

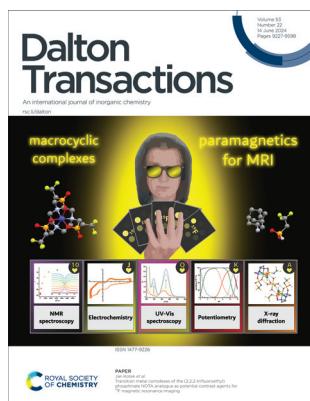
# Dalton Transactions

An international journal of inorganic chemistry incorporating Acta Chemica Scandinavica  
[rsc.li/dalton](https://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

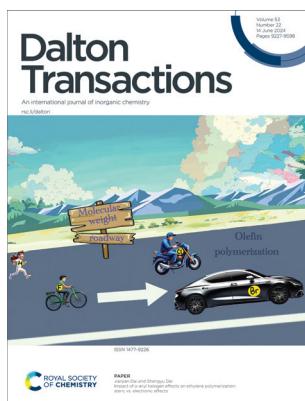
ISSN 1477-9226 CODEN DTARAF 53(22) 9227–9598 (2024)



### Cover

See Jan Kotek et al.,  
pp. 9267–9285.

Image reproduced by  
permission of Filip Koucký  
and Jan Kotek from *Dalton Trans.*, 2024, **53**, 9267.



### Inside cover

See Jianjian Dai and  
Shengyu Dai, pp. 9286–9293.

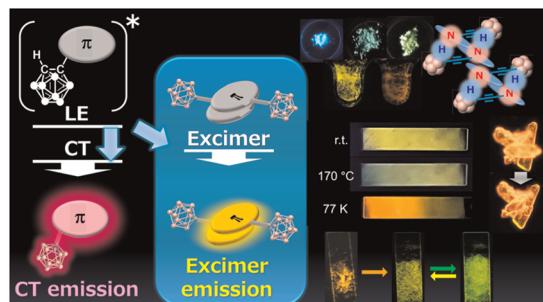
Image reproduced by  
permission of Shengyu Dai  
from *Dalton Trans.*, 2024, **53**,  
9286.

## FRONTIER

9240

### Solid-state excimer emission of o-carborane derivatives and applications for stimuli-responsive luminescent materials

Kazuo Tanaka

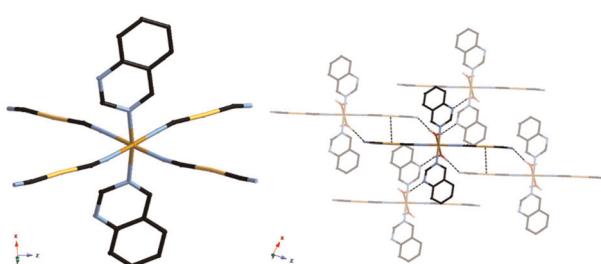


## COMMUNICATIONS

9248

### Soma–Iwamoto-type SCO complex $\text{Fe}(\text{quinazoline})_2[\text{Au}(\text{CN})_2]_2$ using the quinazoline-type ligand

Kosuke Kitase,\* Daisuke Akahoshi and  
Takafumi Kitazawa





# Royal Society of Chemistry approved training courses

Explore your options.

Develop your skills.

Discover learning  
that suits you.

Courses in the classroom,  
the lab, or online

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

- subject area
- location
- event type
- skill level

Members get at least 10% off

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

SAVE  
10%

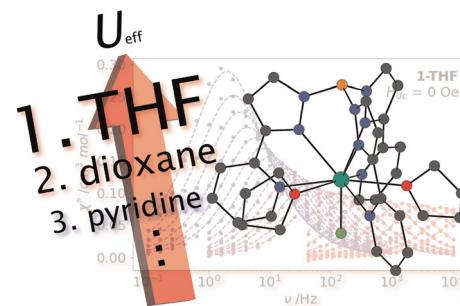


## COMMUNICATIONS

9252

**Approaching the 1000 K energy barrier in high coordinate lanthanide single-ion magnets: Increasing  $U_{\text{eff}}$  in the  $[\text{Dy}(\text{Tp}^{2-\text{PY}})\text{F}]^+$  moiety with tetrahydrofuran**

