RSC Advances

An international journal to further the chemical sciences

RSC Advances, 2014, Issue 106, Page 61232 to 62008

Synthesis, characterization and biological evaluation of cationic hydrazone copper complexes with diverse diimine co-ligands

Shin Thung Chew, Kong Mun Lo, Saravana Kumar Sinniah, Kae Shin Sim and Kong Wai Tan

RSC Adv., 2014,**4**, 61232-61247
DOI: 10.1039/C4RA11716F

Four new copper(II) complexes containing triphenylphosphonium conjugated salicylaldehyde-(4-fluorobenzhydrazone), (L) and various diimine ligands have been synthesized and evaluated for their biological properties.

Influence of the anchoring number in a carbazole-based photosensitizer on the photovoltaic performance of p-type NiO dye sensitized solar cells

Ji Young Park, Bo Youn Jang, Chi Hwan Lee, Hyeong Jin Yun and Jae Hong Kim

RSC Adv., 2014,**4**, 61248-61255
DOI: 10.1039/C4RA08271K

Carbazole dimer enhances the charge injection and reduces the charge recombination to exhibit superior p-type performance of DSSCs.

Functionalized mesoporous silica material and anionic dye adsorption: MCM-41 incorporated with amine groups for competitive adsorption of Acid Fuchsine and Acid Orange II

Yunhai Wu, Meili Zhang, Huaiyang Zhao, Shengxin Yang and Aynigar Arkin

RSC Adv., 2014,**4**, 61256-61267
DOI: 10.1039/C4RA11737A

Adsorption of two representative anionic dyes (Acid Fuchsine (AF) and Acid Orange II (AO)) using MCM-41 functionalized with amine groups in a mesoporous silica framework (NH_2–MCM-41) as the adsorbent was investigated.

Morphological and microstructural investigations of composite dielectrics for energy storage

J. Glenneberg, M. Zenkner, G. Wagner, S. Lemm, C. Ehrhardt, W. Münchgesang, A. Buchsteiner, M. Diestelhorst, H. Beige, S. G. Ebbinghaus and H. S. Leipner

RSC Adv., 2014,**4**, 61268-61276
DOI: 10.1039/C4RA07354A

Efficient composite dielectrics can be created by combination of phase free $Ba(Ti_{(1x)}Ge_x)O_3$ nanoparticles, and an inorganic BBS glass matrix, consisting of BaO, B_2O_3 and SiO_2.

End-group differentiating ozonolysis of furocoumarins

Mikhail V. Malakhov, Maxim A. Dubinnyi, Natalia V. Vlasova, Victor G. Zgoda, Roman G. Efremov and Ivan A. Boldyrev

RSC Adv., 2014,**4**, 61277-61280
DOI: 10.1039/C4RA08106D

Ozonolysis of furocoumarins followed by reductive work-up yields not only common symmetrical dialdehydes, but also *o*-formylumbelliferones with moderate-to-high yields.

Four cobalt(II) coordination polymers with diverse topologies derived from flexible bis(benzimidazole) and aromatic dicarboxylic acids: syntheses, crystal structures and catalytic properties

Xiao Xiao Wang, Baoyi Yu, Kristof Van Hecke and Guang Hua Cui

RSC Adv., 2014,**4**, 61281-61289
DOI: 10.1039/C4RA08138B

Four metal–organic frameworks (MOFs) were obtained from the hydrothermal reaction of Co(II) and with dicarboxylic acid and flexible bis(5,6-dimethylbenzimidazole) and characterized. The four MOFs exhibit distinct 2D or 3D structural frameworks.

[A deeper look into sonic spray ionization]
Abdil Özdemir, Jung-Lee Lin, Yi Sheng Wang and Chung-Hsuan Chen
RSC Adv., 2014,**4**, 61290-61297
DOI: 10.1039/C4RA06409G
Sonic spray ionization (SSI) has been explored as an ambient ionization method for mass spectrometric analysis of different compounds.

Capture and culturing of single microalgae cells, and retrieval of colonies using a perforated hemispherical microwell structure

Jong Seob Choi, Sunwoong Bae, Kyung Hoon Kim, Jaoon Y. H. Kim, Sang Jun Sim and Tae Seok Seo

RSC Adv., 2014,**4**, 61298-61304
DOI: 10.1039/C4RA09730K

We fabricated perforated hemispherical microwells and used them to capture and culture single microalgal cells, and to retrieve the resulting colonies with high speed and simplicity.

Photochromic Ag:TiO_2 thin films on PET substrate

F. Tricot, F. Vocanson, D. Chaussy, D. Beneventi, S. Reynaud, Y. Lefkir and N. Destouches

RSC Adv., 2014,**4**, 61305-61312
DOI: 10.1039/C4RA08804B

A flexible material with reversible photochromic behavior was obtained by designing TiO_2:Ag thin films on PET substrate without damage.

SCO@SiO_2@Au core–shell nanomaterials: enhanced photo-thermal plasmonic effect and spin-crossover properties

Dan Qiu, Ling Gu, Xiao-Li Sun, Dong-Hong Ren, Zhi-Guo Gu and Zaijun Li

RSC Adv., 2014,**4**, 61313-61319
DOI: 10.1039/C4RA10774H

[$Fe(Htrz)_2(trz)](BF_4)$@SiO_2@Au core–shell spin-crossover nanocomposites have been successfully synthesized, and Au nanoparticles caused an efficient photo-thermal heating in the nanocomposites and influenced the spin-transition behaviors.

A reversible fluorescent chemosensor for the rapid detection of mercury ions (II) in water with high sensitivity and selectivity

YuanRong Zhu, Hui Li, BingBing Shi, WenJuan Qu, YouMing Zhang, Qi Lin, Hong Yao and TaiBao Wei

RSC Adv., 2014,**4**, 61320-61323
DOI: 10.1039/C4RA09961C

We report a water-soluble, non-sulfur, chemosensor which could allow recognition of Hg^{2+} selectively in water and observed significant color changes from blue to colorless which could be distinguished by the naked eye on UV lamp.

Redox-controllable self-assembly and anti-bacterial activity of a vancomycin derivative

Guoqin Chen, Jianwu Zhang, Dongxia Li, Chunhua Ren, Caiwen Ou, Ling Wang and Minsheng Chen

RSC Adv., 2014,**4**, 61324-61326
DOI: 10.1039/C4RA12093K

We report a selenium containing vancomycin derivative with redox-controllable self-assembly property and anti-bacterial activity.

