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Cover See David K. Smith, page 34. Visualisation of the way in which dendritic building blocks can be programmed to self assemble into a chiral fibrillar nanostructure. Image produced by Dr H. F. M. Nelissen. Image reproduced by permission of David K. Smith, from *Chem. Commun.*, 2006, 34.



Inside cover

See Ko Yoneda, Keiichi Adachi, Shinya Hayami, Yonezo Maeda, Motomi Katada, Akira Fuyuhiro, Satoshi Kawata and Sumio Kaizaki, page 45. A dinuclear iron(II) complex-based one-dimensional coordination polymer shows a steep one-step [HS–HS] to [LS–LS] spin transition. Image reproduced by permission of Satoshi Kawata *et al.*, from *Chem. Commun.*, 2006, 45.

EDITORIAL

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Happy New Year from ChemComm

Roeland Nolte, Sarah Thomas and Kathryn Sear reflect on the past 40th anniversary year and look to the future and the exciting developments in RSC Publishing.



40TH ANNIVERSARY ARTICLE

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Advances in glycoprotein synthesis

Lei Liu, Clay S. Bennett and Chi-Huey Wong*

The development of chemical and enzymatic methods for the synthesis of homogeneous glycoproteins is a fascinating challenge at the interface between chemistry and biology.



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FEATURE ARTICLE

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Dendritic supermolecules – towards controllable nanomaterials

David K. Smith*

Self-assembly using dendritic building blocks offers an intriguing approach to nanochemistry and the application of dendritic molecules to a range of real world problems.

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A steep one-step [HS–HS] to [LS–LS] spin transition in a 4,4'-bipyridine linked one-dimensional coordination polymer constructed from a pyrazolato bridged Fe(II) dimer

Ko Yoneda, Keiichi Adachi, Shinya Hayami, Yonezo Maeda, Motomi Katada, Akira Fuyuhiro, Satoshi Kawata* and Sumio Kaizaki*

A dinuclear iron(II) complex-based one-dimensional coordination polymer shows a steep one-step [HS–HS] to [LS–LS] spin transition.

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A water-soluble hexa-*peri*-hexabenzocoronene: synthesis, self-assembly and role as template for porous silica with aligned nanochannels

Jishan Wu, Jixue Li, Ute Kolb and Klaus Müllen*

Columnar liquid crystals based on a water-soluble hexa-*peri*hexabenzocoronene (HBC) were used as templates for the formation of porous silica with well-aligned nanochannels by sol-gel process.



y pursue y pure





Screening for crystalline salts via mechanochemistry

Andrew V. Trask, Delia A. Haynes, W. D. Samuel Motherwell and William Jones*

Neat grinding and solvent-drop grinding are used to reveal several new salt forms of two model drugs; the mechanochemical approach is put forth as a new and efficient means of screening for crystalline salts of pharmaceuticals.



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Non-covalent expansion of an organic bilayer involving *exo*-cavity interplay of tetraphenylphosphonium with *para*-sulfonato-calix[4]arene

Mohamed Makha, Alexandre N. Sobolev and Colin L. Raston*

An equimolar reaction of *para*-sulfonato-calix[4]arene, tetraphenylphosphonium chloride and ytterbium chloride in water results in the formation of a mineral clay-like structure, where the hydrophobic tetraphenylphosphonium cations interpose a bilayer arrangement of the calixarene.

Mechanism of *a*-oxoamine synthases: identification of the intermediate Claisen product in the 8-amino-7oxononanoate synthase reaction

Olivier Kerbarh, Dominic J. Campopiano and Robert L. Baxter*

By carrying out the reaction with L-alanine methyl ester and pimeloyl CoA the enzyme bound condensation product was trapped, providing the first definitive evidence for a β -ketoacid

intermediate in an α -oxamine synthase mechanism.

Observation of the formation of supported bilayers by amphiphilic peptidyl-RNA

Adina N. Lazar, Anthony W. Coleman,* Silvia Terenzi and Peter Strazewski

Amphiphilic peptidyl-RNA conjugates, molecules that mimic natural peptidyl-transfer RNA, are capable of self-assembling on glass substrates as vesicles and supported bilayers.