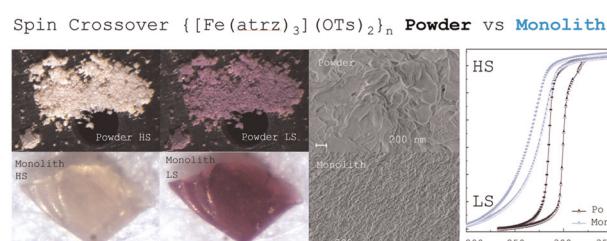
Jarrod R. Thomas, Marcus J. Giansiracusa\* and Scott A. Sulway\*



9257

**Spin crossover  $\{[\text{Fe}(\text{atrz})_3](\text{OTs})_2\}_n$  monolith: a green synthesis approach for Robust switchable materials**

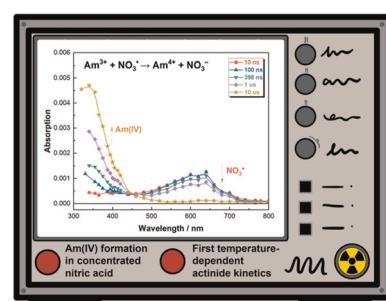
Ana Martínez-Martínez, Pablo Albacete, Mar García-Hernández, Esther Resines-Urien,\* David Fairen-Jiménez\* and José Sánchez Costa\*



9262

**Generation and study of Am(IV) by temperature-controlled electron pulse radiolysis**

Amy E. Kynman,\* Travis S. Grimes, Stephen P. Mezyk, Bobby Layne, Andrew R. Cook, Brian M. Rotermund and Gregory P. Horne\*

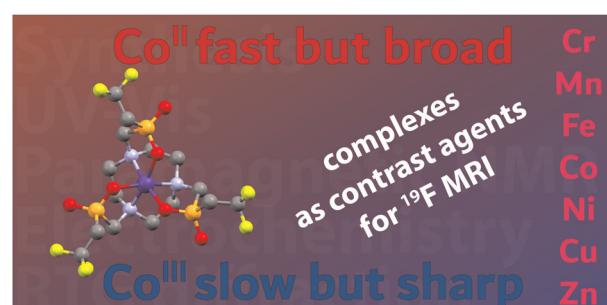


## PAPERS

9267

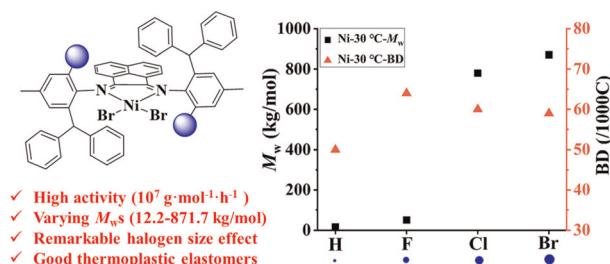
**Transition metal complexes of the (2,2,2-trifluoroethyl)phosphinate NOTA analogue as potential contrast agents for  $^{19}\text{F}$  magnetic resonance imaging**

Filip Koucký, Tereza Dobrovolná, Jan Kotek,\* Ivana Císařová, Jana Havlíčková, Alan Liška, Vojtěch Kubíček and Petr Hermann