Integration of ZnO/ZnS nanostructured materials into a cotton fabric platform

Thushara J. Athauda, Ujith S. K. Madduma-Bandarage and Yolanda Vasquez

RSC Adv., 2014,**4**, 61327-61332
DOI: 10.1039/C4RA12074D

Inorganic semiconductor ZnO/ZnS nanostructures were coupled to flexible natural fibrous materials for potential applications that include wearable electronics, protective textiles, portable and flexible photovoltaic and solar cell devices.

Making a better organic–inorganic composite electrolyte to enhance the cycle life of lithium–sulfur batteries

Il Young Choi, Hoon Kim and Moon Jeong Park

RSC Adv., 2014,**4**, 61333-61336
DOI: 10.1039/C4RA12657B
From themed collection Polymers for Electrochemical Energy Storage

The development of a high performance Li–S battery based on a composite gel polymer electrolyte with unique density gradients of silica nanoparticles.

Nuclease activity and anti-proliferative effect on human cancerous cells of a newly synthesized and characterized mononuclear copper(II) complex [Cu^{II}(L)$(fu)_2$] [L = 2-(2-pyridyl)benzimidazole, fu = furoate]

Sunit Kumar Mal, Merry Mitra, Gurpreet Kaur, V. M. Manikandamathavan, Manikantan Syamala Kiran, Angshuman Roy Choudhury, Balachandran Unni Nair and Rajarshi Ghosh

RSC Adv., 2014,**4**, 61337-61342
DOI: 10.1039/C4RA09448D

A new copper complex acting as a DNA cleaving agent shows appreciable anticancer activity.

Synthesis, characterization and properties of a bio-based elastomer: polymyrcene

Preetom Sarkar and Anil K. Bhowmick

RSC Adv., 2014,**4**, 61343-61354
DOI: 10.1039/C4RA09475A

Bio-based elastomer from renewable resources.

Tailoring mechanical properties and electrical conductivity of flexible niobium carbide nanocomposite thin films

Luis Yate, L. Emerson Coy, Guocheng Wang, Mikel Beltrán, Enrique Díaz-Barriga, Esmeralda M. Saucedo, Mónica A. Ceniceros, Karol Zaski, Irantzu Llarena, Marco Möller and Ronald F. Ziolo

RSC Adv., 2014,**4**, 61355-61362
DOI: 10.1039/C4RA11292J

This work shows the potential of hard, elastic and electrically conductive nanocomposite NbC films for nano- and micro- electronics applications.

New ternary bipyridine–terpyridine copper(II) complexes as self-activating chemical nucleases

Sofia Gama, Inês Rodrigues, Fernanda Marques, Elisa Palma, Isabel Correia, M. Fernanda N. N. Carvalho, João Costa Pessoa, Andreia Cruz, Sónia Mendo, Isabel C. Santos, Filipa Mendes, Isabel Santos and António Paulo

RSC Adv., 2014,**4**, 61363-61377
DOI: 10.1039/C4RA12085J

New copper complexes with an impressive DNA cleaving ability in the absence of any exogenous oxidants or reductants.

Morphology controlled supramolecular assemblies *via* complexation between (5,10,15,20-tetrakisphenyl-porphine) zinc and 4,4-bipyridine: from nanospheres to microrings

Feng Wang, Lei Xu, Mian Hasnain Nawaz, Feng Liu and Weian Zhang

RSC Adv., 2014,**4**, 61378-61382
DOI: 10.1039/C4RA10087E

Well-defined nanospheres and microrings were achieved from the complexation between (5,10,15,20-tetrakisphenylporphine)zinc and 4,4-bipyridine in organic solvents and on a carbon-coated copper grid, respectively.

Triptycene based organosoluble polyamides: synthesis, characterization and study of the effect of chain flexibility on morphology

Snehasish Mondal and Neeladri Das

RSC Adv., 2014,**4**, 61383-61393
DOI: 10.1039/C4RA10476E

Triptycene based thermally stable, organosoluble and low viscous polyamides have been prepared. Polymers may be categorized as self-extinguishing materials. Relation between structural flexibility and surface morphology has been studied.

Green synthesis of anisotropic silver nanoparticles with potent anticancer activity using *Taxus baccata* extract

Abolghasem Abbasi Kajani, Abdol-Khalegh Bordbar, Sayyed Hamid Zarkesh Esfahani, Ahmad Reza Khosropour and Amir Razmjou

RSC Adv., 2014,**4**, 61394-61403
DOI: 10.1039/C4RA08758E

Highly stable colloidal silver nanoparticles with potent anticancer activity against MCF-7 cells were synthesized using *Taxus baccata* extracts.

Fluid interface-mediated nanoparticle membrane as an electrochemical sensor

Mohammed Ali, Koushik Barman, Sk. Jasimuddin and Sujit Kumar Ghosh

RSC Adv., 2014,**4**, 61404-61408
DOI: 10.1039/C4RA12149J

A poly(ethyleneglycol)-stabilised magnetic Fe_3O_4 nanoparticle decorated ultra-thin membrane has been devised at the water/CCl_4 interface by ligand cross-linking with terephthaloyl chloride and the membrane was exploited as an electrochemical sensor for the detection of L-Dopa up to nanomolar concentration.

Preparation and characterization of a novel hetero-nanostructure of zirconium diboride nanoparticle-coated multi-walled carbon nanotubes

Zahra Amirsardari, Rouhollah Mehdinavaz Aghdam, Masoud Salavati-Niasari and Saeed Shakhesi

RSC Adv., 2014,**4**, 61409-61414
DOI: 10.1039/C4RA09739D

Synthesis of zirconium diboride (ZrB_2)-coated multi-walled carbon nanotubes (MWCNTs).

PDMS membranes with tunable gas permeability for microfluidic applications

A. Lamberti, S. L. Marasso and M. Cocuzza

RSC Adv., 2014,**4**, 61415-61419
DOI: 10.1039/C4RA12934B

The air permeability of PDMS membranes is easily tuned acting on their composition. Varying the mixing ratio it is possible to strongly influence the gas molecules permeation across the PDMS membrane.

