

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(17) 7243-7644 (2024)



Cover
See Warren E. Piers *et al.*,
pp. 7273–7281.

Image reproduced by
permission of Warren E. Piers
from *Dalton Trans.*, 2024, **53**,
7273.



Inside cover
See Jim A. Thomas *et al.*,
pp. 7282–7291.

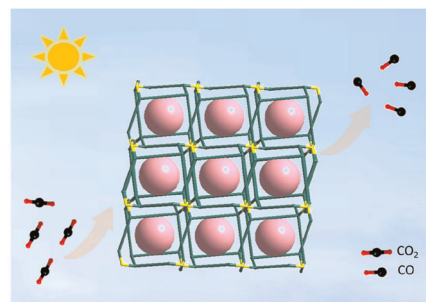
Image reproduced by
permission of Torsten John
from *Dalton Trans.*, 2024, **53**,
7282.

COMMUNICATIONS

7257

A reduced polyoxometalate-encapsulated organo cobalt modified phosphate framework for improving photocatalytic reduction of CO₂

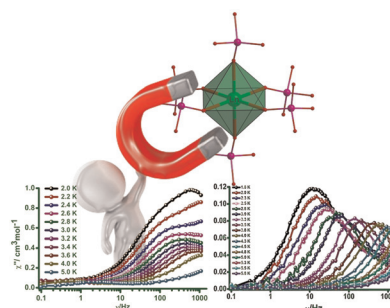
Yinhua Zhu, Pinfang Yan, Lingtong Xu, Zeyu Du,
Hua Mei* and Yan Xu*



7263

Magnetic anisotropy in octahedral Dy(III) and Yb(III) complexes

Aditya Borah, Sourav Dey, Kehkasha Siddiqui,
Sandeep K. Gupta, Gopalan Rajaraman* and
Ramaswamy Murugavel*



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

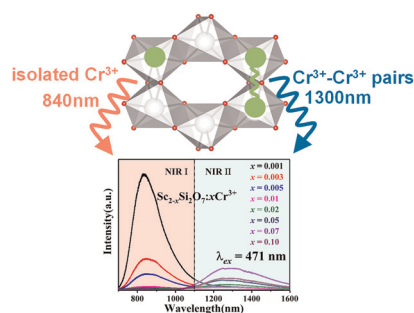


COMMUNICATIONS

7268

Origin of the Cr³⁺ concentration-dependent broad-band near-infrared emission in Sc₂Si₂O₇

Siyuan Xie, Boxin Ma, Dawei Wen, Qingguang Zeng, Yue Guo* and Ting Yu*

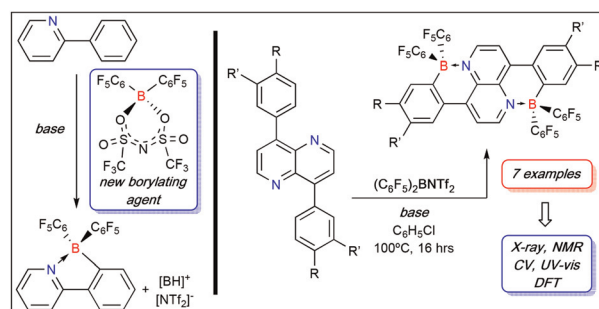


PAPERS

7273

Direct C–H electrophilic borylation with (C₆F₅)₂B–NTf₂ to generate B–N dibenzo[*a,h*]pyrenes

Tony Nguyen, Jason L. Dutton, Chia Yun Chang, Wen Zhou and Warren E. Piers*



7282

Iridium(III)-based minor groove binding complexes as DNA photocleavage agents

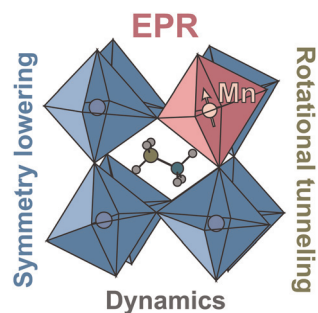
Stephen O. Aderinto, Torsten John, Abdulmujeeb Onawole, Raphael Peter Galleh and Jim A. Thomas*



