

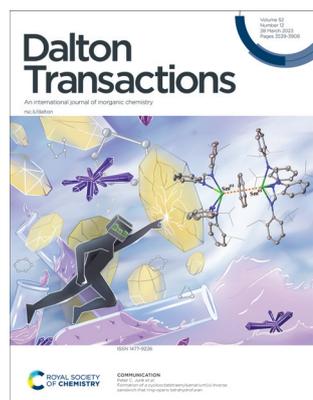
Dalton Transactions

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 52(12) 3539–3908 (2023)



Cover
See Peter C. Junk *et al.*,
pp. 3563–3566.

Image reproduced
by permission of
Peter Courtney Junk
from *Dalton Trans.*,
2023, **52**, 3563.



Inside cover
See Bhabatosh Banik,
Shanta Dhar *et al.*,
pp. 3575–3585.

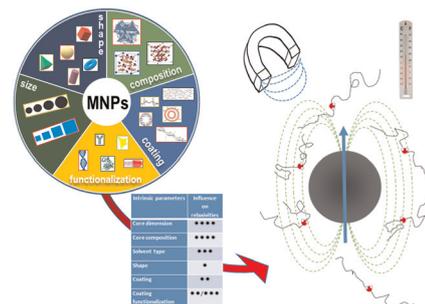
Image reproduced
by permission of
Bapurao Surnar,
Akash Ashokan and
Shanta Dhar
from *Dalton Trans.*,
2023, **52**, 3575.

PERSPECTIVE

3551

The effect of size, shape, coating and functionalization on nuclear relaxation properties in iron oxide core–shell nanoparticles: a brief review of the situation

Paolo Arosio,* Francesco Orsini, Francesca Brero,
Manuel Mariani, Claudia Innocenti, Claudio Sangregorio
and Alessandro Lascialfari

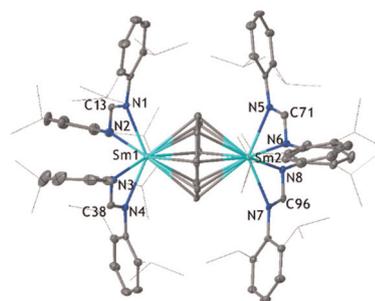


COMMUNICATIONS

3563

Formation of a cyclooctatetraenylsamarium(III) inverse sandwich that ring-opens tetrahydrofuran

Ramees Peedika Paramban, Zhifang Guo,
Glen B. Deacon and Peter C. Junk*



Editorial Staff

Executive Editor

Sally Howells

Deputy Editor

Mike Andrews

Development Editors

Michelle Canning, Emily Cuffin-Munday

Editorial Production Manager

Susannah Davies

Publishing Editors

Debora Giovannelli, 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 dalton@rsc.org

For pre-submission queries please contact Sally Howells, Editor.

Email dalton-rsc@rsc.org

Dalton Transactions (electronic: ISSN 1477-9234) is published 48 times a year by the Royal Society of Chemistry, 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: £4441; US\$7972. 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

Dalton Transactions

An international journal for high quality, original research in organic and organometallic chemistry incorporating Acta Chemica Scandinavica
rsc.li/dalton

Editorial Board

Chair

Russell Morris, University of St Andrews, UK

Associate Editors

Paola Ceroni, University of Bologna, Italy
Vadapalli Chandrasekhar, Indian Institute of Technology Kanpur, India
Maarit Karpinnen, Aalto University, Finland
Mi Hee Lim, Korea Advanced Institute of

