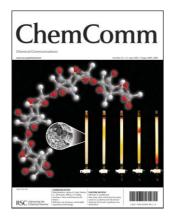
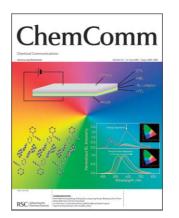
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ISSN 1359-7345 CODEN CHCOFS (23) 2869-2980 (2005)



#### Cover

See Vitaly Budarin, James H. Clark, Fabien E. I. Deswarte, Jeffrey J. E. Hardy, Andrew J. Hunt and Francesca M. Kerton, page 2903. Delicious not siliceous: sustainable separation technology. Image reproduced by permission of James H. Clark *et al.*, from *Chem. Commun.*, 2005, 2903.



#### Inside cover

See Keith Man-Chung Wong, Xiuling Zhu, Ling-Ling Hung, Nianyong Zhu, Vivian Wing-Wah Yam and Hoi-Sing Kwok, page 2906. A novel class of luminescent cyclometalated gold(III) alkynyl complexes with concentration- and voltage-dependent EL properties has been employed for OLED application studies. Image reproduced by permission of Vivian Wing-Wah Yam et al., from Chem. Commun., 2005, 2906.

#### CHEMICAL TECHNOLOGY

T21

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June 2005/Volume 2/Issue 6 www.rsc.org/chemicaltechnology

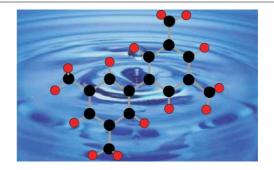
#### FEATURE ARTICLE

2881

#### Fast, easy, clean chemistry by using water as a solvent and microwave heating: the Suzuki coupling as an illustration

Nicholas E. Leadbeater

Water is an excellent solvent for organic chemistry and microwave heating offers very efficient heating. In this article, the use of these two techniques in the Suzuki coupling reaction is discussed.



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#### 2903

#### Delicious not siliceous: expanded carbohydrates as renewable separation media for column chromatography

Vitaly Budarin, James H. Clark,\* Fabien E. I. Deswarte, Jeffrey J. E. Hardy, Andrew J. Hunt and Francesca M. Kerton

Expansion of native corn starch produces a high surface area mesoporous material capable of acting as a novel stationary phase for separating various mixtures of compounds.

#### 2906

## A novel class of phosphorescent gold(III) alkynyl-based organic light-emitting devices with tunable colour

Keith Man-Chung Wong, Xiuling Zhu, Ling-Ling Hung, Nianyong Zhu, Vivian Wing-Wah Yam\* and Hoi-Sing Kwok\*

A novel class of luminescent cyclometalated gold(III) alkynyl complexes has been demonstrated to possess tunable EL properties and has been employed in the roles of electrophosphorescent emitters or dopants of OLEDs with high brightness and efficiency.

#### 2909

#### The use of a continuous flow-reactor employing a mixed hydrogen–liquid flow stream for the efficient reduction of imines to amines

Steen Saaby, Kristian Rahbek Knudsen, Mark Ladlow and Steven V. Ley\*

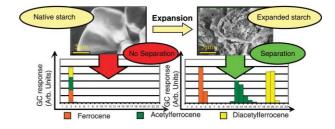
Imines have been reduced to amines in high yield, and with excellent chemoselectivity, by catalytic hydrogenation in a continuous flow-reactor, utilising an electrochemically-generated hydrogen source to produce a mixed hydrogen–liquid flow stream.

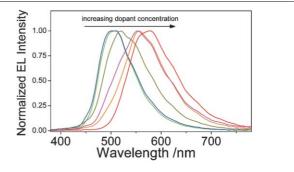
#### 2912

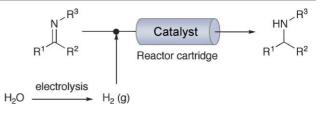
## Ethene hydroformylation with CO/H<sub>2</sub>O: nucleophilic attack by water on to a terminal CO of a Ru(II) acylcarbonyl complex

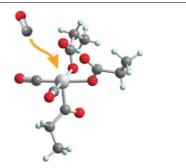
Giuseppe Fachinetti,\* Tiziana Funaioli\* and Fabio Marchetti

