

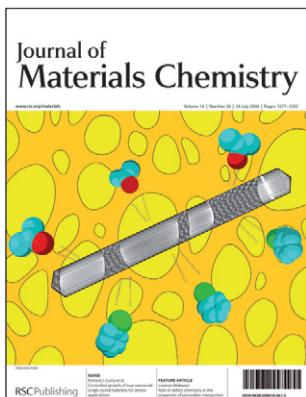
Journal of Materials Chemistry

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ISSN 0959-9428 CODEN JMACEP 18(28) 3277–3392 (2008)



Cover

See L. C. Chong *et al.*, pp. 3319–3324.
Interpretation of fullerite rods on a copper TEM grid with solvent interaction. Design and artwork: David R. Lowndes and Lok Cee Chong. Lattice structure: James Cannon. Image reproduced by permission of Richard J. Curry from *J. Mater. Chem.*, 2008, **18**, 3319.



Inside cover

See H. Qi and T. Hegmann, pp. 3288–3294.
Nanoparticles or carbon nanotubes suspended in liquid crystals may revolutionize liquid crystal displays or at least improve their performance. Image reproduced by permission of Torsten Hegmann from *J. Mater. Chem.*, 2008, **18**, 3288.

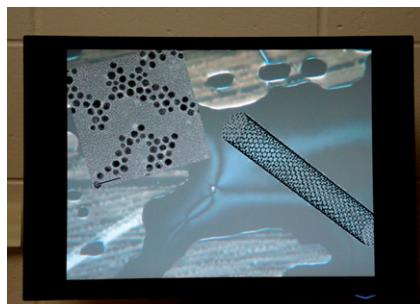
HIGHLIGHT

3288

Impact of nanoscale particles and carbon nanotubes on current and future generations of liquid crystal displays

Hao Qi and Torsten Hegmann*

Current research on nanoparticles and carbon nanotubes suspended in liquid crystals demonstrates the potential of nanomaterials to improve upon current and future LC display technologies.



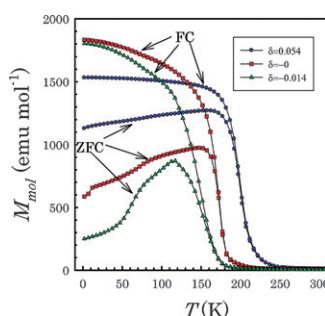
FEATURE ARTICLE

3295

Role of defect chemistry in the properties of perovskite manganites

Lorenzo Malavasi*

This Feature Article reviews the topic of defect chemistry in CMR manganites and the effects of point defects on their structural, transport and magnetic properties. It also provides insights into the way of controlling and tuning the point defects in order to optimize the functional properties of these fascinating materials.



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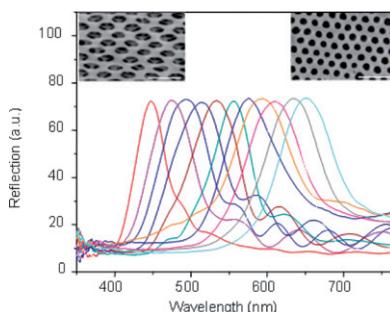
COMMUNICATIONS

3309

Stretched photonic suspension array for label-free high-throughput assay

Zhaobin Liu, Zhuoying Xie, Xiangwei Zhao and Zhong-Ze Gu*

A stretched inverse opal film with an interpenetrating porous structure is proposed to construct a suspension array for label-free high-throughput bioassay with a wide detection range.

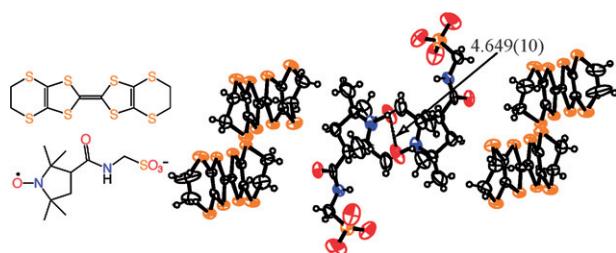


3313

The first organic paramagnetic metal containing the aminoxy radical

Hiroki Akutsu,* Keiko Sato, Shinji Yamashita, Jun-ichi Yamada, Shin'ichi Nakatsuji and Scott S. Turner

The purely organic molecule-based paramagnet β'' -(BEDT-TTF)₂(PROXYL-4-COHCH₂SO₃) shows metallic behaviour down to 210 K, after which it shows a broad metal–insulator (MI) transition.

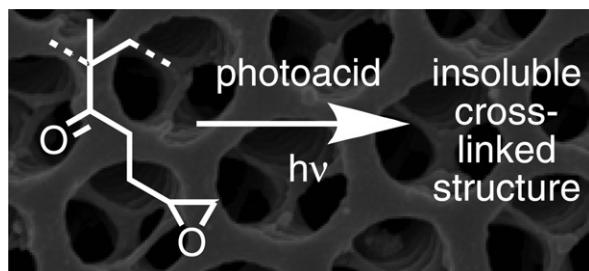


3316

Poly(glycidyl methacrylate)s with controlled molecular weights as low-shrinkage resins for 3D multibeam interference lithography

Ali Hayek, Yongan Xu, Takashi Okada, Stephen Barlow, Xuelian Zhu, Jun Hyuk Moon, Seth R. Marder* and Shu Yang*

Poly(glycidyl methacrylate) exhibits considerably less shrinkage on photoacid-induced cross-linking than the widely used photoresist SU8.