## PAPERS

9286

**Impact of o-aryl halogen effects on ethylene polymerization: steric vs. electronic effects**

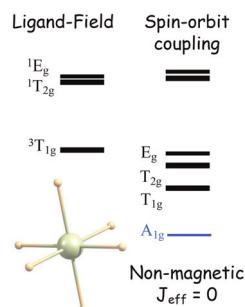
Jianjian Dai and Shengyu Dai\*

9294

**Borylation and rearrangement reactions of azasilaanthracenes to afford B,N-doped nanographenes**

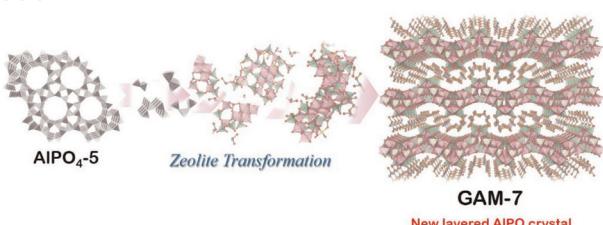
Elena Zender, Danillo Valverde, Robert Neubaur, Sebastian Karger, Alexander Virovets, Michael Bolte, Hans-Wolfram Lerner, Yoann Olivier\* and Matthias Wagner\*

9301

**Revisiting the role of octahedral symmetry in the interpretation of spectroscopic properties of  $[OsF_6]^{2-}$  and  $PtF_6$  complexes**

Eduardo Solis-Céspedes, Luis Alvarez-Thon, Ramiro Arratia-Perez and Dayán Páez-Hernández\*

9306

**GAM-7: an organic–inorganic hybrid layered aluminophosphate crystal formed by zeolite transformation**

Kenichi Komura,\* Gensuke Nakai, Soki Shimizu, Matsuri Nomura, Shiori Niwa, Sanae Kagari, Kazuma Oka, Edo Imai, Hisakazu Aoki and Takuji Ikeda\*

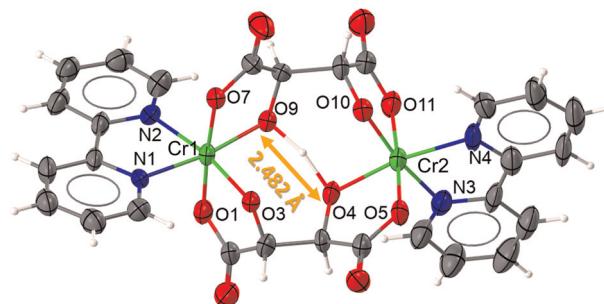


## PAPERS

9315

**A homochiral tartrate-bridged dinuclear chromium(III) complex anion with a resonance-assisted hydrogen bond for proton conduction**

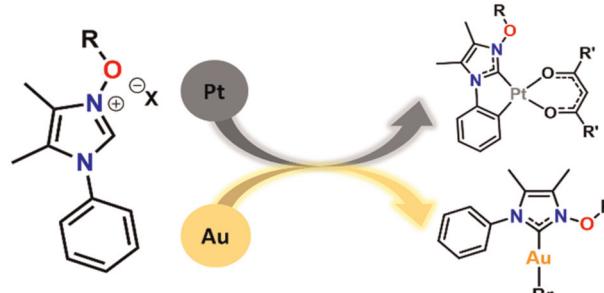
Marko Dunatov, Zhibo Zhao, Dijana Žilić and Lidija Androš Dubraja\*



9323

**Synthesis and characterization of Pt(II) and Au(I) complexes with *N*-oxy-heterocyclic carbene ligands (NOHCs)**

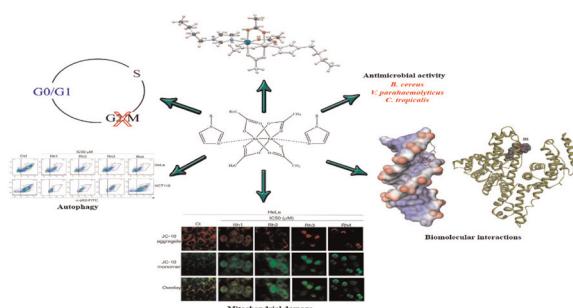
Alice Benin, Joshua Immanuel Kollar, Tim Riesebeck, Felix Wurl, Claudia Graiff, Thomas Strassner\* and Cristina Tubaro\*



9330

**Search for new biologically active compounds: *in vitro* studies of antitumor and antimicrobial activity of dirhodium(II,II) paddlewheel complexes**