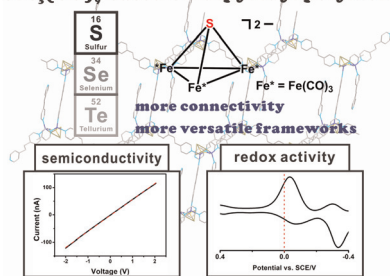
7292

Probing structural and dynamic properties of MAPbCl₃ hybrid perovskite using Mn²⁺ EPR

Gediminas Usevičius, Justinas Turčak, Yuxuan Zhang, Andrea Eggeling, Žyginta Einorytė, Michael Allan Hope, Šarūnas Svirskas, Daniel Klose, Vidmantas Kalendra, Kestutis Aidas, Gunnar Jeschke, Jūras Banys and Mantas Šimėnas*

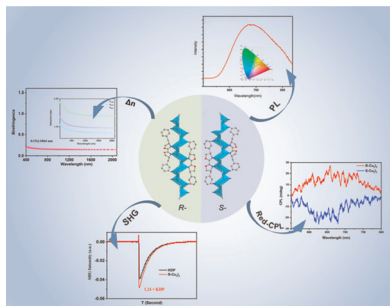


7303

SFe₃(CO)₉-based Cu-dipyridyl polymers**Inorganic–organic hybrid Cu–dipyridyl semiconducting polymers based on the redox-active cluster [SFe₃(CO)₉]²⁻: filling the gap in iron carbonyl chalcogenide polymers**

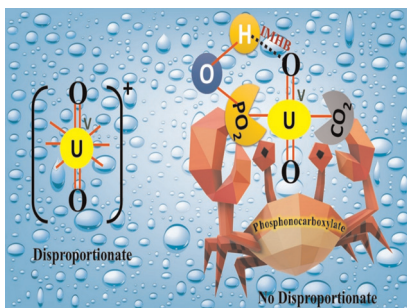
Ming-Chi Hsu, Ru Yan Lin, Tzu-Yen Sun, Yu-Xin Huang, Min-Sian Li, Yu-Huei Li, Hui-Lung Chen* and Minghuey Shieh*

7315

**1D Cu(I)-based chiral organic–inorganic hybrid material with second harmonic generation and circular polarized luminescence**

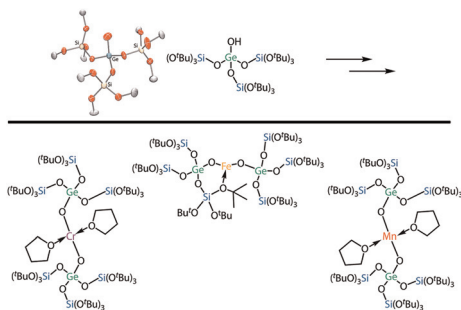
Zhi-Yuan Wu, Mu-Xin Yu, Zi-Qing Zhang, Jia-Xin Jiang, Ting Liu, Fei-Long Jiang, Lian Chen* and Mao-Chun Hong

7321

**Unusual redox stability of pentavalent uranium with hetero-bifunctional phosphonocarboxylate: insight into aqueous speciation**

Ashutosh Srivastava,* Sk. Musharaf Ali,* Rama Mohan Rao Dumpala, Sumit Kumar, Pranaw Kumar, Neetika Rawat and P. K. Mohapatra

7340

**M–Ge–Si thermolytic molecular precursors and models for germanium-doped transition metal sites on silica**

James P. Dombrowski, Vidmantas Kalendra, Micah S. Ziegler, K. V. Lakshmi, Alexis T. Bell and T. Don Tilley*