Limestone nanoparticles as nanopore templates in polymer membranes: narrow pore size distribution and use as self-wetting dialysis membranes

Christoph R. Kellenberger, Florian C. Pfleiderer, Renzo. A. Raso, Cornelia H. Burri, Christoph M. Schumacher, Robert N. Grass and Wendelin J. Stark

RSC Adv., 2014,**4**, 61420-61426
DOI: 10.1039/C4RA12613K

A simple method is reported to directly produce self-wetting membranes by the template removal method particularly suited for dialysis applications.

6-Gingerol mitigates nutritional steatohepatitis through regulating key genes related to oxidative stress, inflammation and fibrogenesis

Thing-Fong Tzeng, Shorong-Shii Liou and I.-Min Liu

RSC Adv., 2014,**4**, 61427-61436
DOI: 10.1039/C4RA12030B

The histopathological findings in liver of MCDD fed-mice were amerliorated by 6-gingerol treatment.

Two-step synthesis of boron and nitrogen co-doped graphene as a synergistically enhanced catalyst for the oxygen reduction reaction

Jiapo Tai, Jiantong Hu, Zhongxin Chen and Hongbin Lu

RSC Adv., 2014,**4**, 61437-61443
DOI: 10.1039/C4RA10162F

Boron and nitrogen co-doped graphene was synthesized as synergistically enhanced catalyst for oxygen reduction reaction *via* a two-step doping strategy.

Silver incorporated antibacterial, cell compatible and bioactive titania layer on Ti metal for biomedical applications

Archana Rajendran and Deepak K. Pattanayak

RSC Adv., 2014,**4**, 61444-61455
DOI: 10.1039/C4RA13107J

Surface modification of titanium metal incorporated with silver to improve the antibacterial activity, cell compatibility and biological affinity of orthopaedic and dental devices.

Scalable preparation of nitrogen-enriched carbon microspheres for efficient CO_2 capture

Mei Wang, Jitong Wang, Wenming Qiao, Licheng Ling and Donghui Long

RSC Adv., 2014,**4**, 61456-61464
DOI: 10.1039/C4RA11647J

Nitrogen-enriched carbon microspheres with uniform and monodispersed morphology can be synthesized *via* a facile, scalable and environmentally friendly process.

Study of captopril pharmacokinetics in rabbit blood with microdialysis based on online generated Au nanoclusters and pepsin–captopril interaction in luminol chemiluminescence

Kai Luo, Fei Nie, Yumei Yan, Shixiang Wang, Xiaohui Zheng and Zhenghua Song

RSC Adv., 2014,**4**, 61465-61475
DOI: 10.1039/C4RA09064K

A luminol–$HAuCl_4$–pepsin (Pep) flow injection-chemiluminescence system was explored to determine captopril (CAP) based on the CL intensity inhibition effect and applied to study CAP pharmacokinetics in rabbits with microdialysis.

Improved low-temperature activity of La–Sr–Co–O nano-composite for CO oxidation by phase cooperation

Linyun Zhong, Fang Hai, Ping Xiao, Jingping Hong and Junjiang Zhu

RSC Adv., 2014,**4**, 61476-61481
DOI: 10.1039/C4RA10902C

$La_{0.7}$–$Sr_{0.3}$–Co–O nano-composite shows improved catalytic activity to CO oxidation relative to $La_{0.7}Sr_{0.3}CoO_3$ and Co_3O_4, which is suggested to be due to a synergistic effect induced by the phase cooperation.

Immobilised peroxidases from *Asparagus acutifolius* L. seeds for olive mill waste water treatment

Vincenzo Guida, Elisa Niro, Nicola Landi, Angela Chambery, Augusto Parente, Laura Cantarella, Maria Cantarella and Antimo Di Maro

RSC Adv., 2014,**4**, 61482-61490
DOI: 10.1039/C4RA11310A

AaP-1-4 peroxidase from *A. acutifolius* L. was immobilised on Eupergit® CM; Eup-AaP-1-4 was proved to be able to remove (poly)phenols in olive mill waste water; Eup-AaP-1-4 is an economic source for removal phenols from industrial processes.

Macroporous and nanometre scale fibrous PLA and PLA–HA composite scaffolds fabricated by a bio safe strategy

Aurelio Salerno, Mar Fernández-Gutiérrez, Julio San Román del Barrio and Concepción Domingo Pascual

RSC Adv., 2014,**4**, 61491-61502
DOI: 10.1039/C4RA07732F

This study reports a bio-safe process useful to design and fabricate macro-porous nanoscale fibrous scaffolds for tissue engineering.

Alcohol mediated growth of -MnO_2 thin films from $KMnO_4$ precursor for high performance supercapacitors

Nilesh R. Chodankar, Girish S. Gund, Deepak P. Dubal and Chandrakant D. Lokhande

RSC Adv., 2014,**4**, 61503-61513
DOI: 10.1039/C4RA09268F

Ragone plots of power density *versus* energy density and the inset figures show the high magnification SEM images (×100000) of M:MnO_2, E:MnO_2, P:MnO_2, and B:MnO_2 samples.

A new Cu-based system for formic acid dehydrogenation

Nicola Scotti, Rinaldo Psaro, Nicoletta Ravasio and Federica Zaccheria

RSC Adv., 2014,**4**, 61514-61517
DOI: 10.1039/C4RA11031E

The production of H_2 from HCOOH was achieved using simple Cu compounds and different HCOOH/amine adducts.

Flexible cage-like carbon spheres with ordered mesoporous structures prepared *via* a soft-template/hydrothermal process from carboxymethylcellulose

Qiong Wu, Wei Li, Jia Tan and Shouxin Liu

RSC Adv., 2014,**4**, 61518-61524
DOI: 10.1039/C4RA12134A

Carbon microspheres with flexible surface morphology and ordered mesoporous structure can be controllably obtained *via* a soft-template/hydrothermal process.

Investigation of anticorrosive, antibacterial and *in vitro* biological properties of a sulphonated poly(etheretherketone)/strontium, cerium co-substituted hydroxyapatite composite coating developed on surface treated surgical grade stainless steel for orthopedic applications

D. Rajeswari, D. Gopi, S. Ramya and L. Kavitha

RSC Adv., 2014,**4**, 61525-61536
DOI: 10.1039/C4RA12207K

In the present investigation, a S-PEEK/Sr,Ce-HAp composite coating is obtained on high energy low current DC electron beam treated 316L stainless steel.