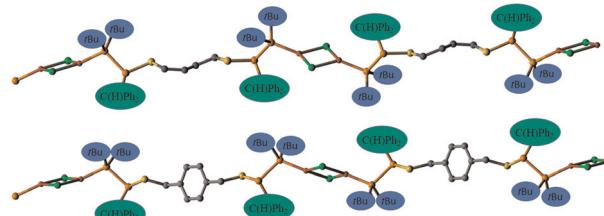
Marina Mitrović, Maja B. Djukić, Milena Vukić, Ivana Nikolić, Marko D. Radovanović, Jovan Luković, Ignjat P. Filipović, Sanja Matić, Tijana Marković, Olivera R. Klisurić, Suzana Popović, Zoran D. Matović and Marija S. Ristić\*



9350

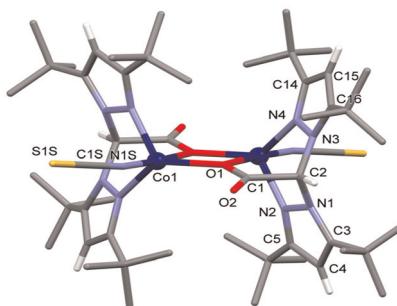
**From phosphanylphosphaalkenes to coordination copper and silver polymers containing P-P bonds**

Aleksandra Ziółkowska, Marta Prześniak-Welenc, Tomasz Kruczyński, Michael Gamer and Łukasz Ponikiewski\*

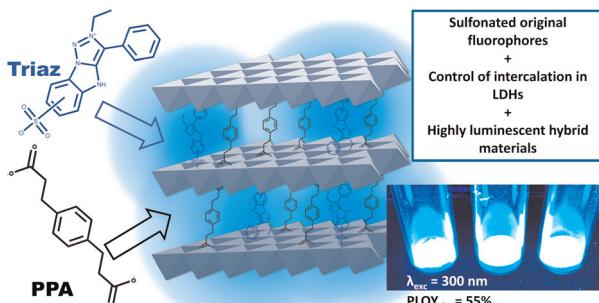


## PAPERS

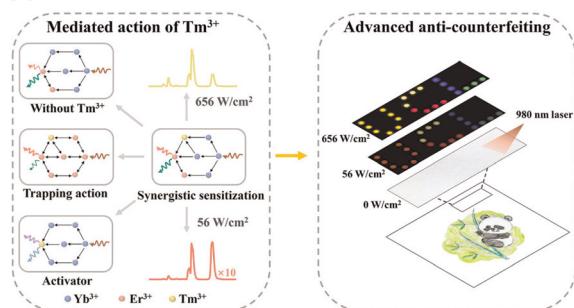
9358



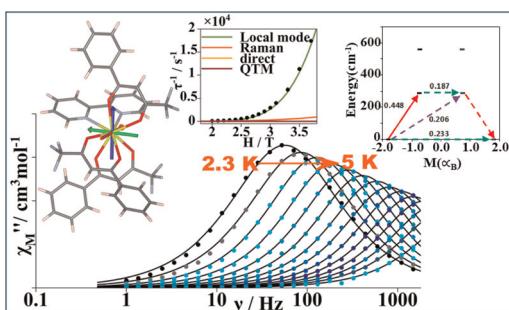
9369



9380



9387



# Magnetic study and DFT analysis of a doubly carboxylato-bridged Co(II) derivative anchored with a ‘scorpionate’ precursor as a potential electrocatalyst for heterogeneous H<sub>2</sub> evolution

Kuheli Das, Belete B. Beyene,\* Chiara Massera,  
Eugenio Garribba, M. S. El Fallah, Antonio Frontera,  
Chen-Hsiung Hung\* and Amitabha Datta\*

# A triazolium-based fluorophore intercalated in layered double hydroxides: from simple syntheses to bright solid-state luminescence