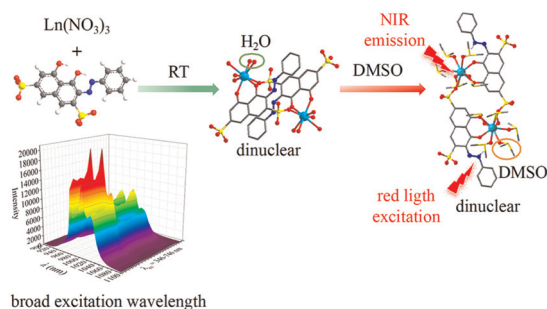


PAPERS

7350

Lanthanide complexes with an azo-dye chromophore ligand: syntheses, crystal structures, and near-infrared luminescence by long-wavelength excitation

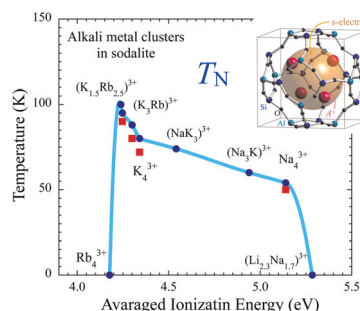
Yun-Long Chen, Min Feng,* Xiaofei Zhu* and Zhiping Zheng*



7358

Antiferromagnetism and insulator-metal transition of alkali metal-loaded sodalite

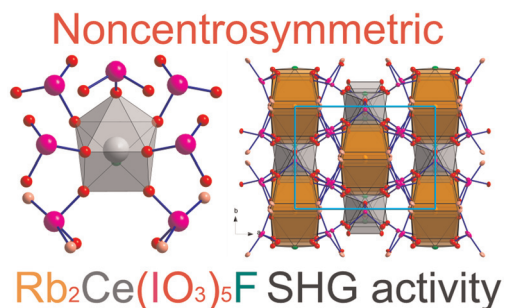
Takehito Nakano,* Kunihiro Watanabe, Atsufumi Hanazawa, Yuko Ishida, Kenji Tanibe and Ryosuke Sakon



7367

New iodate fluoride Rb₂Ce(IO₃)₅F with nonlinear optical properties

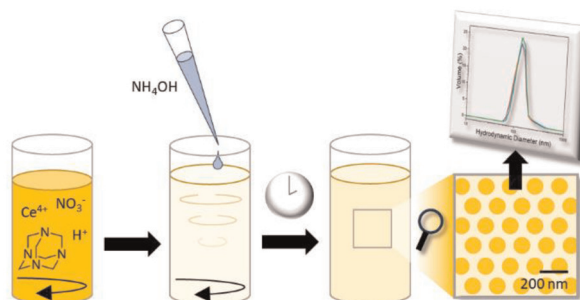
Oksana P. Grigorieva, Tatiana B. Shatalova, Alexey N. Kuznetsov, Peter S. Berdonosov,* Sergey Yu. Stefanovich, Konstantin A. Lyssenko and Valery A. Dolgikh



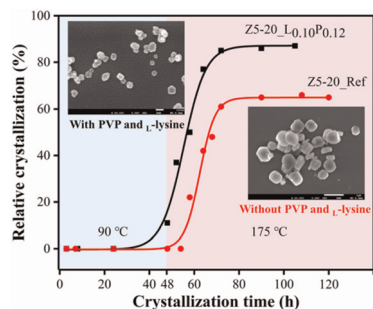
7376

Preparation of monodisperse cerium oxide particle suspensions from a tetravalent precursor

Ashley M. Hastings, Susana Herrera, Sharee Harris, Tashi Parsons-Davis, Andrew J. Pascall and Jennifer A. Shusterman*



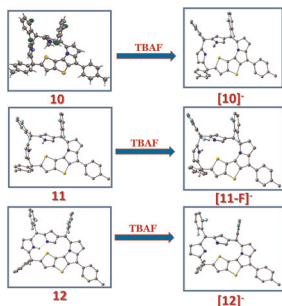
7384



Nonionic polymer and amino acid-assisted synthesis of ZSM-5 nanocrystals and their catalytic application in the alkylation of 2-methylnaphthalene