Science and Technology, South Korea

Warren Piers, University of Calgary, Canada

Christine Thomas, The Ohio State University, USA

Wolfgang Tremel, Johannes Gutenberg-Universität, Germany

Takashi Uemura, University of Tokyo, Japan

Li-Min Zheng, Nanjing University, China

Members

Jaqueline Kiplinger, Los Alamos National Laboratory, USA

Sascha Ott, Uppsala University, Sweden

Advisory Board

Simon Aldridge, University of Oxford, UK

Santiago Alvarez, University of Barcelona, Spain

John Arnold, University of California, Berkeley, USA

Mu-Hyun Baik, KAIST, Korea

Jitendra Bera, IIT Kanpur, India

Eszter Borbas, Uppsala University, Sweden

Holger Braunschweig, Universität Würzburg, Germany

Xian-He Bu, Nankai University, China

Raffaella Buonsanti, École Polytechnique

Fédérale de Lausanne, Switzerland

Claire Carmalt, University College London, UK

Eric Clot, University of Montpellier 2, France

Catherine Constable-Housecroft, University of Basel, Switzerland

Amitava Das, Indian Institute of Science and Education Research Kolkata, India

Jillian Dempsey, University of North Carolina, USA

Anjana Devi, Ruhr-University Bochum, Germany

Rasika Dias, University of Texas at Arlington,

USA

Jairton Dupont, University of Nottingham, UK

William Evans, University of California,

Irvine, USA

Harry B. Gray, California Institute of

Technology, USA

Zijian Guo, Nanjing University, China

Michael Hayward, University of Oxford, UK

Todd W. Hudnall, Texas State University, USA

Ilich Ibarra, National Autonomous University of Mexico, Mexico

Cameron Jones, Monash University, Australia

Masako Kato, Hokkaido University, Japan

Takahiko Kojima, University of Tsukuba, Japan

Jian-Ping Lang, Suzhou University, China

Jennifer Love, University of British Columbia,

Canada

Laurent Maron, Université de Toulouse, France

Stuart Macgregor, Heriot Watt University, UK

Ellen Matson, Rochester University, USA

Marinella Mazzanti, Ecole Polytechnique

Fédérale de Lausanne (EPFL), Switzerland

Nils Metzler-Nolte, Ruhr-Universität Bochum,

Germany

Barbara Milani, Università di Trieste, Italy

Georgii Nikonov, Brock University, Canada

Seiji Ogo, Kyushu University, Japan

Chris Orvig, University of British Columbia, Canada

Gerard Parkin, Columbia University, USA

Eric Rivard, University of Alberta, Canada

Douglas Stephan, University of Toronto,

Canada

Matthias Tamm, Technische Universität

Braunschweig, Germany

Jinkui Tang, Changchun Institute of Applied

Chemistry, China

Thomas Teets, University of Houston, USA

Claudio N. Verani, Wayne State University, USA

Wai-yeung Wong, Hong Kong Baptist

University, China

Zhiguo Xia, South China University of

Technology, China

Zuowei Xie, Chinese University of Hong Kong,

China

Lin Xu, East China Normal University, China

Information for Authors

Full details on how to submit material for publication in Dalton Transactions 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/dalton

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 by permission of the Royal Society of Chemistry.

This journal is © The Royal Society of Chemistry 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

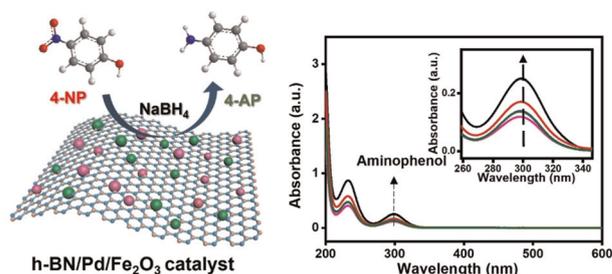


COMMUNICATIONS

3567

Magnetic boron nitride adorned with Pd nanoparticles: an efficient catalyst for the reduction of nitroarenes in aqueous media

Jinghan Wang, Woo Seok Cheon, Ju-Yong Lee, Wenqian Yan, Sunghoon Jung, Ho Won Jang* and Mohammadreza Shokouhimehr*