COMMUNICATIONS

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Asymmetric organocatalytic conjugate addition of malonates to enones using a proline tetrazole catalyst

Kristian Rahbek Knudsen, Claire E. T. Mitchell and Steven V. Ley*

5-Pyrrolidin-2-yltetrazole performs as a useful organocatalyst for the asymmetric addition of malonates to a range of enones, with good to excellent enantioselectivities.

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Formation of insoluble perylenetetracarboxylic diimide films by electro- or photo-crosslinking of pyrrole units

Heung Cho Ko, Suk-ho Kim, Woonghyun Choi, Bongjin Moon and Hoosung Lee*

Perylenetetracarboxylic diimide derivatives bearing 2- or 4-peripheral pyrrole pendants could be efficiently crosslinked to form an insoluble film either by electropolymerization or visible light induced oxidative photopolymerization of the pyrrole units.



Ionic liquids-media for unique phosphorus chemistry

Eric Amigues, Christopher Hardacre,* Gillian Keane, Marie Migaud* and Maeve O'Neill

Ionic liquids have been shown to offer hitherto unseen control as both a storage solvent for PCl₃ and POCl₃ and reaction media for fluorination and mixed anhydride formation under benign conditions.







75

Fabrication of monodisperse colloidal array with confinement effects

Yuan Jiang, Xun Li, Hongjiang Liu, Zheng Xu,* Xiaoping Shen, Xiang Ma and Ziling Xue

A monodisperse 1D colloidal array is prepared from monomer directly combining precipitation polymerization and confinement effects.



COMMUNICATIONS





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2+

2 CI

Vacuum-ultraviolet ionization spectroscopy of the jet-cooled RNA-base uracil

Kyo-Won Choi, Joo-Hee Lee and Sang Kyu Kim*

Adiabatic ionization potential and cationic vibrational structure of the jet-cooled RNA-base uracil are both accurately and precisely determined for the first time using a vacuum-ultraviolet mass-analyzed threshold ionization spectroscopy.

From Pd nanoparticles to single crystals: 1,3-butadiene hydrogenation on well-defined model catalysts

Joaquin Silvestre-Albero, Günther Rupprechter* and Hans-Joachim Freund

Although 1,3-butadiene hydrogenation is known to be a structure-sensitive reaction, correlation of the catalytic activity with the exact Pd particle surface structure shows that the reaction is in fact particle size independent.

Stabilisation of a paramagnetic BH₄⁻-bridged dinickel(II) complex by a macrodinucleating hexaaza-dithiophenolate ligand

Yves Journaux,* Vasile Lozan, Julia Klingele and Berthold Kersting*

The first paramagnetic borohydrido-bridged dinuclear nickel(II) complex, $[(L)Ni^{II}_{2}(\mu_{1,3}\text{-}BH_{4})]^{+}$, stabilised by a sterically demanding hexaaza-dithiophenolate macrocycle, has been obtained by the reaction of $[(L)Ni^{II}_{2}(\mu-ClO_{4})]^{+}$ with $N^{n}Bu_{4}BH_{4}$

Solid-supported chemiluminescence and electrogenerated chemiluminescence based on a tris(2,2'-bipyridyl)ruthenium(II) derivative

G. M. Greenway, A. Greenwood, P. Watts and C. Wiles*

We report a simple and efficient technique for the covalent immobilisation of a tris(2,2'-bipyridyl)ruthenium(II) derivative suitable for use in both chemiluminescent and electrochemiluminescent systems.

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The first insoluble polymer-bound palladium complexes of 2-pyridyldiphenylphosphine: highly efficient catalysts for the alkoxycarbonylation of terminal alkynes

Simon Doherty,* Julian G. Knight* and Michael Betham

Palladium complexes of 2-pyridyldiphenylphosphine anchored on polystyrene, polymethylmethacrylate and styrenemethylmethacrylate copolymer form highly active heterogeneous catalysts for the alkoxycarbonylation of terminal alkynes with activities approaching those obtained under homogeneous conditions.