Junling Zhan, Ying Wang, Tengfei He, Luyang Sheng, Banghao Wu, Qun Liu, Mingjun Jia* and Yu Zhang*

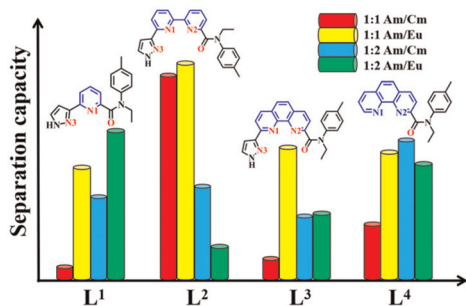
7397



Rational and controllable syntheses of variants of modified N-confused N-fused porphodimethenes and a porphotrimethene with adaptive properties

Manik Jana, Sumit Sahoo, Sanjay Kottekad, Dandamudi Usharani* and Harapriya Rath*

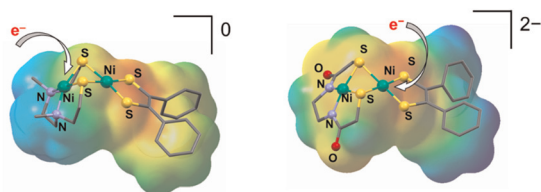
7406



Theoretical insights into selective extraction of Am(III) from Cm(III) and Eu(III) with asymmetric N-heterocyclic ligands

Yan-Mei Chen, Cong-Zhi Wang,* Lei Zhang, Qun-Yan Wu, Jian-Hui Lan, Zhi-Fang Chai and Wei-Qun Shi*

7414



Site Specific Redox Properties in Differentiated Bimetallic Nickel Complexes

Site specific redox properties in ligand differentiated di-nickel complexes inspired by the acetyl CoA synthase active site

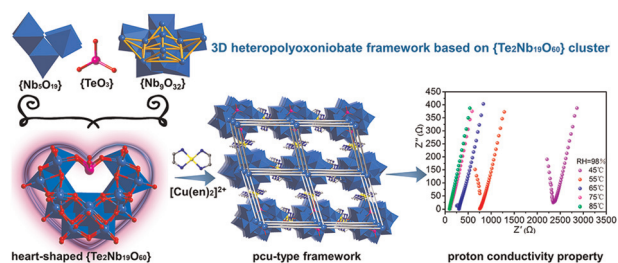
Manuel Quiroz, Manish Jana, Kaiyang Liu, Nattamai Bhuvanesh, Michael B. Hall and Marcetta Y. Darensbourg*



7424

A 3D heteropolyoxoniobate framework based on heart-shaped $\{Te_2Nb_{19}O_{60}\}$ clusters with proton conductivity property

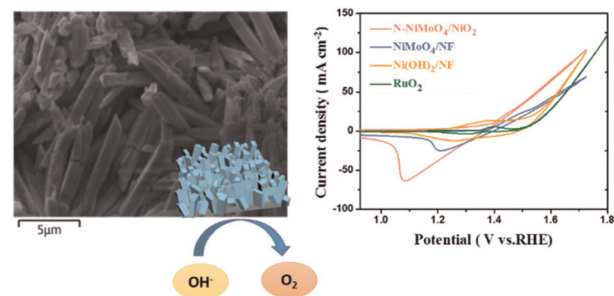
Ping-Xin Wu, Yue Han, Yu-Jin Lin, Yan-Qiong Sun* and Shou-Tian Zheng*



7430

A stable N-doped $NiMoO_4/NiO_2$ electrocatalyst for efficient oxygen evolution reaction

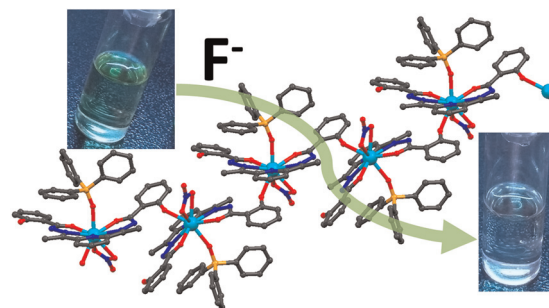
Zhengfang Hou, Fangyuan Fan, Zhe Wang and Yeshuang Du*