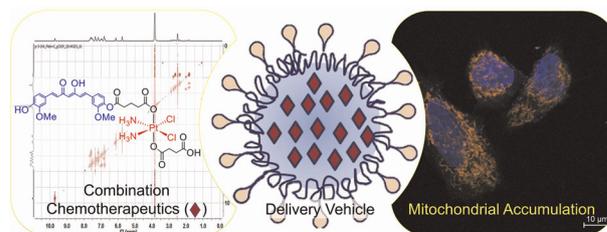


PAPERS

3575

Platin-C containing nanoparticles: a recipe for the delivery of curcumin–cisplatin combination chemotherapeutics to mitochondria

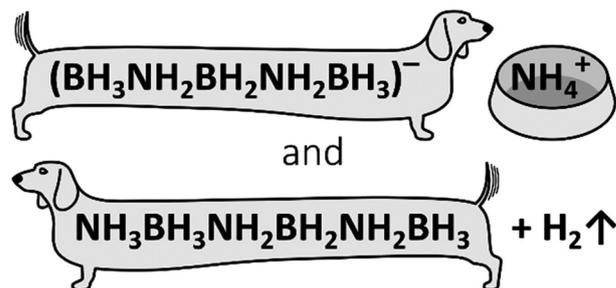
Bhabatosh Banik,* Akash Ashokan, Joshua H. Choi, Bapurao Surnar and Shanta Dhar*



3586

Towards hydrogen-rich ionic (NH₄)(BH₃NH₂BH₂NH₂BH₃) and related molecular NH₃BH₂NH₂BH₂NH₂BH₃

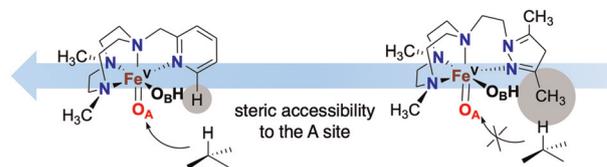
Rafał Owarzany,* Tomasz Jaroń, Krzysztof Kazimierzczuk, Przemysław J. Malinowski, Wojciech Grochala and Karol J. Fijałkowski*



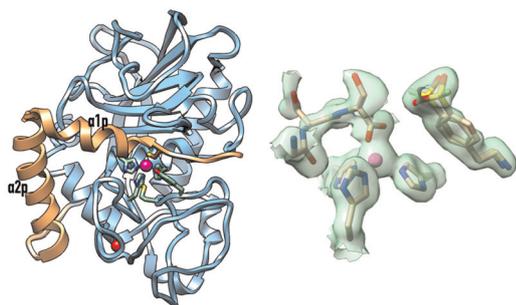
3596

An investigation of steric influence on the reactivity of Fe^V(O)(OH) tautomers in stereospecific C–H hydroxylation

Mainak Mitra, Alexander Brinkmeier, Yong Li, Margarida Borrell, Arnau Call, Julio Lloret Fillol, Michael G. Richmond, Miquel Costas* and Ebbe Nordlander*



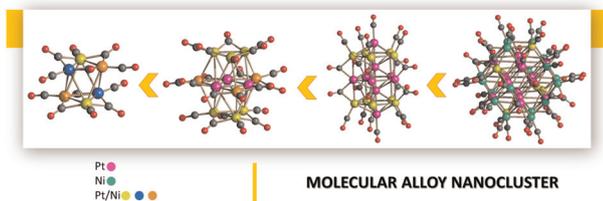
3610



Structural insights into latency of the metallopeptidase ulilysin (lysarginase) and its unexpected inhibition by a sulfonamide-fluoride inhibitor of serine peptidases

Arturo Rodríguez-Banqueri, Marina Moliner-Culubret, Soraia R. Mendes, Tibisay Guevara, Ulrich Eckhard* and F. Xavier Gomis-Rüth*

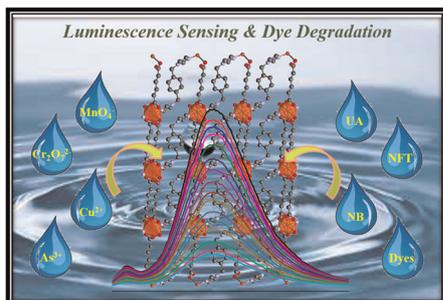
3623



From M_6 to M_{12} , M_{19} and M_{38} molecular alloy Pt–Ni carbonyl nanoclusters: selective growth of atomically precise heterometallic nanoclusters