Guillaume Zerbib, Amélie Roux, Laurène Salat,  
Federico Cisnetti,\* Damien Boyer,\*  
Geneviève Chadeyron and Fabrice Leroux

## Tm<sup>3+</sup> mediated multicolor luminescence of NaYbF<sub>4</sub>: Er,Tm@NaYF<sub>4</sub> for advanced anti-counterfeiting

Jiaxin Li, Pengli Wang, Yujiao Zhang, Dan Xiao and Cuisong Zhou\*

## New series of mononuclear $\beta$ -diketonate cerium(III) field induced single-molecule magnets

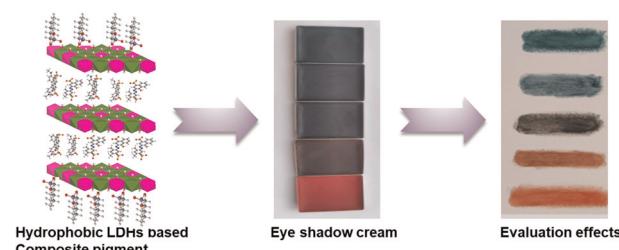
Ànnia Tubau, Silvia Gómez-Coca,\* Saskia Speed,  
Mercè Font-Bardia and Ramon Vicente\*

## PAPERS

9406

**Preparation of hydrophobic layered double hydroxide-based composite pigments via octyltriethoxysilane surface modification for cosmetic applications**

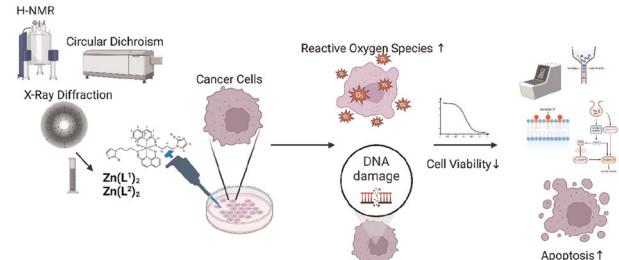
Ruiying Wang, Shuang Zhang, Xi Zhang\* and Qi Liu



9416

**Enhanced selectivity towards melanoma cells with zinc(II)-Schiff bases containing imidazole derivatives**

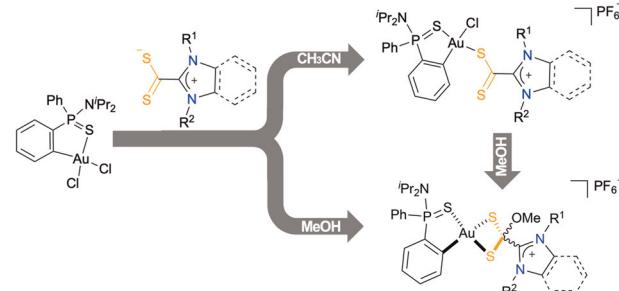
Leonor Corte-Real, Baris Sergi, Busra Yildirim, Raquel Colucas, Radosław Starosta, Xavier Fontrodona, Isabel Romero, Vânia André, Ceyda Acilan\* and Isabel Correia\*



9433

**Coordination of azol(in)ium dithiocarboxylate ligands to Au(III): unexpected formation of a novel family of cyclometallated Au(III) complexes, DFT calculations and catalytic studies**

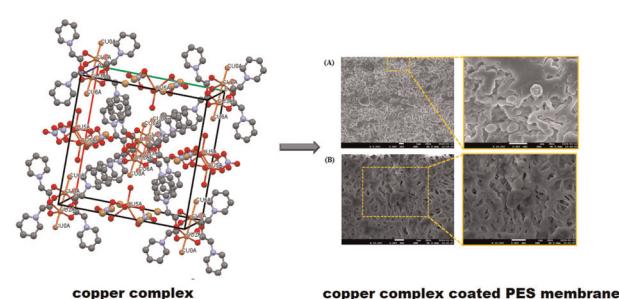
Paula Pérez-Ramos, María A. Mateo, David Elorriaga\*, Daniel García-Vivó, Raquel G. Soengas\* and Humberto Rodríguez-Solla\*