7436

Selective fluoride sensing by a novel series of lanthanide-based one-dimensional coordination polymers through intramolecular proton transfer

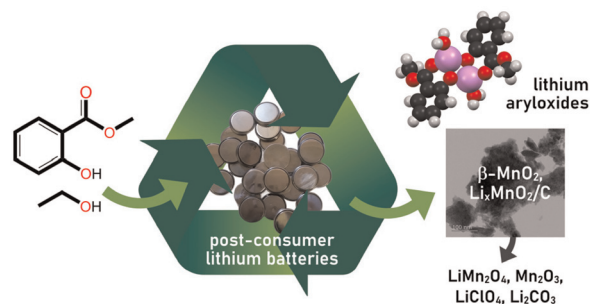
Vaibhav Singh, Lakshmi Thachanadan Suresh, Jean-Pascal Sutter* and Arun Kumar Bar*



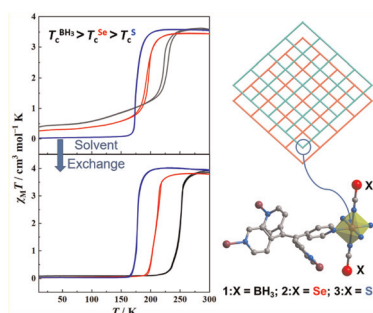
7450

Recycling primary lithium batteries using a coordination chemistry approach: recovery of lithium and manganese residues in the form of industrially important materials

Rafał Petrus,* Adrian Kowaliński and Tadeusz Lis



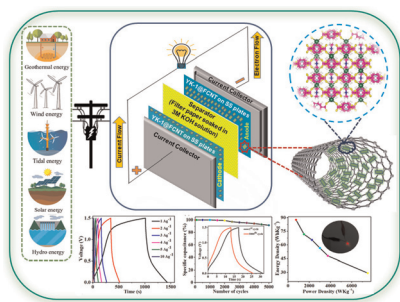
7470



Two-dimensional spin-crossover coordination polymers based on the 1,1,2,2-tetra(pyridin-4-yl) ethene ligand

Meng-Ling Wu, Yan-Cong Chen, Ze-Yu Ruan, Zhao-Ping Ni, Si-Guo Wu* and Ming-Liang Tong*

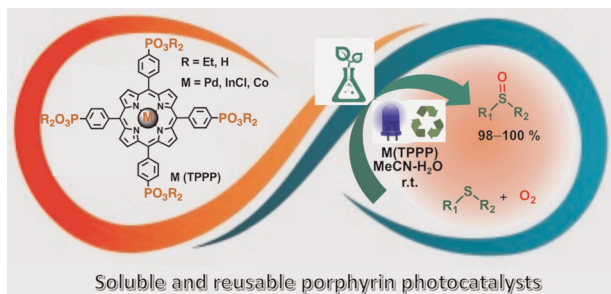
7477



Facile synthesis of a three-dimensional Ln-MOF@FCNT composite for the fabrication of a symmetric supercapacitor device with ultra-high energy density: overcoming the energy storage barrier

Mohammad Yasir Khan, Ahmad Husain, Dhiraj K. Mahajan, Mohammad Muaz, M. Shahid,* Mohd Zeeshan, Farasha Sama and Sharique Ahmad

7498

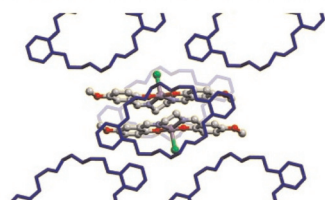


Phosphonate-substituted porphyrins as efficient, cost-effective and reusable photocatalysts