Two novel ambipolar donor–acceptor type electrochromic polymers with the realization of RGB (red-green-blue) display in one polymer

Hui Zhao, Daidi Tang, Jinsheng Zhao, Min Wang and Jianmin Dou

RSC Adv., 2014,**4**, 61537-61547
DOI: 10.1039/C4RA11628C

Two novel D–A type polymers were synthesized and characterized, which realized the valuable full color display in a single polymer.

Correction: Response of strongly fluorescent carbazole-based benzoxazole derivatives to external force and acidic vapors

Pengchong Xue, Boqi Yao, Panpan Wang, Jiabao Sun, Zhenqi Zhang and Ran Lu

RSC Adv., 2014,**4**, 61548-61548
DOI: 10.1039/C4RA90044H

Correction: Three-dimensional hybridized carbon networks for high performance thermoelectric applications

Xiaojian Tan, Hezhu Shao, Yanwei Wen, Huijun Liu and Guoqiang Liu

RSC Adv., 2014,**4**, 61549-61549
DOI: 10.1039/C4RA90042A

In situ-generated chiral iron complex as efficient catalyst for enantioselective sulfoxidation using aqueous H_2O_2 as oxidant

Prasanta Kumar Bera, Prathibha Kumari, Sayed H. R. Abdi, Noor-ul H. Khan, Rukhsana I. Kureshy, P. S. Subramanian and Hari C. Bajaj

RSC Adv., 2014,**4**, 61550-61556
DOI: 10.1039/C4RA09237F

This study represents the rare combination of non-toxic Fe based catalyst/H_2O_2 as an efficient catalytic protocol for asymmetric sulfoxidation reaction.

Recognition of algae by microcontact-imprinted polymers modulates hydrogenase expression

Mei-Hwa Lee, James L. Thomas, Ming-Yuan Lai and Hung-Yin Lin

RSC Adv., 2014,**4**, 61557-61563
DOI: 10.1039/C4RA11132J

The physico-chemical environment of algal cells is shown to affect algal cell metabolism, and, consequently hydrogen production, which can be used for electricity generation in fuel cells.

Synthesis and characterization of fully biobased aromatic polyols – oxybutylation of condensed tannins towards new macromolecular architectures

Alice Arbenz and Luc Avérous

RSC Adv., 2014,**4**, 61564-61572
DOI: 10.1039/C4RA10691A

New fully biobased macropolyols obtained by oxybutylation of different tannins.

Atom efficient thermal and photocuring combined treatments for the synthesis of novel eco-friendly grid-like zein nanofibres

Qingqing Wang, Avinav G. Nandgaonkar, Jing Cui, Fenglin Huang, Wendy E. Krause, Lucian A. Lucia and Qufu Wei

RSC Adv., 2014,**4**, 61573-61579
DOI: 10.1039/C4RA11792A

We report herein for the first time, a novel crosslinking approach for the synthesis of grid-like zein nanofibres with SbQ (styrylpyridinequaternary) realized by a simple electrospinning process followed by thermal treatment and/or UV illumination.

Glycogen-*graft*-poly(2-alkyl-2-oxazolines) – the new versatile biopolymer-based thermoresponsive macromolecular toolbox

Aneta Pospisilova, Sergey K. Filippov, Anna Bogomolova, Stuart Turner, Ondrej Sedlacek, Nikolai Matushkin, Zulfia Cernochova, Petr Stepanek and Martin Hruby

RSC Adv., 2014,**4**, 61580-61588
DOI: 10.1039/C4RA10315G

Glycogen-*graft*-poly(2-alkyl-2-oxazolines), a new group of nanostructured hybrid polymers connecting the biodegradable dendrimer glycogen with the tuneable thermoresponsive behavior of polyoxazolines, are described.

Expedient synthesis of a pentasaccharide related to the O-specific polysaccharide of *Escherichia coli* O117:K98:H4 strain

Ishani Bhaumik and Anup Kumar Misra

RSC Adv., 2014,**4**, 61589-61595
DOI: 10.1039/C4RA10538A

A convenient synthetic strategy has been developed for the synthesis of a pentasaccharide, related to the O-specific polysaccharide of *Escherichia coli* O117:K98:H4 strain, using sequential glycosylations of functionalized monosaccharide moieties.

Hydrothermal synthesis and pseudo capacitance behavior of a highly homogeneous dispersed graphene sheets/ruthenium oxide nanocomposite

Xian Leng, Jianpeng Zou, Xiang Xiong and Hanwei He

RSC Adv., 2014,**4**, 61596-61603
DOI: 10.1039/C4RA10321A

In situ grown RuO_2 helps to get monolayer-graphene and graphene/RuO_2 exhibits desirable electrochemical performance.

Facile synthesis of three-dimensional porous carbon with high surface area by calcining metal–organic framework for lithium-ion batteries anode materials

Li Zuo, Shouhui Chen, Jiafeng Wu, Li Wang, Haoqing Hou and Yonghai Song

RSC Adv., 2014,**4**, 61604-61610
DOI: 10.1039/C4RA10575C

3D porous carbon derived by the MOFs with an excellent performance of 1015 mA h g^{1} after 100 cycles for LIBs.

Reversal of the enantioselectivity in aldol addition over immobilized di- and tripeptides: studies under continuous flow conditions

András Gurka, Imre Bucsi, Lenke Kovács, György Szllsi and Mihály Bartók

RSC Adv., 2014,**4**, 61611-61618
DOI: 10.1039/C4RA07188C

The reversal of the enantioselectivity in the heterogeneous asymmetric direct aldol reactions obtained over resin supported di- *versus* tripeptides was studied in a continuous-flow system.

Highly selective aluminium-catalysed intramolecular Prins reaction for L-menthol synthesis

H. Itoh, H. Maeda, S. Yamada, Y. Hori, T. Mino and Masami Sakamoto

RSC Adv., 2014,**4**, 61619-61623
DOI: 10.1039/C4RA12470G

The perfect production of L-menthol.

Classification study of solvation free energies of organic molecules using machine learning techniques

N. S. Hari Narayana Moorthy, Silvia A. Martins, Sergio F. Sousa, Maria J. Ramos and Pedro A. Fernandes

RSC Adv., 2014,**4**, 61624-61630
DOI: 10.1039/C4RA07961B

Classification models to predict the solvation free energies of organic molecules were developed using decision tree, random forest and support vector machine approaches and with MACCS fingerprints, MOE and PaDEL descriptors.