9441

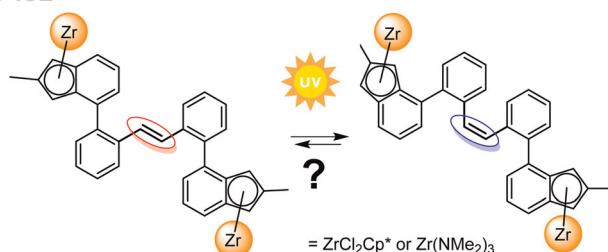
**Synthesis and characterization of a novel copper carboxylate complex and a copper complex-coated polyether sulfone membrane for efficient degradation of methylene blue dye under UV irradiation: the single crystal X-ray structure of the copper carboxylate complex**

Rupy Dhir, Bulle Shah and Narinder Singh\*



## PAPERS

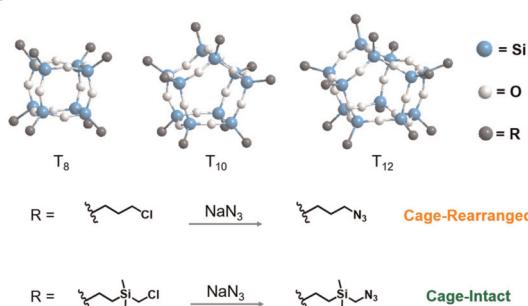
9452



**Dinuclear group IV metal complexes based on a bis(indenyl)-(E/Z)-stilbene platform: a potential prototype of "photoswitchable" catalysts for olefin polymerization**

Nuria Romero, Thierry Chavagnan, Thierry Roisnel, Alexandre Welle, Evgeni Kirillov\* and Jean-François Carpentier\*

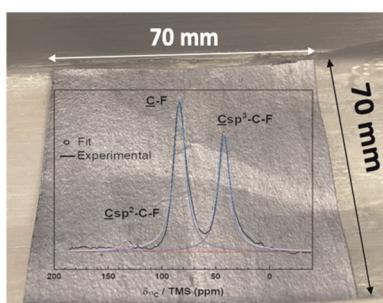
9467



**Cage-rearranged and cage-intact syntheses of azido-functionalized larger T<sub>10</sub> and T<sub>12</sub> POSSs**

Hui Wang, Ming-Xi Nie, Xiong Lin, Xiang-Qian Li, Hao Liu, Qing-Yun Guo,\* Di Han\* and Qiang Fu

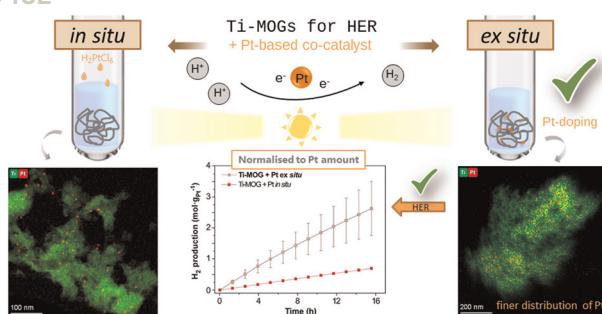
9473



**Flexible fluorinated graphite foils with high contents of the (C<sub>2</sub>F)<sub>n</sub> phase for slow neutron reflectors**

Killian Henry, Marie Colin, Gabin Chambery, Brigitte Vigolo, Sébastien Cahen,\* Claire Hérolé, Valery Nesvizhevsky, Sylvie Le Floch, Vittoria Pischedda, Sam Chen and Marc Dubois

9482



**Unravelling co-catalyst integration methods in Ti-based metal-organic gels for photocatalytic H<sub>2</sub> production**

Maite Perfecto-Irigaray, Garikoitz Beobide,\* Oscar Castillo, Michael G. Allan, Moritz F. Kühnel,\* Antonio Luque, Harishchandra Singh, Ashok Kumar Yadav and Sonia Pérez-Yáñez