Cristiana Cesari, Beatrice Berti, Marco Bortoluzzi, Cristina Femoni, Tiziana Funaioli, Federico Maria Vivaldi, Maria Carmela Ialalucci and Stefano Zacchini*

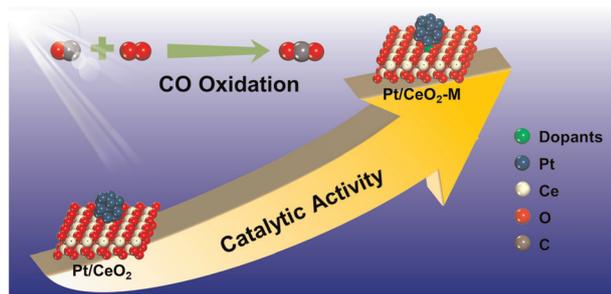
3643



Ratiometric luminescent sensing of a biomarker for sugar consumption in an aqueous medium using a Cu(II) coordination polymer

Somnath, Musheer Ahmad and Kafeel Ahmad Siddiqui*

3661



Fabrication of supported Pt/CeO₂ nanocatalysts doped with different elements for CO oxidation: theoretical and experimental studies

Xingwen Cha, Xueying Wang, Mingzhen Huang, Dongren Cai, Kang Sun, Jianchun Jiang, Shu-feng Zhou* and Guowu Zhan*

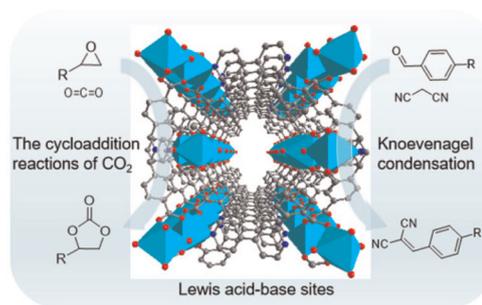


PAPERS

3671

Thermally activated bipyridyl-based Mn-MOFs with Lewis acid–base bifunctional sites for highly efficient catalytic cycloaddition of CO₂ with epoxides and Knoevenagel condensation reactions

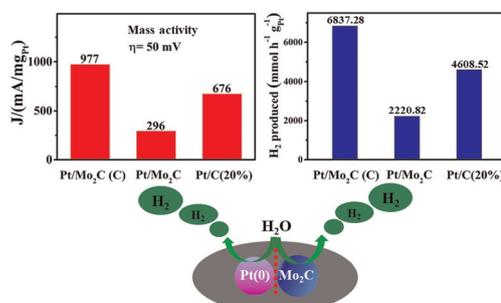
Zhen Xu, Ya-Yu Zhao, Le Chen, Cai-Yong Zhu, Peng Li, Wei Gao,* Ji-Yang Li and Xiu-Mei Zhang*



3682

Mo₂C promoted electrocatalysis of the Pt/Mo₂C (C) heterostructure for a superior hydrogen evolution reaction

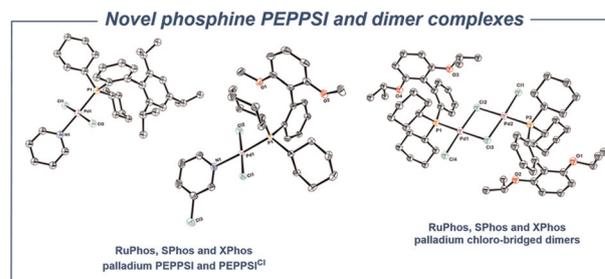
Yixiang Ye, Yuande Shi, Jiannan Cai, Zhisheng Xiao, Zhongshui Li* and Shen Lin*



3690

Synthesis, characterization, and reactivity of [Pd(phosphine)(py)Cl₂] (PEPPSI) and [Pd(phosphine)Cl₂]₂ complexes

