IN THIS ISSUE

ISSN 1359-7345 CODEN CHCOFS (26) 3229-3360 (2005)



Cover

See Simon Harrisson and Karen L. Wooley, page 3259. The one-pot RAFT polymerization of styrene and maleic anhydride is followed by direct assembly of the resulting amphiphilic block copolymers to afford interesting rosette morphologies. Image reproduced by permission of Simon Harrisson and Karen L. Wooley, from Chem. Commun., 2005, 3259.



Inside cover

See Verena Görtz and John W. Goodby, page 3262. Uncovered defect texture of the nematic phase of an achiral bent-shaped mesogen near to the nematic-smectic phase transition. Image reproduced by permission of Verena Görtz and John W. Goodby, from Chem. Commun., 2005, 3262.

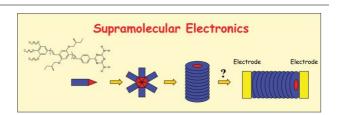
FEATURE ARTICLE

3245

Supramolecular electronics; nanowires from self-assembled π -conjugated systems

Albertus P. H. J. Schenning* and E. W. Meijer

The conditions required for supramolecular electronics, e.g. nano-sized optoelectronic devices, are illustrated on the basis of the programmed self-assembly of π -conjugated systems into individual nanosized wires.



COMMUNICATIONS

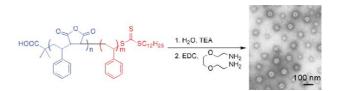
3259



Shell-crosslinked nanostructures from amphiphilic AB and ABA block copolymers of styrene-alt-(maleic anhydride) and styrene: polymerization, assembly and stabilization in one pot

Simon Harrisson and Karen L. Wooley*

Shell-crosslinked nanostructures with unusual morphologies have been created from block copolymers of styrene-alt-(maleic anhydride) and styrene. The process can be performed in a single pot, starting from styrene and maleic anhydride monomers.



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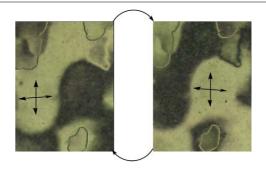
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Enantioselective segregation in achiral nematic liquid crystals

Verena Görtz and John W. Goodby

We show that the achiral biaxial nematic phase can segregate into chiral domains of opposite handedness, thereby demonstrating that the liquid-like nematic phase remarkably exhibits the properties of a conglomerate.

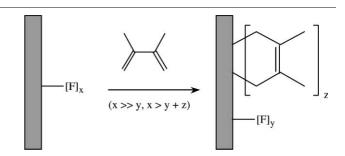


3265

Diels-Alder addition to fluorinated single walled carbon nanotubes

Lei Zhang, Jianzhong Yang, Christopher L. Edwards, Lawrence B. Alemany, Valery N. Khabashesku and Andrew R. Barron*

Sidewall activated fluorinated single walled carbon nanotubes (SWNTs) undergo a facile Diels-Alder [4 + 2] cycloaddition with a range of dienes.



3268



Promotion of host folding during the formation of a taco complex

Feihe Huang, Matthew Lam, Eric J. Mahan, Arnold L. Rheingold and Harry W. Gibson*

Folding of the host for the formation of taco complexes can be promoted by proper introduction of substituents that provide additional attractive host-guest interactions.



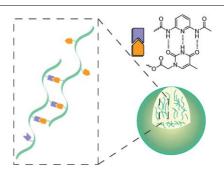
3271



Duplex strand formation using alternating copolymers

Hiroshi Nakade, M. Firat Ilker, Brian J. Jordan, Oktay Uzun, Nicholas L. LaPointe, E. Bryan Coughlin and Vincent M. Rotello*

Complementary alternating copolymers were synthesized using ROMP polymerization. These polymers self-assemble into discrete microspheres.



3274

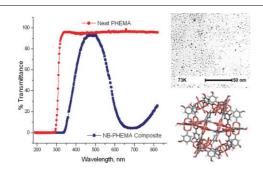


Coordination polymers formed in solution and in solvent-free environment. Structural transformation due to interstitial solvent removal revealed by X-ray powder diffraction

Evgeny V. Dikarev,* Bo Li, Vladimir V. Chernyshev, Roman V. Shpanchenko and Marina A. Petrukhina*

The collective reorientation of 1D polymeric chains induced by interstitial solvent removal has been studied by a combination of single crystal and powder X-ray diffraction techniques.

