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Cover



See Gianluca Accorsi *et al.*, p. 2911. Lanthanide(III) complexes, emitting in the visible spectral region, have been anchored to a SiO<sub>2</sub> transparent substrate resulting in highly uniform and easily colour tunable luminescent layers. Image reproduced by permission of Lidia Armelao, Gregorio Bottaro, Silvio Quici, Marco Cavazzini, Maria Concetta Raffo, Francesco Barigelletti and Gianluca

Accorsi from Chem. Commun.,

2007, 2911.

### FEATURE ARTICLE

### 2901

### Monodisperse nanocrystals: general synthesis, assembly, and their applications

### Xun Wang and Yadong Li\*

This article summarizes the recent advances in the synthesis, assembly and applications of monodisperse nanocrystals, which may be suggestive for the designed synthesis and assemblies of target nanocrystals according to practical requirements.





### COMMUNICATIONS

### 2911

Photophysical properties and tunable colour changes of silica single layers doped with lanthanide(III) complexes

Lidia Armelao,\* Gregorio Bottaro, Silvio Quici,\* Marco Cavazzini, Maria Concetta Raffo, Francesco Barigelletti and Gianluca Accorsi\*

Lanthanide(III) complexes, emitting in the visible spectral region, have been anchored to a  $SiO_2$  transparent substrate resulting in highly uniform and easily colour-tunable luminescent layers.



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#### 2914



#### A conjugated polyelectrolyte-based fluorescence sensor for pyrophosphate

Xiaoyong Zhao, Yan Liu and Kirk S. Schanze\*

A sensitive and selective fluorescence turn-on sensor for pyrophosphate has been developed based on the amplified quenching of conjugated polyelectrolyte fluorescence by cupric ion.

### 2917

### Two-dimensional alignment of imogolite on a solid surface

Sungjin Park, Yunha Lee, Bumjung Kim, Jisun Lee, Youngdo Jeong, Jaegeun Noh, Atsushi Takahara and Daewon Sohn\*

Surface modified imogolite fiber, hydrated aluminium silicate that has the shape of a rigid hollow cylinder, was aligned with consistent nano spacing and was visualized by scanning tunneling microscopy.



### 2920

### Observation of an unprecedented body centered cubic micellar mesophase from rod-coil molecules

Eunji Lee, Ja-Hyoung Ryu, Myoung-Hwan Park, Myongsoo Lee,\* Kyung-Hee Han, Yeon-Wook Chung and Byoung-Ki Cho\*

Rod-coil molecules based on a conjugated tetra-*p*-phenylene rod and a flexible poly(propylene oxide) coil self-assemble into an unprecedented ordered micellar mesophase with a body centered cubic symmetry in the melt.

### 2923

### Responsive fluorinated lanthanide probes for <sup>19</sup>F magnetic resonance spectroscopy

P. Kanthi Senanayake, Alan M. Kenwright, David Parker\* and Susanna K. van der Hoorn

By introducing  $CF_3$  reporter groups close to the paramagnetic centre in macrocyclic lanthanide(III) complexes, fluorine relaxation rates are increased by two orders of magnitude and chemical shift non-equivalence amplified, allowing much faster acquisition of signal intensity.

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19-F chemical shift pH probe





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### 2926

### Light-fluorous safety-catch arylgermanes – exceptionally robust, photochemically activated precursors for biaryl synthesis by Pd(0) catalysed cross-coupling

Alan C. Spivey,\* Chih-Chung Tseng, Joseph P. Hannah, Christopher J. G. Gripton, Paul de Fraine, Nigel J. Parr and Jan J. Scicinski

A new class of arylgermane derivative that participate efficiently in Pd(0)-catalysed cross-coupling reactions with aryl bromides following photochemical activation is described.

### 2929

#### Highly diastereoselective ionic/radical domino reactions: single electron transfer induced cyclization of bis-sulfoxides

Jean-Philippe Goddard, Catherine Gomez, Franck Brebion, Sophie Beauvière, Louis Fensterbank\* and Max Malacria\*

SET oxidation of bis-sulfinyl anions has enabled the uses of bis-sulfinyl radical as a synthetic equivalent of chiral acyl and methylene radicals involved in tandem reactions leading to the enantioselective construction of various carbo- and heterocyclic derivatives.

#### 2932

#### A chemo- and regio-selective three-component dihydropyrimidinone synthesis

Chris D. Bailey, Chris E. Houlden, Grégory L. J. Bar, Guy C. Lloyd-Jones and Kevin I. Booker-Milburn\*

A selective three-component coupling, involving co-condensation of aldehyde pairs with substituted ureas under Lewis acid catalysis, provides rapid access to highly functionalised dihydropyrimidinones; sulfamides react analogously.