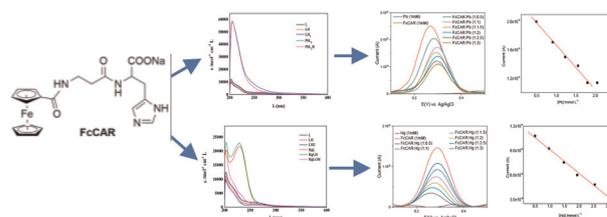
Vladislav A. Voloshkin, Yaxu Liu, Marek Beliš, Min Peng, Kristof Van Hecke, Catherine S. J. Cazin* and Steven P. Nolan*



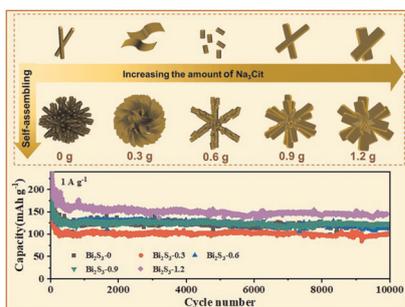
3699

Thermodynamic and voltammetric study on carnosine and ferrocenyl-carnosine

Chiara Abate, Anna Piperno, Alex Fragoso, Ottavia Giuffrè, Antonino Mazzaglia, Angela Scala and Claudia Foti*



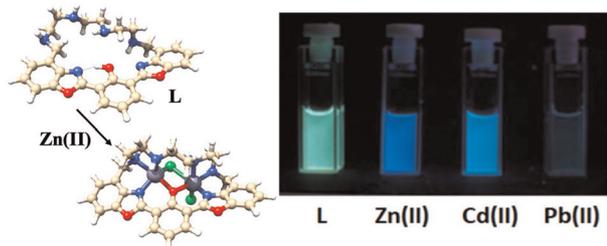
3709



Trisodium citrate as a modulation additive to increase the cycling capability of a Bi_2S_3 cathode in a zinc-ion battery

Lei Gou,* Lin Zhu, Wen-Yan Wang, Kai Liang, Xiao-Yong Fan* and Dong-Lin Li

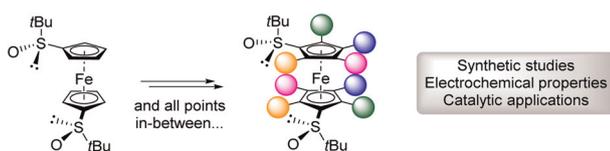
3716



A novel 2,6-bis(benzoxazolyl)phenol macrocyclic chemosensor with enhanced fluorophore properties by photoinduced intramolecular proton transfer

Daniele Paderni, Giampaolo Barone,* Luca Giorgi,* Mauro Formica, Eleonora Macedi and Vieri Fusi

3725



From ferrocene to decasubstituted enantiopure ferrocene-1,1'-disulfoxide derivatives

Min Wen, William Erb,* Florence Mongin, Jean-Pierre Hurvois, Yury S. Halauko,* Oleg A. Ivashkevich, Vadim E. Matulis, Marielle Blot and Thierry Roisnel

3738



Investigating the mechanism of Ni-mediated trifluoromethylthiolation of aryl halides using AgSCF_3

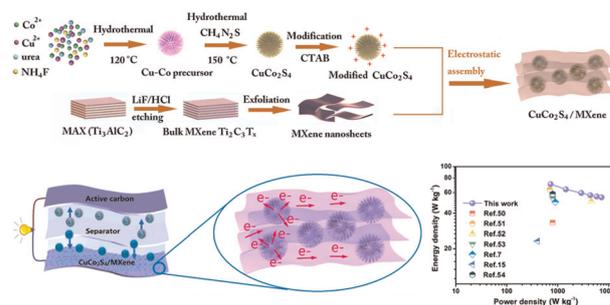
Weiling Chiu, Ben E. Nadeau, Brian O. Patrick and Jennifer A. Love



3746

Construction of $\text{Ti}_3\text{C}_2\text{T}_x$ MXene wrapped urchin-like CuCo_2S_4 microspheres for high-performance asymmetric supercapacitors