3277

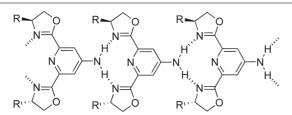


Persistent interactions between hydroxylated nanoballs and atactic poly(2-hydroxyethyl methacrylate) (PHEMA)

Kadine Mohomed, Heba Abourahma, Michael J. Zaworotko and Julie P. Harmon*

Nanoball inclusion into PHEMA gives rise to a crosslinked network/hydrogel with enhanced interfacial interaction whereas its inclusion in poly(methyl methacrylate) (PMMA) results in plasticization.

3280

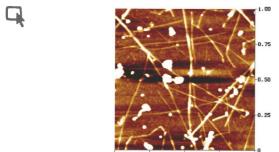


The influence of sterics on the formation of polar 1-D hydrogen-bonded networks

Adam J. Preston, Judith C. Gallucci and Jon R. Parquette*

The polar, noncentrosymmetric packing of chiral, 4-amino-2,6-bis(oxazolinyl)pyridines into directional, 1-D networks occurs *via* the development of intermolecular hydrogen-bonding interactions.

3283



Discrete dispersion of single-walled carbon nanotubes

Qingwen Li, Ian A. Kinloch and Alan H. Windle*

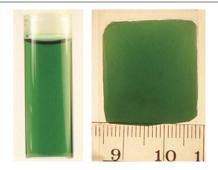
Single-walled carbon nanotubes have been effectively wetted and dispersed in saturated sodium hydroxide alcohol-water solutions with little surface damage or shortening of the tubes. The treated material was dispersable as individual tubes in many common organic solvents.

3286

Processable stabilizer-free polyaniline nanofiber aqueous colloids

Dan Li and Richard B. Kaner*

Aqueous polyaniline nanofiber colloids can be readily prepared and self-stabilized via electrostatic repulsions without the need for any chemical modification or steric stabilizer.

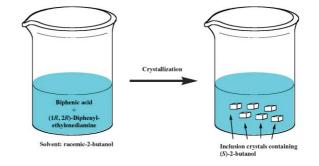


3289

Efficient optical resolution of secondary alkyl alcohols by chiral supramolecular hosts

Yoshitane Imai, Tomohiro Sato and Reiko Kuroda*

A novel tunable multi-chiral supramolecular host system formed from non-chiral dicarboxylic acid and chiral diamine via chirality transfer enabled highly efficient optical resolution of secondary alkyl alcohols by simple crystallization.



3292

Facile insertion reaction of arynes into carbon-carbon **σ-bonds**

Hiroto Yoshida,* Masahiko Watanabe, Joji Ohshita and Atsutaka Kunai*

Two carbon-carbon bond-forming processes proceeded simultaneously via the novel insertion reaction of arynes into the carbon–carbon σ -bond of β -dicarbonyl compounds to produce diverse polysubstituted arenes including benzoannulated macrocycles in a straightforward manner.

$$R \xrightarrow{\qquad \qquad \qquad } R' \xrightarrow{\qquad \qquad } R''$$

3295

Rh(I)-catalyzed CO gas-free cyclohydrocarbonylation of alkynes with formaldehyde to α,β -butenolides

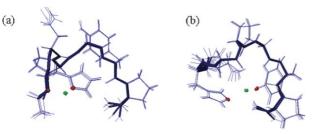
Koji Fuji, Tsumoru Morimoto,* Ken Tsutsumi and Kiyomi Kakiuchi

The rhodium(I)-catalyzed reaction of alkynes with formaldehyde proceeds via the double incorporation of a carbonyl moiety from formaldehyde, resulting in a CO gas-free cyclohydrocarbonylation leading to α,β -butenolides.

$$R^1 = R^2 + H H H \frac{\text{cat.}}{\text{[Rh] / phosphine}} R^1$$

3298



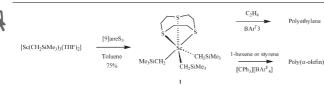


Fine tuning the structure of the Cu²⁺ complex with the prion protein chicken repeat by proline isomerization

Paweł Stańczak, Daniela Valensin, Paulina Juszczyk, Zbigniew Grzonka, Gianni Valensin,* Francesca Bernardi, Elena Molteni, Elena Gaggelli and Henryk Kozłowski*

The interaction between the single hexarepeat unit of chicken prion protein [ChPrP(54–59)] and Cu(II) was investigated by NMR, finding different coordination modes for the *transltrans* and *cisltrans* isomers.