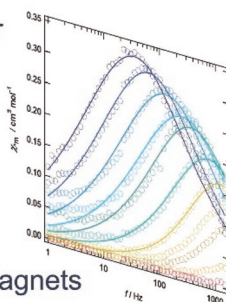
Azhar Kechiche, Shaymaa Al Shehimi, Lhoussain Khrouz, Cyrille Monnerau,* Christophe Bucher, Stephane Parola, Alla Bessmertnykh-Lemeune,* Yoann Rousselin, Andrey V. Cheprakov and Habib Nasri

7517

Supramolecular Strategy for



Single Molecule Magnets



Unlocking single molecule magnetism: a supramolecular strategy for isolating neutral Mn^{III} salen-type dimer in crystalline environments

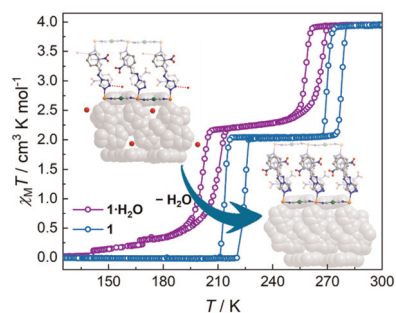
Yuri Kyoya, Kiyonori Takahashi,* Wataru Kosaka, Rui-Kang Huang, Chen Xue, Jia-bing Wu, Hitoshi Miyasaka and Takayoshi Nakamura*



7522

Guest water-induced structural transformation and spin-crossover variation of a two-dimensional Hofmann-type compound

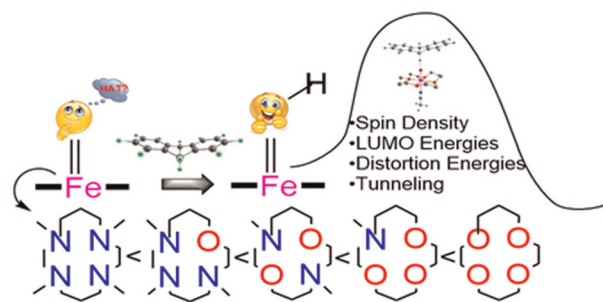
Zhi-Kun Liu, Ke Sun, Jin-Peng Xue, Zi-Shuo Yao* and Jun Tao*



7527

A density functional theory analysis of the C–H activation reactivity of iron(IV)-oxo complexes with an 'O' substituted tetramethylcyclam macrocycle

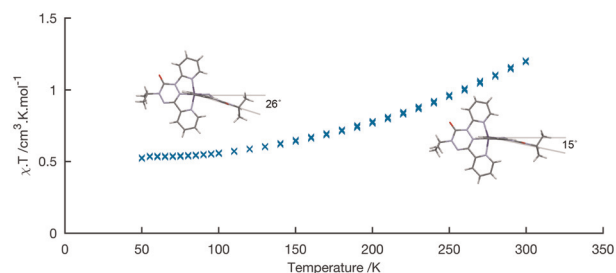
Lovleen Kaur and Debasish Mandal*



7536

Spectroscopic and thermodynamic characterization of a cobalt-verdazyl valence tautomeric system. influence of crystal structure, solvent and counterion

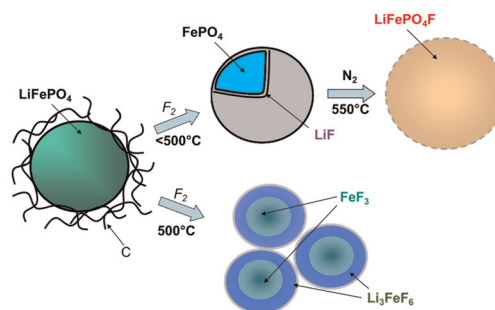
David J. R. Brook,* Jeffrey DaRos, Aamani Ponnekanti, Stefano Agrestini and Eric Pellegrin