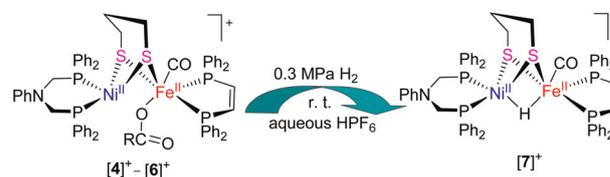
Xiaobo Chen,* Huiran Ge, Wen Yang and Peizhi Yang*



3755

Functionalized nickel(II)–iron(II) dithiolates as biomimetic models of [NiFe]-H₂ases

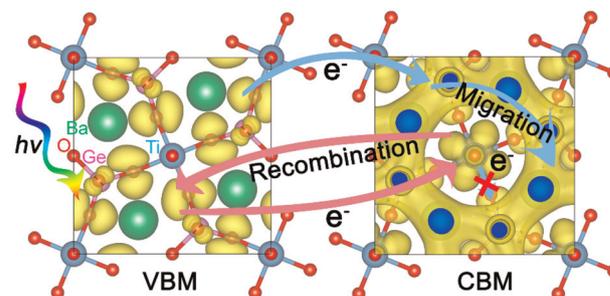
Li-Cheng Song,* Yin-Peng Wang, Yi-Xiong Dong and Xi-Yue Yang



3769

Deciphering the photocatalytic hydrogen generation process of Fresnoite $\text{Ba}_2\text{TiGe}_2\text{O}_8$ by electronic structure and bond analyses

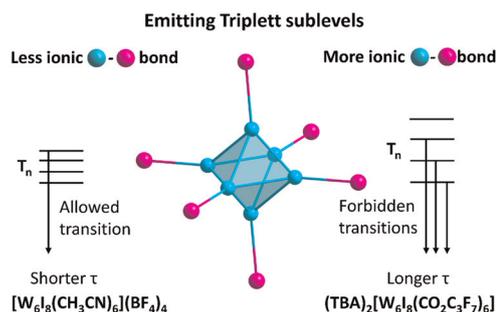
Guangxiang Lu and Tao Yang*



3777

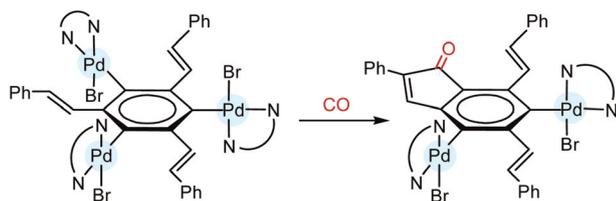
Preparation, photoluminescence and excited state properties of the homoleptic cluster cation $[(\text{W}_6\text{I}_8)(\text{CH}_3\text{CN})_6]^{4+}$

Florian Pachel, Philipp Frech, Markus Ströbele, David Ensling, Carl P. Romao, Thomas Jüstel, Marcus Scheele and Hans-Jürgen Meyer*



PAPERS

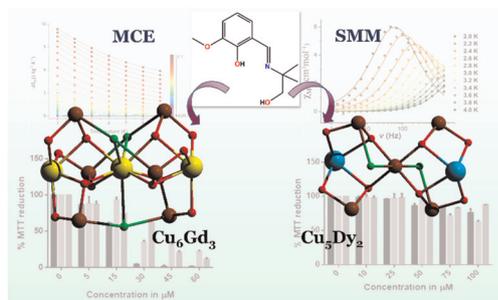
3786



Synthesis of mono-, di- and tripalladated 1,3,5-benzenetriaryl complexes. CO insertion to give a dipalladated indenone