3301

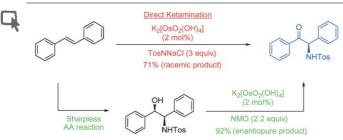


The first rare earth organometallic complex of 1,4,7-trithiacyclononane: a precursor to unique cationic ethylene and α -olefin polymerisation catalysts supported by an all-sulfur donor ligand

Cara S. Tredget, Fanny Bonnet, Andrew R. Cowley and Philip Mountford*

[Sc([9]aneS₃)(CH₂SiMe₃)₃] 1, the first rare earth organometallic complex of 1,4,7-trithiacyclonane is a precursor to ethylene and α -olefin polymerisation catalysts upon activation with BAr^F₃ or [CPh₃][BAr^F₄] (Ar^F = C₆F₅).

3304



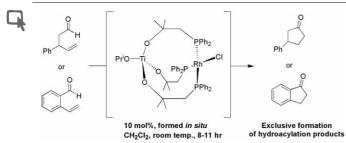
Stepwise Ketamination

First osmium-catalysed ketamination of alkenes

Amparo Villar, Claas H. Hövelmann, Martin Nieger and Kilian Muñiz*

The first direct ketamination of alkenes was developed on the basis of osmium(VIII) catalysis. 2-Amino ketones are accessible either through osmium-catalysed oxidation of C=C double bonds with nitrenoids or through a two-step process of aminohydroxylation and subsequent osmium-catalysed oxidation.

3307



A readily prepared neutral heterobimetallic titanium(IV)-rhodium(I) catalyst for intramolecular hydroacylation

John P. Morgan,* Kousik Kundu* and Michael P. Doyle

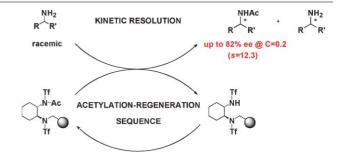
The combination of HOCMe₂CH₂PPh₂, Ti(O*i*Pr)₄, and [Rh(cod)Cl]₂ (3:1:1) in either benzene or dichloromethane produces a discrete species that is active for intramolecular hydroacylation reactions of 3-substituted pentenals.

3310

Unprecedented, fully recyclable, solid-supported reagent for the kinetic resolution of racemic amines through enantioselective N-acetylation

Stellios Arseniyadis, Pithani V. Subhash, Alain Valleix, Alain Wagner* and Charles Mioskowski*

The first, fully recyclable, polymer supported reagent for the kinetic resolution (KR) of primary amines through enantioselective acetylation is described. This new supported chiral reagent allows the KR of amines with moderate to good enantioselection at room temperature.

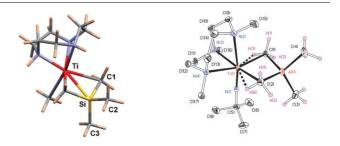


3313

Well-defined imidotitanium alkyl cations: agostic interactions, migratory insertion vs. [2+2] cycloaddition, and the first structurally authenticated AlMe₃ adduct of any transition metal alkyl cation

Paul D. Bolton, Eric Clot,* Andrew R. Cowley and Philip Mountford*

The agostic interactions in the imidotitanium alkyl cations $[Ti(N^tBu)(Me_3[9]aneN_3)R]^+$ (R = Me or CH₂SiMe₃) are described, together with the first experimental probe of M=NR vs. M–R site-selectivity in catalytically relevant systems.