A multiple-assembly/one-pot-crystallization strategy for a relatively more eco-friendly synthesis of hydrothermally stable mesoporous aluminosilicates

Li Cao, Qingxun Hu, Junsu Jin, Chunyan Xu, Xionghou Gao, Honghai Liu, Ling Lan, Xiaoliang Yuan and Hongtao Liu

RSC Adv., 2014,**4**, 61631-61633
DOI: 10.1039/C4RA10408K

Hydrothermally stable mesoporous aluminosilicates were synthesized by multiple-assembly and a one-pot crystallization strategy with significantly decreased surfactant and water amounts.

Reaction induced phase separation in thermosetting/thermosetting blends: effects of imidazole content on the phase separation of benzoxazine/epoxy blends

Pei Zhao, Qian Zhou, Yu Yuan Deng, Rong Qi Zhu and Yi Gu

RSC Adv., 2014,**4**, 61634-61642
DOI: 10.1039/C4RA10484F

Multiphase structure were prepared *in situ* in traditional homogeneous benzoxazine/epoxy blending systems by reaction induced phase separation method.

Effect of hydration on the stability and tautomerisms of different isomers of uracil

Younes Valadbeigi and Hossein Farrokhpour

RSC Adv., 2014,**4**, 61643-61651
DOI: 10.1039/C4RA09733E

Uracil isomers can be hydrated when in contact with water molecules, which affects the stability and tautomerism of the uracil isomers.

The selective conversion of D-limonene to *p*,-dimethylstyrene

S. A. Sanchez-Vazquez, T. D. Sheppard, J. R. G. Evans and H. C. Hailes

RSC Adv., 2014,**4**, 61652-61655
DOI: 10.1039/C4RA11558A

The conversion of D-limonene selectively to *p*,-dimethylstyrene (DMS) only has been achieved *via* a palladium acetate-catalysed dehydrogenation.

Dendritic polyglycerol cyclodextrin amphiphiles and their self-assembled architectures to transport hydrophobic guest molecules

Ana Campo Rodrigo‡, Shashwat Malhotra‡, Christoph Böttcher, Mohsen Adeli and Rainer Haag

RSC Adv., 2014,**4**, 61656-61659
DOI: 10.1039/C4RA11601A

Microwave-assisted synthesis of cyclodextrin–polyglycerol based amphiphilic dendrimers and their self-assembly to form well-defined nanostructures in aqueous solutions are reported here.

Sonochemically synthesized ferromagnetic Fe_3O_4 nanoparticles as a recyclable catalyst for the preparation of pyrrolo[3,4-*c*]quinoline-1,3-dione derivatives

Nagaraj Basavegowda, Kanchan Mishra and Yong Rok Lee

RSC Adv., 2014,**4**, 61660-61666
DOI: 10.1039/C4RA11623B

Ferromagnetic Fe_3O_4 (magnetite) nanoparticles were synthesized from *Perilla frutescens* leaf extract and used as a recyclable catalyst for the preparation of pyrrolo[3,4-*c*]quinoline-1,3-dione derivatives.

Label-free fluorescence turn-on sensing for melamine based on fluorescence resonance energy transfer between CdTe/CdS quantum dots and gold nanoparticles

Jingjin Zhao, Hong Wu, Jing Jiang and Shulin Zhao

RSC Adv., 2014,**4**, 61667-61672
DOI: 10.1039/C4RA08776C

A label-free fluorescence turn-on sensing system based on fluorescence resonance energy transfer (FRET) between CdTe/CdS quantum dots and gold nanoparticles (AuNPs) has been developed for highly sensitive and selective detection of melamine.

A novel type of one-dimensional organic selenium-containing fiber with superior performance for lithium–selenium and sodium–selenium batteries

Hongqiang Wang, Sha Li, Zhixin Chen, Hua Kun Liu and Zaiping Guo

RSC Adv., 2014,**4**, 61673-61678
DOI: 10.1039/C4RA10967H

A novel type of fibrous organic selenium composite is synthesized. The excellent mechanical stability and unique chemical structure make the selenium composite exhibit superior electrochemical performance in both Li-ion and Na-ion batteries.

Upconversion assisted BiOI/$ZnWO_4$:Er^{3+}, Tm^{3+}, Yb^{3+} heterostructures with enhanced visible and near-infrared photocatalytic activities

Shouqiang Huang, Yingming Feng, Lihua Han, Weiliu Fan, Xian Zhao, Ziyang Lou, Zhibin Qi, Bao Yu and Nanwen Zhu

RSC Adv., 2014,**4**, 61679-61686
DOI: 10.1039/C4RA10170G

An efficient semiconductor upconversion agent of $ZnWO_4$:Er^{3+}, Tm^{3+}, Yb^{3+} (ZWOETY) was applied to synthesize the BiOI/ZWOETY composite with p–n heterostructure.

Is it ATRP or SET-LRP? part I: Cu^{0}&Cu^{II}/PMDETA – mediated reversible – deactivation radical polymerization

Yongsheng Gao, Tianyu Zhao and Wenxin Wang

RSC Adv., 2014,**4**, 61687-61690
DOI: 10.1039/C4RA11477A

The mechanism of Cu^{0}&Cu^{II}/PMDETA catalyzed polymerization is attributed to the competition and equilibrium of the traditional ATRP and SET-LRP models.

Excellent gas sensing and optical properties of single-crystalline cadmium sulfide nanowires

Linghui Zhu, Caihui Feng, Feng Li, Dezhong Zhang, Chao Li, Ying Wang, Ying Lin, Shengping Ruan and Zhanguo Chen

RSC Adv., 2014,**4**, 61691-61697
DOI: 10.1039/C4RA11010B

The single-crystalline CdS NWs shown ultrafast response and recovery speed to ethanol gas. They also demonstrated the fastest decay speed to visible-light in the reported detectors based on randomly oriented CdS NW networks.

Water-soluble non-polymeric electrospun cyclodextrin nanofiber template for the synthesis of metal oxide tubes by atomic layer deposition

Asli Celebioglu, Sesha Vempati, Cagla Ozgit-Akgun, Necmi Biyikli and Tamer Uyar

RSC Adv., 2014,**4**, 61698-61705
DOI: 10.1039/C4RA12073F

We report on the suitability of water-soluble non-polymeric electrospun cyclodextrin (CD) nanofiber templates by using atomic layer deposition (ALD) to yield metal oxide tubes.