Rashmi V. Shenoy, Peter G. Jones, José Vicente and Eloisa Martínez-Viviente*

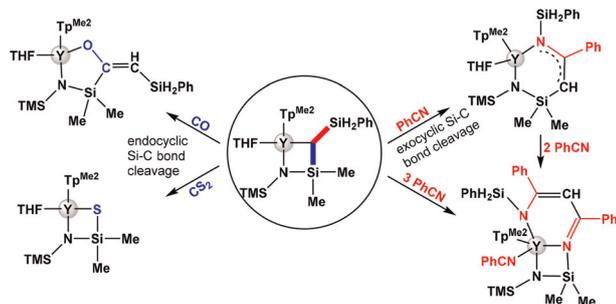
3795



Synthesis and characterization of two self-assembled $[\text{Cu}_6\text{Gd}_3]$ and $[\text{Cu}_5\text{Dy}_2]$ complexes exhibiting the magnetocaloric effect, slow relaxation of magnetization, and anticancer activity

Avik Bhanja, Sangeeta Roy Chaudhuri, Angelos B. Canaj, Shachi Pranjal Vyas, Fabrizio Ortu, Lucy Smythe, Mark Murrie, Ritobrata Goswami and Debashis Ray*

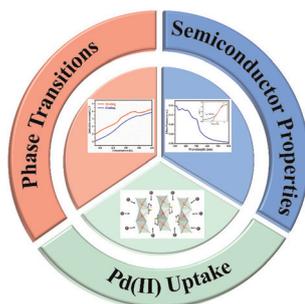
3807



Selective Si–C(sp^3) bond cleavage of a silyl-bridged amido alkyl ligand in an yttrium complex

Jiamin Cai, Jie Zhang* and Xigeng Zhou*

3815



Effect of Pd(II) uptake on high-temperature phase transitions in a hybrid organic–inorganic perovskite semiconductor

Yan Xu, Ke Xu, Lei He, Jie Mu, Ti-Jian Yin, Jin-Tao Men and Qiong Ye*

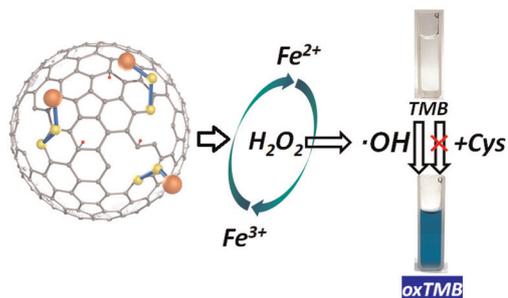


PAPERS

3821

Peroxidase-like activity of hollow sphere-like FeS₂/SC boosted by synergistic action of defects and S–C bonding

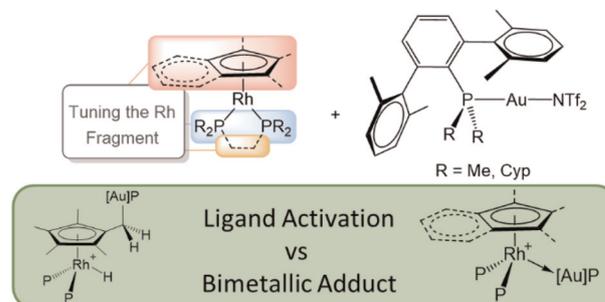
Hao Tan and Zhaodong Nan*



3835

Polarized Au(i)/Rh(i) bimetallic pairs cooperatively trigger ligand non-innocence and bond activation

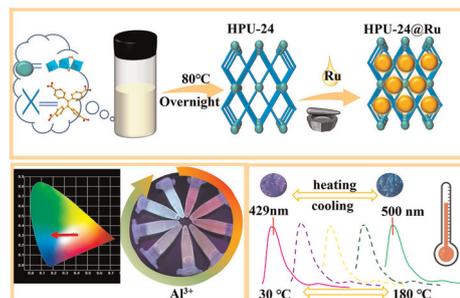
Macarena G. Alférez, Juan J. Moreno, Celia Maya and Jesús Campos*



3846

A dual-function [Ru(bpy)₃]²⁺ encapsulated metal organic framework for ratiometric Al³⁺ detection and anticounterfeiting application