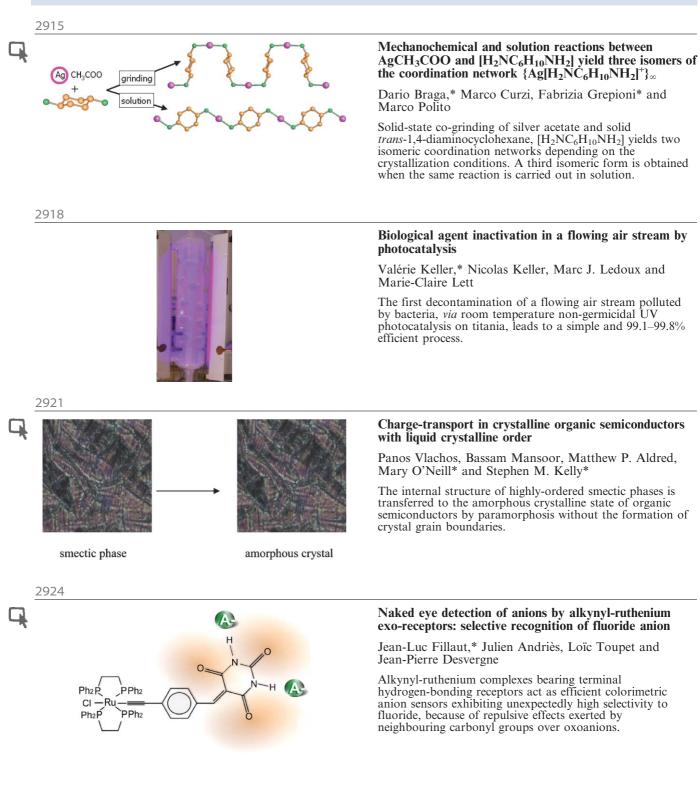
Ethene hydrocarboxylation and hydrocarbonylation with  $CO/H_2O$  are related reactions both promoted by acyldicarbonyl Ru(II) complexes. The step yielding organic products consists of a nucleophilic attack by water: on to the acyl CO for propionic acid and on to a terminal CO of an acyl tricarbonyl complex for propanal and  $CO_2$ .











#### 2927

#### Synthesis and characterisation of a {Ni<sub>21</sub>Ag} cage

Guillem Aromí,\* Aidan Bell, Simon J. Teat and Richard E. P. Winpenny\*

Addition of silver perchlorate to the reaction of a nickel pivalate complex with a pyrazolinone ligand leads to a large heterometallic cage. The structure and magnetic properties of the compound are reported.

#### 2930

# The synthesis of head-to-tail (H–T) dimers of 3-substituted thiophenes by the hypervalent iodine(III)-induced oxidative biaryl coupling reaction

Toshifumi Dohi, Koji Morimoto, Yorito Kiyono, Akinobu Maruyama, Hirofumi Tohma and Yasuyuki Kita\*

Head-to-tail (H–T) dimers of 3-substituted thiophenes were obtained selectively by the oxidative dimerization using a combination of hypervalent iodine(III) reagents and trimethylsilyl trifluoromethanesulfonate.

#### 2933

#### Selective photocatalytic reduction of nitrate to nitrogen molecules in an aqueous suspension of metal-loaded titanium(IV) oxide particles

Hiroshi Kominami,\* Takao Nakaseko, Yumiko Shimada, Akitoshi Furusho, Hiroyuki Inoue, Shin-ya Murakami, Yoshiya Kera and Bunsho Ohtani

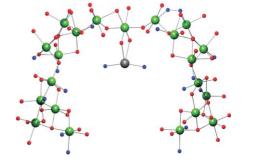
Nitrate was photocatalytically reduced to nitrogen molecules with a high selectivity in a basic aqueous suspension of palladium and copper-loaded titanium(IV) oxide powders in the presence of oxalate anion as a hole scavenger.

#### 2936

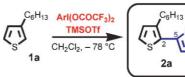
#### Structure and anti-HIV activity of micrandilactones B and C, new nortriterpenoids possessing a unique skeleton from *Schisandra micrantha*

Rong-Tao Li, Quan-Bin Han, Yong-Tang Zheng, Rui-Rui Wang, Liu-Meng Yang, Yang Lu, Su-Qin Sang, Qi-Tai Zheng, Qin-Shi Zhao and Han-Dong Sun\*

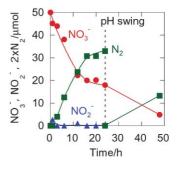
Micrandilactones B and C (1–2), new nortriterpenoids possessing a unique skeleton, were isolated from *Schisandra micrantha*. **2** exhibited potent anti-HIV-1 activity (SI > 25.94) with minimal cytotoxicity, and might be a promising lead for therapeutic development of a new generation of anti-HIV drug.

