Jia, Liyi Shi, Dongqi Yu\* and Lei Huang\*



# 10735

Preparation of highly dispersed metallic Pt nanoparticle catalysts for low-temperature propene combustion

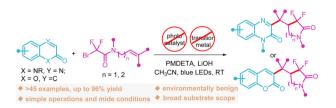
Bei Huang, Ke Wang, Fanxing Zhang, Xianfeng Shen, Kewu Yang, Yi He,\* Keping Yan, Yao Shi and Pengfei Xie\*



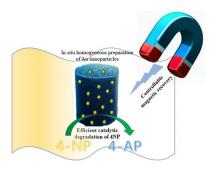
### 10744

Photoinduced tandem radical cyclization/ heteroarylation of N-allylbromodifluoroacetamides with quinoxalin-2(1H)-ones or coumarins under metal- and photocatalyst-free conditions

Wei Zhao, Liangming Xuan, Yang Liu, Jiayi Yin, Haifeng Wang, Qiongjiao Yan, Wei Wang,\* Jin Huang\* and Fener Chen\*



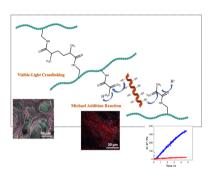
### 10751



# Magnetic graphene noble metal aerogels: preparation and application for catalytic degradation of 4-NP

Danyi Li, Lin Lin, Manli Lu, Linfan Li and Jihao Li\*

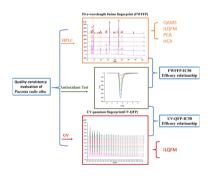
# 10759



# In situ formation of biocompatible and ductile protein-based hydrogels via Michael addition reaction and visible light crosslinking

Rumeysa Tutar,\* Simay Yagmur Koken, Deniz Ceylan Tuncaboylu, Betül Çelebi-Saltik and Cemal Özeroğlu

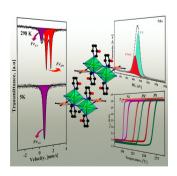
# 10770



# Evaluating Paeonia Radix Alba quality by multidimensional quantified fingerprinting combined with antioxidant profiling

Lu Chen, Jiajia Fan, Xiang Li, Lili Lan,\* Zhe Wang\* and Guoxiang Sun\*

#### 10781



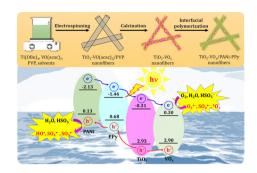
# Spin crossover in Hofmann-like coordination polymers. Effect of the axial ligand substituent and its position

Y. Avila, O. Pérez, L. Sánchez, M. C. Vázquez, R. Mojica, M. González, M. Avila, J. Rodríguez-Hernández and E. Reguera\*

#### 10796

Interfacial synthesis of polyaniline-polypyrrole on electrospun vanadium oxide-embedded TiO<sub>2</sub> nanofibers with enhanced photocatalytic performance

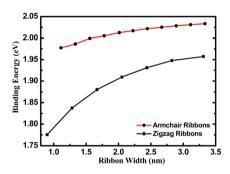
Vu Dinh Thao, Nguyen Trung Dung, Bui Ngoc Chuan, Le The Son, To Van Nguyen, Pham Chau Thuy, Nguyen Nhat Huy and Tran Viet Thu\*



#### 10808

# First-principles study of CdSe nanoribbons under uniaxial tensile strain

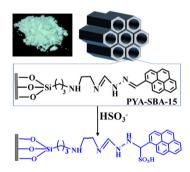
Bing Fu, Xiaozhe Yang, Guolong Yu, Liangrong Li\* and Gang Feng



# 10819

A fluorescence "turn-on" probe for the detection of HSO<sub>3</sub><sup>-</sup> based on a pyrene-functionalized mesoporous silica material

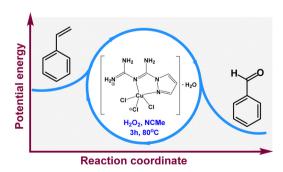
Xinyue Zhao, Qian Zhao, Yating Lu, Wen Xu and Jing Wang\*