### 2935

#### A molecular gate based on a porphyrin and a silver lock

Aurélie Guenet, Ernest Graf, Nathalie Kyritsakas, Lionel Allouche and Mir Wais Hosseini\*

A Sn metallaporphyrin bearing two pyridine units, one on the hinge and the other on the handle, behaves as a molecular gate controlled by the locking action of Ag(I).











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### 2938

### Complementary face-to-face dimer formation from *meso*-aryl subporphyrins bearing a 2-carboxyphenyl group

Yasuhide Inokuma and Atsuhiro Osuka\*

A<sub>2</sub>B-type *meso*-aryl-substituted subporphyrins bearing a 2-carboxyphenyl unit exhibited quantitative and complementary dimerization behavior in a face-to-face manner.



### C<sub>70</sub> ordering on nanostructured SrTiO<sub>3</sub>(001)

David S. Deak, Kyriakos Porfyrakis and Martin R. Castell\*

The nanostructured (7  $\times$  4) surface of SrTiO<sub>3</sub>(001) is used as a template to order C<sub>70</sub> into single-molecule-wide chains and linear islands.



2944

### A novel class of metal-directed supramolecular DNA-delivery systems

Itzia Cruz-Campa, Alejandro Arzola, Lynn Santiago, Jason G. Parsons, Armando Varela-Ramirez, Renato J. Aguilera and Juan C. Noveron\*

Metal complexes of designed amphiphilic ligands self-assemble into metallo-liposomes in water and exhibit the ability to condense and deliver long segments of dDNA into eukaryotic cells.

### 2947

### Synthesis of photochromic diarylethenes using a microflow system

Yousuke Ushiogi, Tomoyuki Hase, Yoshiharu Iinuma, Atsushi Takata and Jun-ichi Yoshida\*

An effective method for the synthesis of photochromic diarylethenes based on microflow systems has been developed, and the synthesis of unsymmetrical diarylethenes which is difficult to achieve using conventional macro batch systems, has been accomplished.







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### 2950



### Synthesis, characterization and photophysical properties of a SWNT-phthalocyanine hybrid

Beatriz Ballesteros, Stéphane Campidelli, Gema de la Torre, Christian Ehli, Dirk M. Guldi,\* Maurizio Prato\* and Tomas Torres\*

Synthesis, characterization and photophysical features of single wall carbon nanotubes bearing phthalocyanine chromophores are reported.

HOOL N GOOL

### 2953

### Chirality induction in a cation-driven assembly using a crowned metalloporphyrin

Yusuke Ishii, Yoshiei Soeda and Yuji Kubo\*

15-Crown-5-appended metalloporphyrin causes a  $K^+$ -driven self-organization to bind a bifunctional guest ditopically, thereby allowing the circular dichroism (CD) detection of chirality induced in the ensemble when chiral amines are employed as the guest.



#### 2956

### An improved phage display methodology for inorganic nanoparticle fabrication

Alan R. Bassindale,\* Antonio Codina-Barrios, Nunzianda Frascione and Peter G. Taylor\*

The use of rolling circle amplification together with the addition of a wild-type control significantly improves the usefulness of phage display methodology as exemplified by the production of silver and platinum nanoparticles.

### 2959



Hyang Yeon Lee, Hyoung Kun Park, Yoon Mi Lee, Kwan Kim\* and Seung Bum Park\*

A novel and universal procedure has been developed for producing nanosized stable silver particles on cotton fabrics in a simple and cost-effective manner.









### Reversible photopadlocking on double-stranded DNA

Kenzo Fujimoto,\* Shigeo Matsuda, Yoshinaga Yoshimura, Takehiro Ami and Isao Saito

The authors describe a highly efficient method for reversible photocircularization of oligonucleotide (ODN) on a doublestranded DNA template. 5-Carboxyvinyl-2'-deoxyuridinecontaining ODN was reversibly circularized around the double-stranded plasmid DNA resulting in formation of a catenated plasmid.



#### Novel catalysts for dechlorination of polychlorinated biphenyls (PCBs) and other chlorinated aromatics

Andrew E. D. Fletcher, James Moss, Andrew R. Cowley and Dermot O'Hare\*

[(FeCp)<sub>2</sub>FluH][PF<sub>6</sub>]<sub>2</sub> and [(FeCp)<sub>2</sub>Flu\*H][PF<sub>6</sub>]<sub>2</sub> are rare examples of molecular organotransition metal compounds that are able to catalytically reductively dechlorinate commercial PCB mixtures.