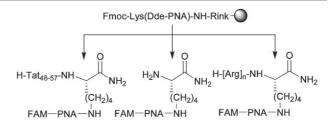


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Synthesis and cellular uptake of cell delivering PNA-peptide conjugates

Juan J. Díaz-Mochón, Laurent Bialy, Jon Watson, Rosario M. Sánchez-Martín and Mark Bradley*

The synthesis of a set of fluorescently labelled PNA-peptide conjugates using the Dde and the Fmoc protecting groups is reported. These conjugates were tested on mammalian cells to study their cellular uptake.



Cellular delivery of PNA

3319

Polyfunctionalized macrocycles demonstrate enantioselective and ditopic binding properties

Jiachang Gong and Bruce C. Gibb*

A pair of enantioselective, ditopic macrocycles is described; the receptors bind chiral ammonium cations in a manner that depends on the stereochemistry of the cation as well as the nature of its counter anion.

3322

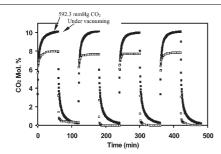
160 120 120 40 40 0.0 0.2 0.4 0.6 0.8 1.0

Reversible hydrogen gas uptake in nanoporous Prussian Blue analogues

Karena W. Chapman, Peter D. Southon, Colin L. Weeks and Cameron J. Kepert*

The family of dehydrated nanoporous Prussian Blue analogues, $M^{II}_{3}[Co^{III}(CN)_{6}]_{2}$ ($M^{II}=Mn$, Fe, Co, Ni, Cu, Zn, Cd), which contain coordinatively unsaturated divalent metal cations, undergoes reversible sorption of hydrogen gas up to 1.2 wt% (at 77 K, 101.3 kPa), the capacity of which depends on the metal cation.

3325

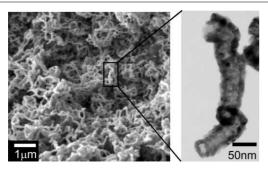


Poly(ionic liquid)s: a new material with enhanced and fast CO_2 absorption

Jianbin Tang, Huadong Tang, Weilin Sun, Henry Plancher, Maciej Radosz and Youqing Shen*

Polymers made from ionic liquid monomers had selective, fast and reversible sorption of CO_2 with high absorption capacity. They are novel sorbent and membrane materials for CO_2 separation.

3328

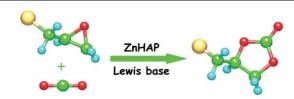


Enhancement of electrochemical and photoelectrochemical properties of fibrous Zn and ZnO electrodes

Carmen M. López and Kyoung-Shin Choi*

Zinc and zinc oxide electrodes with fibrous morphologies were prepared to exploit their high interfacial areas and superior electrical conductivity for the enhancement of electrochemical and photoelectrochemical properties.

3331



A single-site hydroxyapatite-bound zinc catalyst for highly efficient chemical fixation of carbon dioxide with epoxides

Kohsuke Mori, Yohei Mitani, Takayoshi Hara, Tomoo Mizugaki, Kohki Ebitani and Kiyotomi Kaneda*

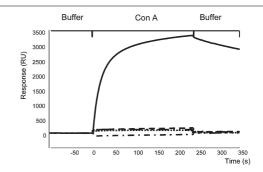
A zinc-based hydroxyapatite catalyst in conjunction with a Lewis base proved to be efficient for the coupling of CO₂ and epoxide in the absence of additional organic solvents under an atmospheric CO₂ pressure.

3334

Thioctic acid amides: convenient tethers for achieving low nonspecific protein binding to carbohydrates presented on gold surfaces

Rositsa Karamanska, Balaram Mukhopadhyay, David A. Russell* and Robert A. Field*

The thioctic-amide system serves as an accessible and effective method for carbohydrate presentation on gold surfaces which limits non-specific protein binding whilst enhancing specific binding of the target lectin.



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Markedly enhanced recyclability of osmium catalyst in asymmetric dihydroxylation reactions by using macroporous resins bearing both residual vinvl groups and quaternary ammonium moieties

K. J. Kim, H. Y. Choi, S. H. Hwang, Y. S. Park,* E. K. Kwueon, D. S. Choi and C. E. Song*

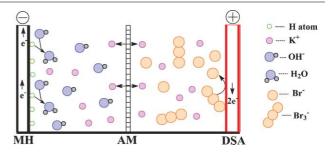
Markedly enhanced recyclability of osmium catalyst in asymmetric dihydroxylation has been achieved by using osmylated macroporous resins bearing both residual vinyl groups and quaternary ammonium moiety.