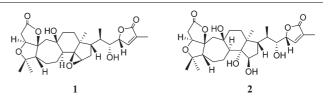


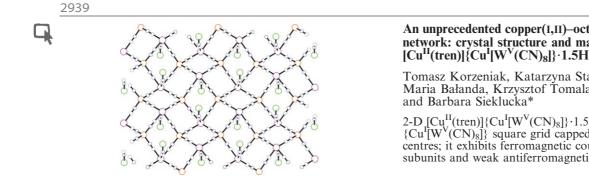
head to tail (H-T)

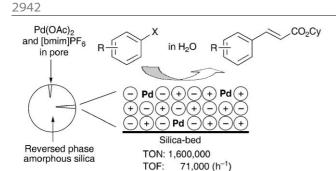




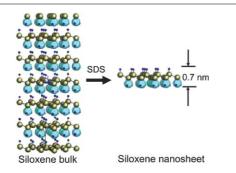








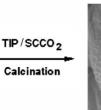
2945



2948



Original pollen grains





#### An unprecedented copper(I,II)–octacyanotungstate(V) 2-D network: crystal structure and magnetism of $[Cu^{II}(tren)]$ { $Cu^{I}[W^{V}(CN)_{8}]$ } ·1.5H<sub>2</sub>O

Tomasz Korzeniak, Katarzyna Stadnicka, Robert Pełka, Maria Bałanda, Krzysztof Tomala, Kazimierz Kowalski

 $\begin{array}{l} 2\text{-}D~[Cu^{II}(tren)]\{Cu^{I}[W^{V}(CN)_{8}]\}\cdot 1.5H_{2}O~consists~of~a\\ \{Cu^{I}[W^{V}(CN)_{8}]\}~square~grid~capped~by~[Cu^{II}(tren)]^{2+}~at~W^{V}~centres;~it~exhibits~ferromagnetic~coupling~within~Cu^{II}-W^{V}~centres \\ \end{array}$ subunits and weak antiferromagnetic coupling between them.

#### Sustainable Mizoroki-Heck reaction in water: remarkably high activity of Pd(OAc)<sub>2</sub> immobilized on reversed phase silica gel with the aid of an ionic liquid

Hisahiro Hagiwara,\* Yoshitaka Sugawara, Takashi Hoshi and Toshio Suzuki

Palladium acetate immobilized on reversed phase silica gel with the aid of  $[bmim]PF_6$ , was highly efficient in the promotion of the Mizoroki-Heck reaction in water without a ligand up to the sixth re-use, in 95% average yield with TON and TOF 1,600,000 and 71,000 ( $h^{-1}$ ), respectively.

#### Preparation and structure of novel siloxene nanosheets

Hideyuki Nakano,\* Masahiko Ishii and Hiroshi Nakamura

We demonstrate the two-dimensional silicon backbone structure of siloxene nanosheets, which produces relatively monodisperse nanosheets with a thickness of 0.7 nm and lengths in the range 100-200 nm.

#### Replication of biological organizations through a supercritical fluid route

Yong Wang, Zhimin Liu,\* Buxing Han,\* Zhenyu Sun, Jimin Du, Jianling Zhang, Tao Jiang, Weize Wu and Zhenjiang Miao

Both the macro- and micro-structures of pollen grains were faithfully copied through the reaction of titanium isopropoxide with the surface active groups and adsorbed surface water on these biotemplates in supercritical  $CO_2$ .

#### 2951

#### High yield method for nanocrystalline zeolite synthesis

W. Song, V. H. Grassian\* and S. C. Larsen\*

Nanocrystalline zeolites, such as silicalite-1 and zeolite Y, were synthesized in high yield by periodically removing nanocrystals from the synthesis solution and recycling unused reagents, including the template and T-atom sources.



## Ion transfer processes at ionic liquid based redox active drop deposited on an electrode surface

Joanna Niedziolka, Ewa Rozniecka, Janusz Stafiej, Juliette Sirieix-Plenet, Laurent Gaillon, Dung di Caprio and Marcin Opallo\*

The electrooxidation of a redox probe dissolved in a room temperature ionic liquid drop deposited on the surface of an electrode immersed in aqueous solution is facilitated by hydrophobic anion insertion from the aqueous phase.