7546

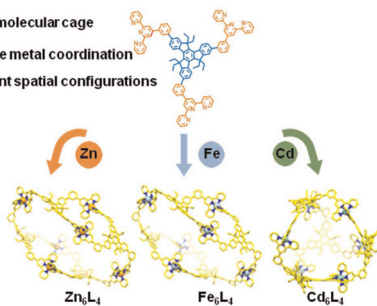
Insertion of fluorine into a LiFePO₄ electrode material by gas–solid fluorination

Lemoine Kevin,* Kenmogne-Debah Roméo, Doubtsof Léa, Frezet Lawrence, Petit Elodie, Guerin Katia, Devouard Bertrand, Sougrati Moulay-Tahar, Delbègue Diane and Bonnet Pierre*



7555

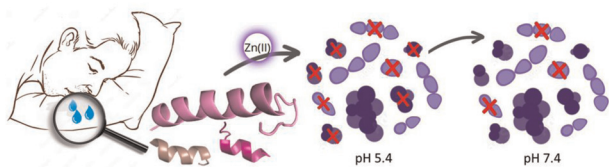
- Supramolecular cage
- Multiple metal coordination
- Different spatial configurations



Metal-ion-determined geometrical configurations of metallo-cages with different emission properties

Zirui Zhai, Qixia Bai, Yu-Ming Guan, He Zhao, Tun Wu, Jingxian Pang, Haoxuan Xu, Ting-Zheng Xie, Zhe Zhang* and Pingshan Wang*

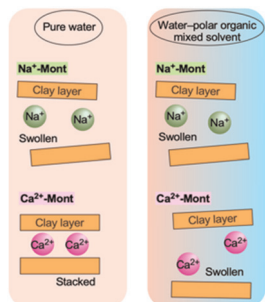
7561



Impact of metal coordination and pH on the antimicrobial activity of histatin 5 and the products of its hydrolysis

Emilia Dzień, Joanna Wąty,* Arian Kola, Aleksandra Mikołajczyk, Adriana Miller, Agnieszka Matera-Witkiewicz, Daniela Valensin and Magdalena Rowińska-Żyrek*

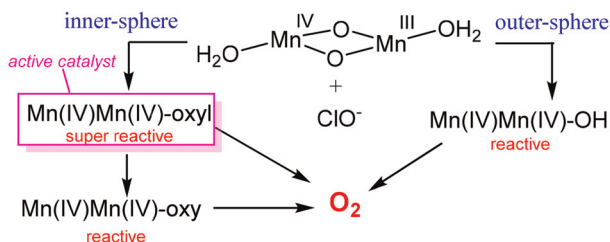
7571



Swelling and delamination of inorganic homoionic montmorillonite clay in water-polar organic mixed solvents

Teruyuki Nakato,* Munehiro Kubota, Yuki Otsuka, Yuta Yane, Kosei Orio, Emiko Mouri, Yusuke Yamauchi and Hirokatsu Miyata

7580



Elucidating the catalytic mechanisms of O_2 generation by $[Mn_2(\mu-O)_2(terpy)_2(OH_2)_2]^{3+}$ using DFT calculations: a focus on ClO^- as oxidant

Alireza Ariafard,* Matthew Longhurst, Gerhard F. Swiegers and Robert Stranger*

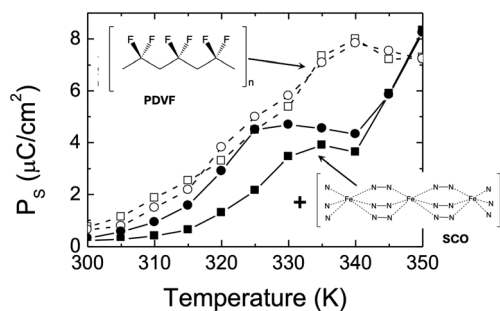


PAPERS

7590

Memory effect in ferroelectric polyvinylidene fluoride (PVDF) films *via* spin crossover probes