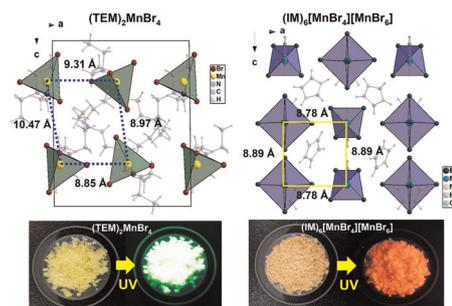
Huijun Li,* Yanan Wang, Fengjiao Jiang, Manman Li and Zhouqing Xu*



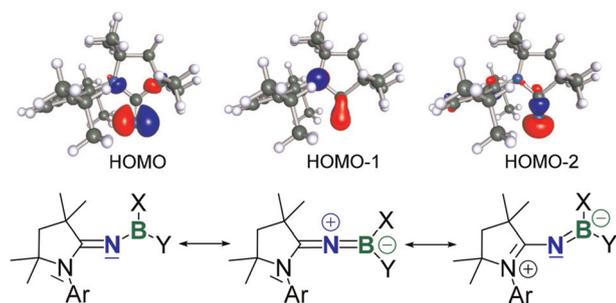
3855

Long-lived spin-triplet excitons in manganese complexes for room-temperature phosphorescence

Mi-Hee Jung



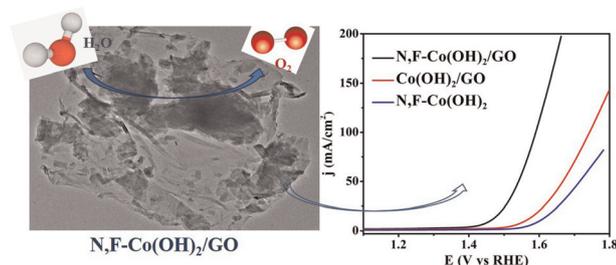
3869



Cyclic alkyl(amino)iminates (CAAs) as strong $2\sigma,4\pi$ -electron donor ligands for the stabilisation of boranes and diboranes(4): a synthetic and computational study

Silvia Huynh, Merle Arrowsmith, Lukas Meier, Maximilian Dietz, Marcel Härterich, Maximilian Michel, Annalena Gärtner and Holger Braunschweig*

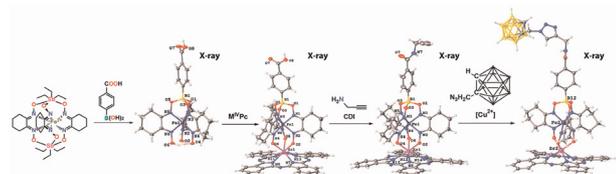
3877



Enhancing the oxygen evolution reaction of cobalt hydroxide by fabricating nanocomposites with fluorine-doped graphene oxide

Pandi Muthukumar, Periyappan Nantheeswaran, Mariappan Mariappan, Mehboobali Pannipara, Abdullah G. Al-Sehemi and Savarimuthu Philip Anthony*

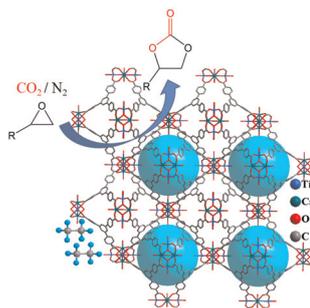
3884



Multistep synthesis and X-ray structures of carboxyl-terminated hybrid iron(II) phthalocyaninatoclathrochelates and their postsynthetic transformation into polytopic carboranyl-containing derivatives

Alexander S. Chuprin, Alexander A. Pavlov, Anna V. Vologzhanina, Pavel V. Dorovatovskii, Anton V. Makarenkov, Valentina A. Ol'shevskaya, Semyon V. Dudkin and Yan Z. Voloshin*

3896



A robust and porous titanium metal–organic framework for gas adsorption, CO₂ capture and conversion

Xuze Pan, Xuezhen Si, Xiaoying Zhang, Qingxia Yao,* Yunwu Li, Wenzeng Duan, Yi Qiu,* Jie Su and Xianqiang Huang*