Cu-catalyzed intramolecular hydroarylation of alkynes

Yun-Long Wang, Wen-Man Zhang, Jian-Jun Dai, Yi-Si Feng and Hua-Jian Xu

RSC Adv., 2014,**4**, 61706-61710
DOI: 10.1039/C4RA12258E

Both of electron-rich and electron-deficient groups are well tolerated for the developed Cu-catalyzed intramolecular hydroarylation.

Visual detection of methanol in alcoholic beverages using alcohol-responsive poly(*N*-isopropylacrylamide-*co*-*N*,*N*-dimethylacrylamide) copolymers as indicators

Xiao-Yi Zou, Rui Xie, Xiao-Jie Ju, Wei Wang, Zhuang Liu, Xiao-Ying Li and Liang-Yin Chu

RSC Adv., 2014,**4**, 61711-61721
DOI: 10.1039/C4RA10996A

A simple and visual method for quantitative detection of methanol in alcoholic beverages is developed by using alcohol-responsive copolymers as indicators.

Suzuki–Miyaura coupling of phosphinoyl--allenic alcohols with arylboronic acids catalyzed by a palladium complex “on water”: an efficient method to generate phosphinoyl 1,3-butadienes and derivatives

Teng Liu, Jie Dong, Shu-Jun Cao, Li-Cheng Guo and Lei Wu

RSC Adv., 2014,**4**, 61722-61726
DOI: 10.1039/C4RA12251H

We report here the first palladium-catalyzed Suzuki–Miyaura couplings of phosphinoyl--allenic alcohols with arylboronic acids “on water” without phase-transfer catalysts or additives.

Photoluminescent, self-cleaning titanium oxide nanocomposites with multifunctional properties

Venu Sreekala Smitha, Saju Pillai, Unnikrishnan Nair Saraswathy Hareesh, Balagopal N. Nair and Krishna Gopakumar Warrier

RSC Adv., 2014,**4**, 61727-61735
DOI: 10.1039/C4RA08910C

Novel multifunctional luminescent and self-cleaning nanocomposites and coatings of Eu doped TiO_2–SiO_2–$LaPO_4$ (Eu-TSL) were synthesized from an aqueous sol–gel process which possess photoactivity, low wettability and photoluminescent properties.

Integration of a plasmonic semiconductor with a metal–organic framework: a case of Ag/AgCl@ZIF-8 with enhanced visible light photocatalytic activity

Shu-Tao Gao, Wei-Hua Liu, Ning-Zhao Shang, Cheng Feng, Qiu-Hua Wu, Zhi Wang and Chun Wang

RSC Adv., 2014,**4**, 61736-61742
DOI: 10.1039/C4RA11364K

A novel plasmonic photocatalyst, Ag/AgCl@ZIF-8, was fabricated for the first time. The unique structure of Ag/AgCl@ZIF-8 greatly enhanced its photocatalytic activity towards the degradation of organic pollutants under solar irradiation.

Synthesis of nanostructured chitin–hematite composites under extreme biomimetic conditions

Marcin Wysokowski, Mykhailo Motylenko, Juliane Walter, Grzegorz Lota, Jarosaw Wojciechowski, Hartmut Stöcker, Roberta Galli, Allison L. Stelling, Cameliu Himcinschi, Elke Niederschlag, Enrico Langer, Vasilii V. Bazhenov, Tomasz Szatkowski, Jakub Zdarta, Iaroslav Pertenko, Zoran Kljaji, Tilmann Leisegang, Serguei L. Molodtsov, Dirk C. Meyer, Teofil Jesionowski and Hermann Ehrlich

RSC Adv., 2014,**4**, 61743-61752
DOI: 10.1039/C4RA10017D

Chitinous scaffolds isolated from the skeleton of marine sponge *Aplysina aerophoba* can be used as a template for the *in vitro* formation of hematite (Fe_2O_3) under conditions (pH 1.5, 90 °C), which are extreme for biological materials.

3D nitrogen-doped graphene/$Co(OH)_2$-nanoplate composites for high-performance electrochemical pseudocapacitors

Hao Xie, Shaochun Tang, Zilun Gong, Sascha Vongehr, Fei Fang, Min Li and Xiangkang Meng

RSC Adv., 2014,**4**, 61753-61758
DOI: 10.1039/C4RA10333E

Nanocomposites constructed by 3D nitrogen-doped graphene (NG) networks with hexagonal $Co(OH)_2$ nanoplates have been hydrothermally prepared. They exhibit a better pseudocapacitive performance than reported $Co(OH)_2$ and 2D G/$Co(OH)_2$ composites.

An electrogenerated chemiluminescent biosensor based on a g-C_3N_4–hemin nanocomposite and hollow gold nanoparticles for the detection of lactate

Hongmei Chen, Xingrong Tan, Juanjuan Zhang, Qiyi Lu, Xin Ou, Yuan Ruo and Shihong Chen

RSC Adv., 2014,**4**, 61759-61766
DOI: 10.1039/C4RA09616A

In this article, a new electrochemiluminescent (ECL) biosensor based on a g-C_3N_4–hemin nanocomposite and hollow gold nanoparticles (HGNPs) was constructed to detect lactate.

A continuous flow microfluidic-MS system for efficient OBOC screening

Weizhi Wang, Zewen Wei, Zihua Wang, Huailei Ma, Xiangli Bu and Zhiyuan Hu

RSC Adv., 2014,**4**, 61767-61770
DOI: 10.1039/C4RA12911C

A microfluidic chip based method utilized for effective screening of high-throughput peptide libraries was achieved. 10^5 beads was processed within 4 hours and peptide ligands towardtarget protein AHA and APN were successfully discovered.

Nanosized Pt-containing Al_2O_3 as an efficient catalyst to avoid coking and sintering in steam reforming of glycerol

Davi C. Carvalho, Helvio S. A. Souza, Josué M. Filho, Elisbete M. Assaf, Vivian V. Thyssen, Adriana Campos, E. Padron Hernandez, Ramon Raudel and Alcineia C. Oliveira

RSC Adv., 2014,**4**, 61771-61780
DOI: 10.1039/C4RA09895A

The action of nanosized Pt-containing Al_2O_3 catalysts to avoid coking and sintering was studied in steam reforming of glycerol.