3340

Halogen: A high-capacity cathode for rechargeable alkaline batteries

Jun-qing Pan,* Yan-zhi Sun, Ping-yu Wan,* Zi-hao Wang and Xiao-guang Liu

Here we report a new high capacity battery system referred to as RAH batteries, which is based upon a high energy cathode—halogen (such as Br₂ or Cl₂) and metal hydride anode.

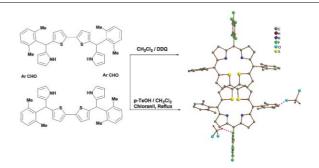


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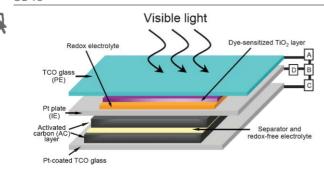
Figure-eight aromatic core-modified octaphyrins with six meso links: syntheses and structural characterization

Harapriya Rath, Jeyaraman Sankar, Viswanathan PrabhuRaja, Tavarekere K. Chandrashekar,* Bhawani S. Joshi and Raja Roy

The synthesis and structural characterization of the first examples of aromatic core-modified figure-eight octaphyrins with six meso links and their formation with and without acid catalysts are highlighted.



3346



A high-voltage dye-sensitized photocapacitor of a three-electrode system

Takurou N. Murakami, Norimichi Kawashima and Tsutomu Miyasaka*

A photo-rechargeable capacitor (photocapacitor) of three-electrode configuration produces 0.8 V by direct storage of solar energy. Being capable of cyclic photocharge—discharge, it stores visible light energy at a density per area of $47~\mu W~h~cm^{-2}$.

3349



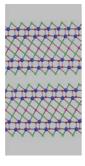
 $Cp^*(^iPr_3P)Ru(Cl)(\eta^2\text{-}HSiClMe_2)\!:$ the first complex with simultaneous Si–H and RuCl···SiCl inter-ligand interactions

Alexander L. Osipov, Sergei F. Vyboishchikov,* Konstantin Y. Dorogov, Lyudmila G. Kuzmina, Judith A. K. Howard, Dmitrii A. Lemenovskii and Georgii I. Nikonov*

The title compound $Cp*({}^{i}Pr_{3}P)Ru(Cl)(\eta^{2}-HSiMe_{2}Cl)$ is unusual in simultaneously having a H–Si σ -interaction and an inter-ligand hypervalent interaction RuCl···SiCl.

3352



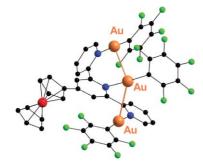


A new intermediate intercalate in superconducting sodium-doped hafnium nitride chloride

Judith Oró-Solé, Carlos Frontera, Benjamín Martínez, Daniel Beltrán-Porter, Maria Rosa Palacín and Amparo Fuertes*

A new phase observed during the sodium intercalation of hafnium nitride chloride shows interlayer spacings ranging from 9.48 to 9.67 Å, corresponding to a second stage intercalate of HfNCl and is superconducting with a critical temperature of 20 K.

3355



Unprecedented $\eta^3\text{-}M_3$ coordination mode in a terpyridine ligand

Javier E. Aguado, Maria José Calhorda, M. Concepción Gimeno* and Antonio Laguna

The trinuclear gold complex $[Au_3(C_6F_5)_3(\eta^3-Fcterpy)]$ has been prepared and is the first example of a terpyridine ligand bonded to three different metals; the aurophilic interactions may contribute to the overall stability.

3357

Encapsulated sulfates: insight to binding propensities

Sung Ok Kang, Md. Alamgir Hossain, Douglas Powell and Kristin Bowman-James

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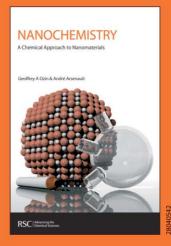
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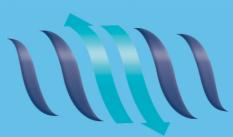
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