Ruthenium biimidazole complexes as anion receptors

Laura Ion, Dolores Morales,* Julio Pérez,* Lucía Riera, Víctor Riera, Richard A. Kowenicki and Mary McPartlin

The behavior of a metal biimidazole complex, namely $[RuCl(cym)(H_2biim)][BAr'_4]$ (1), as anion receptor has been studied for the first time.





cat. Pd(OAc)₂/TFF

K₂CO₃, DMSO

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From allene to allene: a palladium-catalyzed approach to β-allenyl butenolides and their application to the synthesis of polysubstituted benzene derivatives

Shengming Ma,* Zhenhua Gu and Youqian Deng

An allene to allene protocol for the synthesis of β -allenyl butenolides from 2,3-allenoic acids and propargylic carbonates catalyzed by Pd(OAc)2-TFP has been developed. The products were applied successfully to the Diels-Alder reaction.

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Methyl transfer reaction from monomethyltin reagent under palladium(0) catalysis: a versatile method for labelling with carbon-11

Mickaël Huiban, Aline Huet, Louisa Barré, Franck Sobrio,* Eric Fouquet* and Cécile Perrio*

The ¹¹C-monomethyl stannate prepared from $[^{11}C]$ -methyl iodide and Lappert's stannylene, was subject to a palladiummediated cross-coupling reaction with an aryl halide under ligand-free conditions, to afford easily purified ¹¹C-methyl(hetero)arenes in high radiochemical yields.





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COMMUNICATIONS



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200 180 160 Co Fe 140 Hg Ni² 120 Φ/Φ_0 100 80 * Zn Al 60 0 40 20 000 ☆ 0&0&0 &0 0.00 0.05 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.45 0.50 0.55 0.60 [Mⁿ⁺], 10⁻³ M

Cofacial porphyrin multilayers *via* layer-by-layer assembly

Dong-Chan Lee, Gustavo M. Morales, Youngu Lee and Luping Yu^{\ast}

This paper reports a new layer-by-layer assembly approach to fabricate multilayers of cofacially aligned porphyrins on solid supports by a selective siloxane formation utilizing tetraphenylporphyrinatosilicon(IV) chloride as the building block.

Linkage of N3 dye to N3 dye on nanocrystalline TiO_2 through *trans*-1,2-bis(4-pyridyl)ethylene for enhancement of photocurrent of dye-sensitized solar cells

Song-Rim Jang, R. Vittal, Jiwon Lee, Nakcheol Jeong and Kang-Jin $\operatorname{Kim}\nolimits^*$

Linking of N3 dye to another TiO_2 -attached N3 dye rendered an enhanced short-circuit photocurrent and thereby higher efficiency for the dye-sensitized solar cell with the pertinent TiO_2 film electrode.

A highly selective charge transfer fluoroionophore for Cu^{2+}

Zhen-Chang Wen, Rui Yang, Hui He and Yun-Bao Jiang*

A new dual fluorescent charge transfer fluoroionophore bearing an *N*-acylhydrazone electron acceptor as the ionophore (1) shows a highly selective and sensitive CT dual fluorescence response toward Cu^{2+} in ACN–H₂O.

Two regioisomeric and exclusively selective Hg(II) sensor molecules composed of a naphthalimide fluorophore and an *o*-phenylenediamine derived triamide receptor

Jiaobing Wang and Xuhong Qian*

Two regioisomeric sensors (**RS**) are designed by properly attaching an *o*-phenylenediamine derived triamide receptor to the naphthalimide fluorophore. Both sensors display exclusive Hg(II) ion selectivity. **RS2** exhibits a higher sensitivity due to its larger fluorescence enhancement rate.

ADDITION AND CORRECTION

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Highly effective phosphate electrochemical sensor based on tetrathiafulvalene

Haiyan Lu, Wei Xu, Deqing Zhang and Daoben Zhu

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Professor Jonathan Sessler

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