Improvement of proton conductivity in nanocomposite polyvinyl alcohol (PVA)/chitosan (CS) blend membranes

P. Bahavan Palani, K. Sainul Abidin, R. Kannan, M. Sivakumar, Fu-Ming Wang, S. Rajashabala and G. Velraj

RSC Adv., 2014,**4**, 61781-61789
DOI: 10.1039/C4RA10788H

The composite membranes are prepared with poly(vinyl alcohol) (PVA), chitosan (CS) and montmorillonite (MMT) using a solution casting technique.

Synthesis of two copper clusters and their catalysis towards the oxidation of benzene into phenol

XiuLi You, ZhenHong Wei, HaiLong Wang, DongPing Li, Jian Liu, BeiBei Xu and Xiaoming Liu

RSC Adv., 2014,**4**, 61790-61798
DOI: 10.1039/C4RA12832J

Two Cu(II) clusters derived from reacting two multidentate ligands with $Cu(ClO_4)_2$ catalyze the oxidation of benzene into phenol by H_2O_2.

Investigation into the reactivity of 16-electron complexes $Cp^{\#}Co(S_2C_2B_{10}H_{10})$ ($Cp^{\#}$ = Cp, Cp*) towards methyl diazoacetate and toluenesulphonyl azide

Wei Zhong, Mingshi Xie, Yizhi Li and Hong Yan

RSC Adv., 2014,**4**, 61799-61808
DOI: 10.1039/C4RA13017K

A three-component reaction of the 16-electron half-sandwich complex $Cp^*Co(S_2C_2B_{10}H_{10})$ (**2**) with both methyl diazoacetate (**MDA**) and toluenesulphonyl azide (TsN_3) led to the formation of complexes **3** and **4**, while a two-component reaction of complex **2** with **MDA** afforded products **5–7**.

Polymer composite random lasers based on diatom frustules as scatterers

Francesca Romana Lamastra, Roberta De Angelis, Alessandra Antonucci, Damiano Salvatori, Paolo Prosposito, Mauro Casalboni, Roberta Congestri, Sonia Melino and Francesca Nanni

RSC Adv., 2014,**4**, 61809-61816
DOI: 10.1039/C4RA12519C

Diatom frustules exhibiting unique micro- and nano-porous architectures (a) were used for the first time as scatterers in random lasers. An incoherent random lasing effect was observed (b).

Equilibrium and kinetic studies of Se(VI) removal by Mg–Al layered double hydroxide doped with Fe^{2+}

Tomohito Kameda, Eisuke Kondo and Toshiaki Yoshioka

RSC Adv., 2014,**4**, 61817-61822
DOI: 10.1039/C4RA11645C

Schematic diagram for Se(VI) removal by the Fe^{2+}-doped Mg–Al layered double hydroxide.

Self-assembly of Au nanoparticles on graphene sheets as a catalyst with controlled grafting density and high reusability

Haiqing Yao, Tsao-Cheng Huang and Hung-Jue Sue

RSC Adv., 2014,**4**, 61823-61830
DOI: 10.1039/C4RA11231H

Novel catalysts based on self-assembly of Au NPs on graphene oxide sheets through silane functionalization were reported.

Direct electrochemistry of laccase and a hydroquinone biosensing application employing ZnO loaded carbon nanofibers

Dawei Li, Jie Yang, Jianbo Zhou, Qufu Wei and Fenglin Huang

RSC Adv., 2014,**4**, 61831-61840
DOI: 10.1039/C4RA11469H

A novel laccase-based biosensor employing ZnO loaded carbon nanofibers showed highly efficient electrocatalysis toward hydroquinone with a low detection limit and high sensitivity.

Urea based organic nanoparticles for selective determination of NADH

Jasminder Singh, Amanpreet Singh and Narinder Singh

RSC Adv., 2014,**4**, 61841-61846
DOI: 10.1039/C4RA10209F

Dipodal receptor **1** was synthesized using a single step procedure.

Shape memory polymer nanocomposite with multi-stimuli response and two-way reversible shape memory behavior

Wenbing Li, Yanju Liu and Jinsong Leng

RSC Adv., 2014,**4**, 61847-61854
DOI: 10.1039/C4RA10716K

The nanocomposite exhibited excellent shape memory performance with a multistage recovery triggered by multi stimuli. Furthermore, the nanocomposite showed two-way reversible shape memory effect.

A lithium ion battery exploiting a composite Fe_2O_3 anode and a high voltage $Li_{1.35}Ni_{0.48}Fe_{0.1}Mn_{1.72}O_4$ cathode

Roberta Verrelli, Rosaria Brescia, Alice Scarpellini, Liberato Manna, Bruno Scrosati and Josef Hassoun

RSC Adv., 2014,**4**, 61855-61862
DOI: 10.1039/C4RA12598C

The combination of a composite Fe_2O_3 anode and a high voltage $Li_{1.35}Ni_{0.48}Fe_{0.1}Mn_{1.72}O_4$ cathode leads to a new high performance lithium-ion battery.

Radical initiator modified cerium oxide nanoparticles for polymer encapsulation *via* grafting from the surface

Eric Johansson Salazar-Sandoval, Miren Aguirre, María Paulis, José R. Leiza, Mats Johansson and Anwar Ahniyaz

RSC Adv., 2014,**4**, 61863-61868
DOI: 10.1039/C4RA09044F

The present paper describes a versatile route to modify and stabilize ceria nanoparticles with a radical initiator, 4,4-azobis(4-cyanovaleric acid) (ACVA), allowing a strong interface to be formed *via* grafting of polymers from the surface.

Simple and facile synthesis of water-soluble poly(phosphazenium) polymer electrolytes

Christopher G. Arges, Lihui Wang and Vijay Ramani

RSC Adv., 2014,**4**, 61869-61876
DOI: 10.1039/C4RA13101K

The synthesis and alkaline stability of a new class of water-soluble polymer electrolyte, poly(phosphazenium), is reported.

A template induced method to synthesize nanoporous graphitic carbon nitride with enhanced photocatalytic activity under visible light

Qianjing Fan, Jianjun Liu, Yingchun Yu and Shengli Zuo

RSC Adv., 2014,**4**, 61877-61883
DOI: 10.1039/C4RA12033G

Nanoporous graphitic carbon nitride with network structures, synthesized by a template induced method, exhibits enhanced photocatalytic activity for the photodegradation of Rhodamine B dye under visible light.