### 2974

### Enhanced selectivity in the conversion of methanol to 2,2,3-trimethylbutane (triptane) over zinc iodide by added phosphorous or hypophosphorous acid

John E. Bercaw, Robert H. Grubbs, Nilay Hazari, Jay A. Labinger\* and Xingwei Li

A substantial increase in methanol-to-triptane selectivity, effected by addition of phosphorous or hypophosphorous acid, is the consequence of the relatively uncommon hydridic reactivity of a P–H bond.



### Evolution of chiral Lewis basic *N*-formamide as highly effective organocatalyst for asymmetric reduction of both ketones and ketimines with an unprecedented substrate scope

Li Zhou, Zhouyu Wang, Siyu Wei and Jian Sun\*

L-Pipecolinic acid derived Lewis basic *N*-formamide **5e** has been developed as a first highly effective catalyst for the asymmetric reduction of aromatic and aliphatic ketones as well as aromatic and aliphatic ketimines in good to high enantioselectivity.



### Artificial hemoprotein nanotubes

Gang Lu, Teruyuki Komatsu\* and Eishun Tsuchida\*

Artificial hemoprotein nanotubes have been prepared by a layer-by-layer deposition technique with human serum albumin incorporating the synthetic heme; the liberated tubules can reversibly bind and release dioxygen at 25 °C.



XH

up to 99% yield

up to 93% ee

οčα

5e

Me

R

### 2983



Avelino Martín, Noelia Martínez-Espada, Miguel Mena and Carlos Yélamos\*

 $[{Ti(\eta^{5}-C_{5}Me_{5})(\mu-NH)}_{3}(\mu_{3}-N)] exhibits a conventional tridentate chelate behavior to silver(I) ions or the unprecedented bridging mode (\mu_{3}-\eta^{1}:\eta^{1}:\eta^{1}) in the triangular silver(I) cluster [(CF_{3}SO_{2}O)_{3}Ag_{3}{((\mu_{3}-NH)_{3}Ti_{3}(\eta^{5}-C_{5}Me_{5})_{3}(\mu_{3}-N)}_{2}]$ 



ed  $H_{0}O + H_{2}O + H_{3}PO_{3} + H^{+}$   $H_{0}O + H_{0}O + H_{2}O + H_{3}PO_{4} + H^{+}$   $H_{0}O + PO(OH)_{2^{+}} + H_{2}O + H_{3}PO_{4} + H^{+}$ ic

10 mol % 5e

HSiCl<sub>3</sub>, toluene, -20 °C

R

X = 0, NAr

R = aryl, alkyl

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Virus Molecular Interactions: Therapeutic Targets 17 - 19 September 2007 Oxford, UK Antibiotics- Where Now? 21 January 2008 London, UK

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### 2986



### An unpaired electron-based hole-transporting molecule: Triarylamine-combined nitroxide radicals

Takashi Kurata, Kenichiroh Koshika, Fumiaki Kato, Junji Kido and Hiroyuki Nishide\*

A durable nitroxide radical combined with a triarylamine moiety exhibited a high hole-drift mobility of  $6 \times 10^{-3} \text{ cm}^2 \text{ V}^{-1} \text{ s}^{-1}$ , to which the aminophenyl nitroxide structure contributed.

#### 2989

### Proton conductivity in the dry membrane of poly(sulfonic acid) and polyamine layer-by-layer complex

Takahiro Tago, Hirokazu Shibata and Hiroyuki Nishide\*

A layer-by-layer assembled and molecular-complexed polymer membrane was prepared by the simple combination of poly(4-styrenesulfonic acid) and poly(allylamine) on a comb-shaped gold electrode: it displayed a very high proton conductivity of  $10^{-3}$  S cm<sup>-1</sup> under a dry condition at 120 °C.





2992

### Bifunctional pathways mediated by Pt clusters and $Al_2O_3$ in the catalytic combustion of dimethyl ether

Akio Ishikawa and Enrique Iglesia\*

Mixtures of Pt clusters dispersed on  $\gamma$ -Al<sub>2</sub>O<sub>3</sub> and additional  $\gamma$ -Al<sub>2</sub>O<sub>3</sub> led to much higher DME combustion rates than on the individual components or on Pt clusters supported on non-acidic oxides.



### 2994

#### Meso-meso linked corroles

Beata Koszarna and Daniel T. Gryko\*

Sterically hindered dipyrromethanes can be transformed into *meso-meso* linked corroles in a one-pot process involving DDQ-induced coupling of two corrole units.



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