2957

### Carbocycles *via* enantioselective inter- and intramolecular iridium-catalysed allylic alkylations

Stephane Streiff, Carolin Welter, Mathias Schelwies, Gunter Lipowsky, Nicole Miller and Günter Helmchen\*

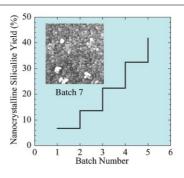
Carbocycles with > 90% ee were prepared *via* Ir-catalysed asymmetric allylic alkylation/ring closing metathesis sequences or enantioselective Ir-catalysed intramolecular allylic alkylations.

#### 2960

## Iron porphyrins anchored to a thermosensitive polymeric core-shell nanosphere as a thermotropic catalyst

Bo Gyu Choi, Rita Song, Wonwoo Nam\* and Byeongmoon Jeong\*

A thermosensitive nanocatalyst was prepared in the reaction of water-soluble iron(III) porphyrins and thermosensitive polymeric nanospheres with a core-shell structure; its catalytic activity in cyclohexene oxidation by iodosylbenzene was markedly dependent on reaction temperatures in aqueous solution.



PF<sub>6</sub>

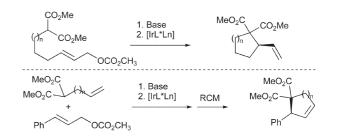
C<sub>10</sub>mimN(Tf)

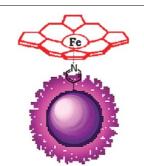
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C<sub>4</sub>mim<sup>+</sup>

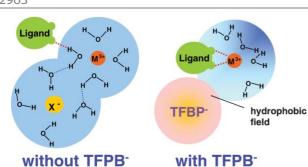
C₄mimN(Tf)

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2966

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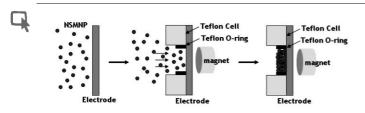
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120 180 240 300 360 420

Selective separation of Am(III) from lanthanides(III) by solvent extraction with hydrophobic field of "superweak" anion

Hirochika Naganawa, Hideya Suzuki, Junji Noro and Takaumi Kimura

The weakly coordinating hydrophobic anion  $\text{TFPB}^-$ , whose surface is covered with a hydrophobic field, gives rise to a selective separation of Am(III) from lanthanides(III) in their solvent extraction even with a hard-donor extractant.

## Nafion-stabilized magnetic nanoparticles ( $Fe_3O_4$ ) for $[Ru(bpy)_3]^{2+}$ (bpy = bipyridine) electrogenerated chemiluminescence sensor

Dong-Jun Kim, Young-Ku Lyu, Han Nim Choi, In-Hong Min and Won-Yong Lee\*

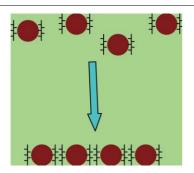
A highly sensitive and stable  $[Ru(bpy)_3]^{2+}$  ECL sensor has been fabricated based on the multilayer films of Nafion-stabilized magnetic nanoparticles (Nafion/Fe<sub>3</sub>O<sub>4</sub>) formed on a platinum electrode surface by means of an external magnet.

### *In situ* hybridization of PNA/DNA studied label-free by electrochemical impedance spectroscopy

Jianyun Liu, Shengjun Tian, Peter E. Nielsen and Wolfgang Knoll\*

The *in situ* hybridization kinetics of label-free DNA on mixed monolayers of peptide nucleic acid (PNA) and 6-mercapto-1-hexanol (MCH) on Au electrodes was investigated by electrochemical impedance spectroscopy (EIS) and used to effectively discriminate the fully complementary DNA from the single-base mismatched hybrids.

#### 2972



## Self-assembly of $\beta$ -D glucose-stabilized Pt nanocrystals into nanowire-like structures

Juncheng Liu,\* Poovathinthodiyil Raveendran, Gaowu Qin and Yukata Ikushima\*

Self-assembly of  $\beta$ -D glucose-protected Pt nanocrystals (average particle size = 4.1 nm) into nanowire-like structures in aqueous solution, under ambient conditions.

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