A rationally designed molecule for removal of cyanide from human blood serum and cytochrome c oxidase

Sukhmeet Kaur, Amrinder Singh, Venus Singh Mithu and Palwinder Singh

RSC Adv., 2014,**4**, 61884-61890
DOI: 10.1039/C4RA09658D

Compound **3** having three dimethoxyphenolic units exhibited excellent selectivity and competitive binding with CN.

Synthesis of Er^{3+}/Yb^{3+} codoped $NaMnF_3$ nanocubes with single-band red upconversion luminescence

Zhenhua Bai, Hui Lin, Kenji Imakita, Reza Montazami, Minoru Fujii and Nastaran Hashemi

RSC Adv., 2014,**4**, 61891-61897
DOI: 10.1039/C4RA10723C

A facile synthetic method has been developed for fabrication of Er^{3+}/Yb^{3+} codoped $NaMnF_3$ nanocubes, which show pure red emission.

Plasmonic heating with near infrared resonance nanodot arrays for multiplexing optofluidic applications

A. Steinbrück, J.-W. Choi, S. Fasold, C. Menzel, A. Sergeyev, T. Pertsch and R. Grange

RSC Adv., 2014,**4**, 61898-61906
DOI: 10.1039/C4RA13312A

In this work, we show local laser-induced heating in fluids with gold nanodot arrays prepared by electron-beam lithography that cover resonances in the near infrared spectral range from 750 nm to 880 nm.

Mild, green copper/4-dimethylaminopyridine catalysed aerobic oxidation of alcohols mediated by nitroxyl radicals in water

Guoqi Zhang, Chengxiong Yang, E Liu, Li Li, James A. Golen and Arnold L. Rheingold

RSC Adv., 2014,**4**, 61907-61911
DOI: 10.1039/C4RA13929A

The combination of copper salts with 4-dimethylaminopyridine was found to catalyse the aerobic oxidations of a range of primary and secondary alcohols in high yields in the presence of TEMPO or ABNO radicals in water at room temperature.

CeO_2 decorated graphite felt as a high-performance electrode for vanadium redox flow batteries

Haipeng Zhou, Jingyu Xi, Zhaohua Li, Zhengyang Zhang, Lihong Yu, Le Liu, Xinping Qiu and Liquan Chen

RSC Adv., 2014,**4**, 61912-61918
DOI: 10.1039/C4RA12339E

CeO_2 decorated graphite felt electrode shows outstanding electrochemical activity and cycle stability towards vanadium redox flow battery application.

The efficient enrichment of U(VI) by graphene oxide-supported chitosan

Wencai Cheng, Maolin Wang, Zhiguo Yang, Yubing Sun and Congcong Ding

RSC Adv., 2014,**4**, 61919-61926
DOI: 10.1039/C4RA09541C

Schematic diagram of GO-Ch synthesis and U(VI) adsorption.

Thiol–ene adhesives from clove oil derivatives

Brian R. Donovan, Jared S. Cobb, Ethan F. T. Hoff and Derek L. Patton

RSC Adv., 2014,**4**, 61927-61935
DOI: 10.1039/C4RA12020E

This paper reports the synthesis of catechol-functionalized thiol–ene networks as photocurable adhesives, where adhesive interactions are derived from 4-allylpyrocatechol – an alkene readily obtained from *Syzygium aromaticum* flower buds (clove oil).

Polymeric ionic liquid modified reduced graphene oxide as adsorbent for highly selective isolation of acidic protein

Jia-Wei Liu, Meng-Meng Wang, Yue Zhang, Lu Han, Xu-Wei Chen and Jian-Hua Wang

RSC Adv., 2014,**4**, 61936-61943
DOI: 10.1039/C4RA09808K

A novel adsorbent is achieved by modifying reduced graphene oxide with polymeric ionic liquid and further assembly on SiO_2 nanoparticles. This nano-hybrid exhibits selective adsorption of ovalbumin with an ultra-high sorption capacity.

A fluorescence turn-on probe for selective detection of nitrogen dioxide

Biplab Mondal and Vikash Kumar

RSC Adv., 2014,**4**, 61944-61947
DOI: 10.1039/C4RA10426A

The quenched fluorescence intensity of the ligands in Cu(II) complexes of two ligands, **L1** and **L2** [**L1** = 2-{[anthracen-9-ylmethyl-(2-dimethylamino-ethyl)-amino]-methyl}-4,6-di-*tert*-butyl-phenol; **L2** = 5-dimethylamino-naphthalene-1-sulfonic acid (3,5-di-*tert*-butyl-2-hydroxy-benzyl)-(2-dimethylamino-ethyl)-amide was found to be restored upon addition of NO_2.

Delivering curcumin and gemcitabine in one nanoparticle platform for colon cancer therapy

Manhong Tan, Jia Luo and Ying Tian

RSC Adv., 2014,**4**, 61948-61959
DOI: 10.1039/C4RA10431E

As gemcitabine and curcumin have different targets in colon cancer cells, combination of them may bring benefits.

Preparation of layered titanate with interlayer cadmium sulfide particles for visible-light-assisted dye degradation

Zhigang Xiong and X. S. Zhao

RSC Adv., 2014,**4**, 61960-61967
DOI: 10.1039/C4RA09692D

Layered titanate with interlayer cadmium sulfide was prepared and used for the degradation of dye pollutant under visible light irradiation.

Frequency response of giant electrorheological fluids in AC electric field

Rong Shen, Rui Liu, De Wang, Ke Chen, Gang Sun and Kunquan Lu

RSC Adv., 2014,**4**, 61968-61974
DOI: 10.1039/C4RA11238E

The response of CTO based polar molecule dominated electrorheological (PM-ER) fluids shows the amplitude of shear stress for PM-ER fluid decreases with increasing field frequency due to response decay.

The chemistry and biological activities of natural products from Northern African plant families: from Aloaceae to Cupressaceae

Fidele Ntie-Kang and Joseph N. Yong

RSC Adv., 2014,**4**, 61975-61991
DOI: 10.1039/C4RA11467A

Traditional medicinal practices play a key role in health care systems in countries with developing economies.

Proton dissociation and transfer in a phosphoric acid doped imidazole system

Jittima Thisuwan and Kritsana Sagarik

RSC Adv., 2014,**4**, 61992-62008
DOI: 10.1039/C4RA08198F

Fluctuations of local-dielectric environment and H-bond chain lengths lead to intermediate complexes and proton transfer along the Im H-bond chains.