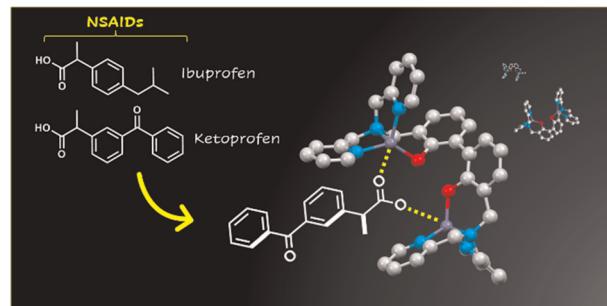


## PAPERS

9495

**A new biphenol-dipicolylamine based ligand and its dinuclear  $Zn^{2+}$  complex as fluorescent sensors for ibuprofen and ketoprofen in aqueous solution**

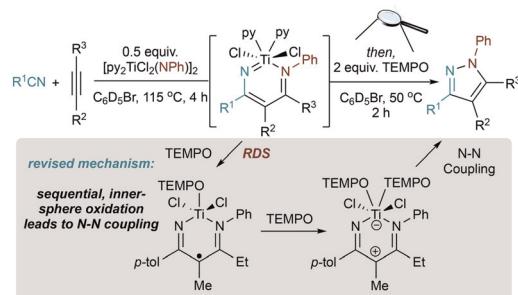
Daniele Paderni, Eleonora Macedi, Gina Elena Giacomazzo, Mauro Formica, Luca Giorgi, Barbara Valtancoli, Patrizia Rossi, Paola Paoli, Luca Conti,\* Vieri Fusi\* and Claudia Giorgi



9510

**Mechanistic study of pyrazole synthesis via oxidation-induced N–N coupling of diazatitanacycles**

Yukun Cheng, Daniel N. Huh and Ian A. Tonks\*

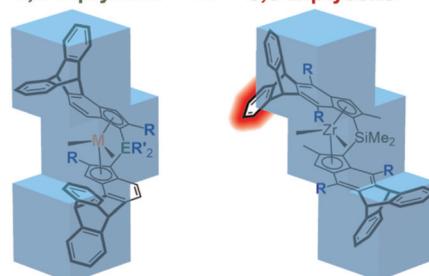


9516

**Triptycene as a scaffold in metallocene catalyzed olefin polymerization**

Pavel S. Kulyabin, Mikhail I. Sharikov, Vyatcheslav V. Izmer, Dmitry S. Kononovich, Georgy P. Goryunov, Nikita V. Alexeev, Dmitry V. Uborsky, Antonio Vittoria, Giuseppe Antinucci, Christian Ehm, Peter H. M. Budzelaar,\* Roberta Cipullo, Vincenzo Busico\* and Alexander Z. Voskoboinikov\*

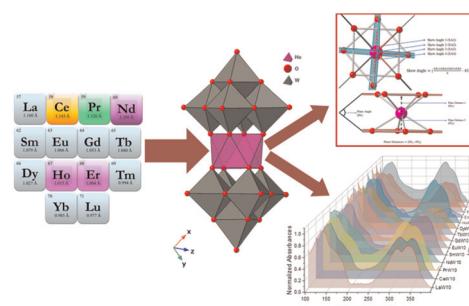
4,5-triptycene vs 5,6-triptycene



9526

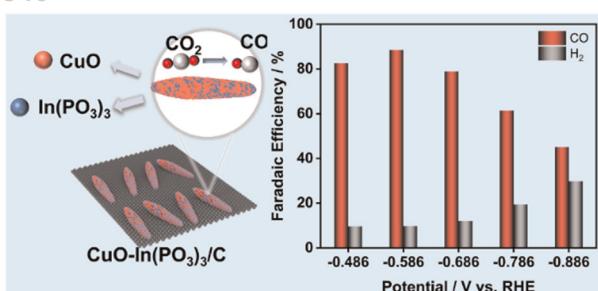
**Structural and vibrational properties of lanthanide Lindqvist polyoxometalate complexes**