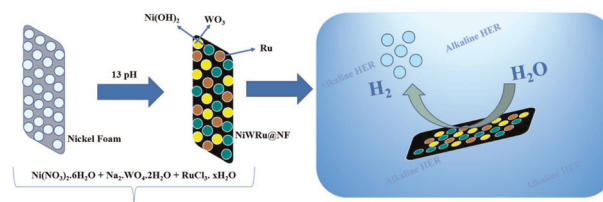
Yong Sung Koo and Jose Ramon Galan-Mascaros*



7596

An advanced Ru-based alkaline HER electrocatalyst benefiting from Volmer-step promoting 5d and 3d co-catalysts

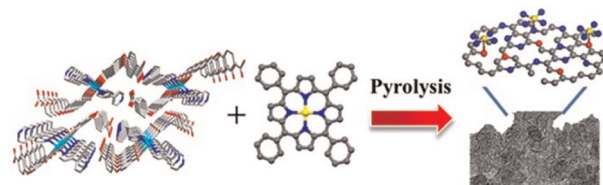
M. Ramaprakash, Nasrin Banu G, Bernardshaw Neppolian* and Anantharaj Sengeni*



7605

Coordination polymer derived Fe–N–C electrocatalysts with high performance for the oxygen reduction reaction in Zn–air batteries

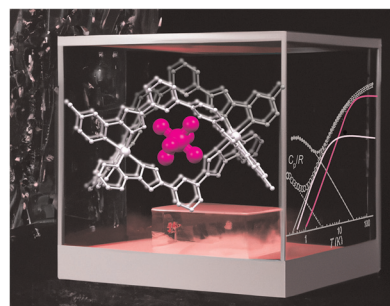
Peng-Peng Guo, Chao Xu, Kun-Zu Yang, Chen Lu, Ping-Jie Wei, Qi-Zhi Ren* and Jin-Gang Liu*



7611

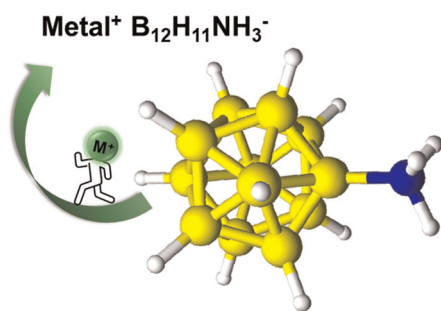
Modulated spin dynamics of [Co₂] coordination helicates *via* differential strand composition

Leóni A. Barrios*, Nuria Capó, Hanae Boulehour, Daniel Reta, Inés Tejedor, Olivier Roubeau* and Guillem Aromí*



PAPERS

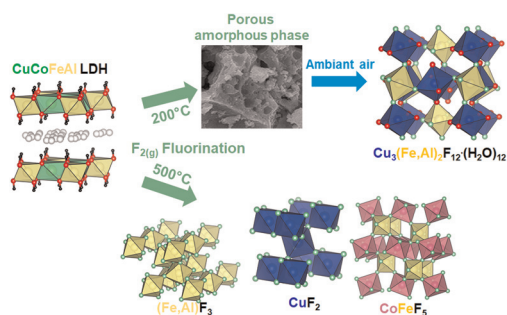
7619



Ionic conduction in ammonia functionalised *closo*-dodecaborates MB₁₂H₁₁NH₃ (M = Li and Na)

Steffen R. H. Jensen, Mathias Jørgensen, Thi Phuong Thao Nguyen, Greg Nolan, Craig E. Buckley, Torben R. Jensen* and Mark Paskevicius*

7628



Intimately mixed copper, cobalt, and iron fluorides resulting from the insertion of fluorine into a LDH template

Abderrouf Rouag, Régis Porhiel, Kevin Lemoine, Fabrice Leroux, Jean-Marc Grenèche, Diane Delbègue, Cristina Iojoiu and Katia Guérin*

CORRECTION

7641

Correction: On the mercuration, palladation, transmetalation and direct auration of a C^N^C pincer ligand

Alice Jane McEllin, Christopher A. Goult, Adrian C. Whitwood, Jason M. Lynam and Duncan W. Bruce*