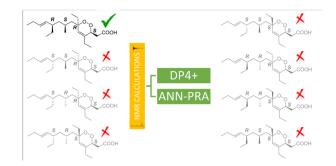
### 10826

Co(II/III), Ni(II) and Cu(II) complexes with a pyrazole-functionalized 1,3,5-triazopentadiene: synthesis, structure and application in the oxidation of styrene to benzaldehyde

Ibadulla Mahmudov, Atash V. Gurbanov,\* Luísa M. D. R. S. Martins, \* Yusif Abdullayev, Afsun Sujayev, Kamran T. Mahmudov\* and Armando J. L. Pombeiro



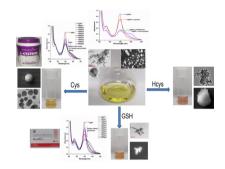
#### 10834



Combining the power of DP4+ and ANN-PRA analysis on stereochemical assignments: structural validation of bioactive cyclic peroxide from the marine sponge Plakortis angulospiculatus

Andrea N. L. Batista, Lucas H. Martorano, Alessandra L. Valverde\* and Fernando M. dos Santos Jr\*

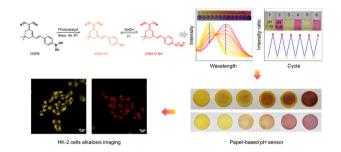
#### 10842



A rapid and sensitive colorimetric discrimination and detection of cysteine, homocysteine and glutathione by phloroglucinol-functionalized silver nanoresonators with real applications

Anurag Kumar Singh, Raksha Singh, Minu Yadav, Manish Sharma, Ida Tiwari and K. K. Upadhyay\*

#### 10849



A latent reversible ratiometric optical pH sensing probe based on phenylboronic acid for alkaline pH detection and applications in test paper and alkalotic HK-2 cells

Hufeng Fang,\* Shan Xu, Jinhong Gong, Lidan Tang, Xiaomei He, Ying Lin, Hao Yang, Kun Yan, Dan Su\* and Yujing Leng\*

#### 10857



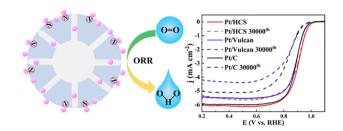
# Fenton-like degradation of bisphenol A by Fe<sub>3</sub>O<sub>4</sub> rhombic dodecahedrons

Jinglin Zhu,\* Meng Zhu and Juanjuan Peng

#### 10866

Anchored and confined Pt nanoparticles in radial mesoporous hollow carbon spheres enhancing oxygen reduction reaction stability

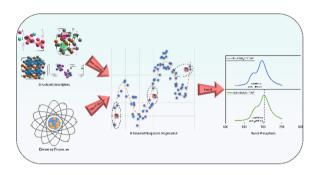
Lijuan Cao, Hongwei Zhu, Yadong Li, Chen Yang, Xilong Wang and Han-Pu Liang\*



#### 10875

Machine learning the peak emission wavelength of Mn<sup>4+</sup>-activated inorganic phosphors

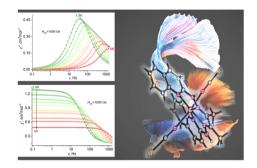
Cong Ding, Zhongfa Li, Wenjun Zhang,\* Jun Ou, Xue Wen, Chengyue Xin and Min Su\*



#### 10884

Hexacoordinated Co(II) complex exhibiting strong magnetic anisotropy and field-induced slow magnetization relaxation: synthesis, magnetic characterization, and quantum-chemical modelling

Yulia P. Tupolova, Vladimir E. Lebedev, Denis V. Korchagin, Valery V. Tkachev, Andrey N. Utenyshev, Roman B. Morgunov, Andrei V. Palii, Igor N. Shcherbakov\* and Sergey M. Aldoshin



# CORRECTION

# 10892

Correction: Cobalt metal-organic framework microcrystalline particles with strong electrocatalytic activity: amine controlled morphology and OER activity

Gunasekaran Arunkumar, Periyappan Nantheeswaran, Mariappan Mariappan, Ravi Kanth Kamlekar, Mehboobali Pannipara, Abdullah G. Al-Sehemi and Savarimuthu Philip Anthony\*