Primadi J. Subintoro and Korey P. Carter\*



## PAPERS

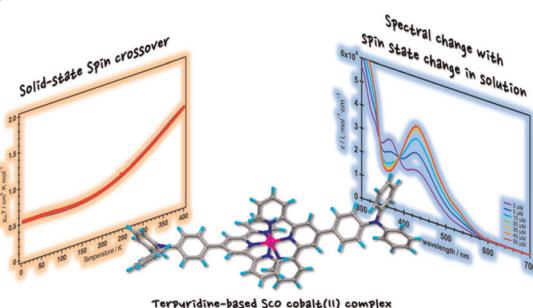
9540



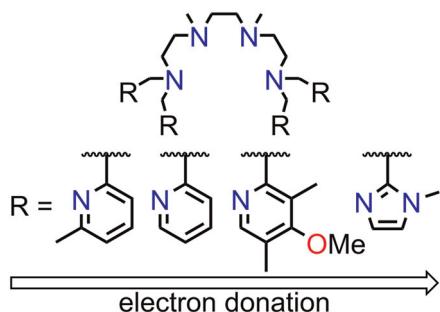
### Promotional effects of In(PO<sub>3</sub>)<sub>3</sub> on the high catalytic activity of CuO–In(PO<sub>3</sub>)<sub>3</sub>/C for the CO<sub>2</sub> reduction reaction

Chengtao Ruan, Zhihui Zhao, Hui Wu, Jiaqian Liu, Yuande Shi,\* Lingxing Zeng\* and Zhongshui Li\*

9547



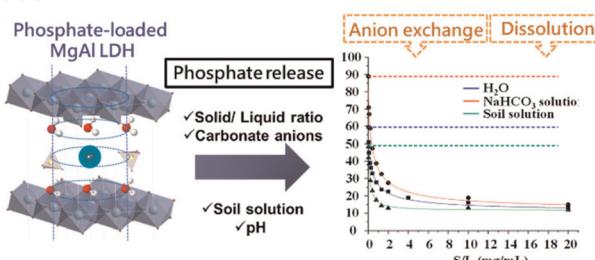
9554



### Spin-crossover cobalt(II) complexes exhibiting temperature- and concentration-dependent optical changes in solution

Naoki Izumiya, Shun Fujii, Kiichi Kato, Ryuya Tokunaga, Shinya Hayami and Manabu Nakaya\*

9568



### In-depth characterization of phosphate intercalated Mg Al Layered double hydroxides and study of the PO<sub>4</sub> release properties

Alexandra Jourdain, Christine Taviot-Gueho, Ulla Gro Nielsen, Vanessa Prévot\* and Claude Forano\*

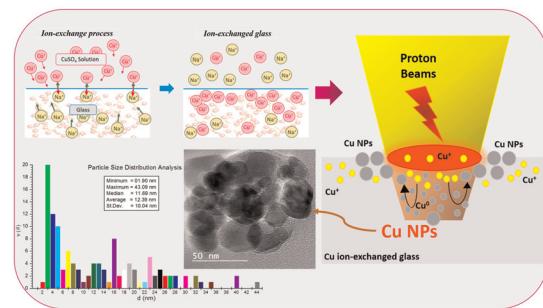


## PAPERS

9578

## Copper nanoparticle and point defect formation in Cu<sup>+</sup>–Na<sup>+</sup> ion-exchanged glass using protons of 2 MeV energy

Safa Toumi,\* Alaa Adawy,\* Alberto Quaranta and Khaled Farah



9590

## On the mechanism of sp<sup>2</sup> C–H borylation using *ortho*-N-substituted pyridinium cations

Nikita Slesarchuk, Enlu Ma, Juan Miranda-Pizarro, Sami Heikkinen, Dieter Schollmeyer, Martin Nieger, Petra Vasko and Timo Repo\*