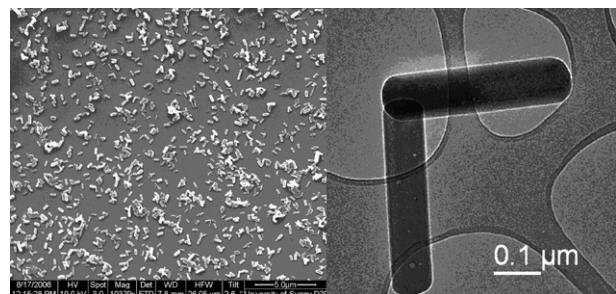
PAPERS

3319

Controlled growth of true nanoscale single crystal fullerites for device applications

Lok Cee Chong, Jeremy Sloan, Gabriele Wagner, S. Ravi P. Silva and Richard J. Curry*

A detailed study demonstrating the growth of truly nanoscale C₆₀ fullerites with diameters of ~80 nm is reported thus improving the potential for their future use in enhanced optoelectronic devices.

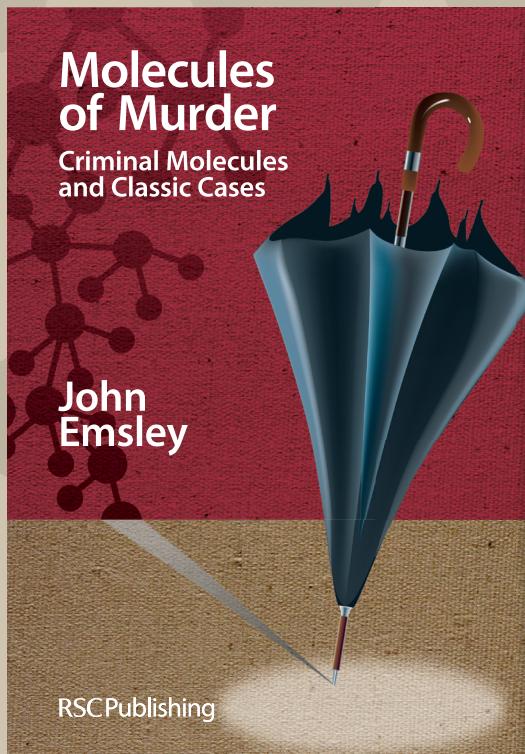


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John Emsley

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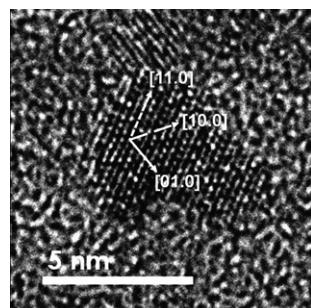
PAPERS

3325

 **Preparation of ZnO colloids by pyrolysis of [MeZnO'Pr]4 in the presence of hexadecylamine and probing the surface chemistry of the nanoparticles by CO/CO2 adsorption studies followed by FTIR**

Todor Hikov, Andre Rittermeier, Maik-Borris Luedemann, Christian Herrmann, Martin Muhler and Roland A. Fischer*

Preparation and characterization of 3.5 nm ZnO nanoparticles and their evaluation as models for methanol active catalyst support followed by *in situ* FTIR studies.

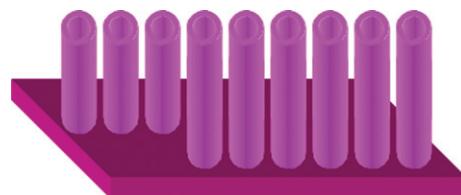


3332

Synthesis of ordered arrays of discrete, partially crystalline titania nanotubes by Ti anodization using diethylene glycol electrolytes

Sorachon Yoriya, Gopal K. Mor, Sanjeev Sharma and Craig A. Grimes*

Described is the fabrication of self-organized titania nanotube arrays comprised of fully separated, discrete nanotubes by Ti anodization in diethylene glycol electrolytes containing either HF or NH₄F.

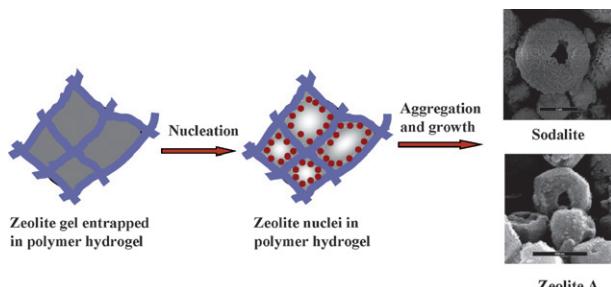


3337

Hollow zeolite structures formed by crystallization in crosslinked polyacrylamide hydrogels

Li Han, Jianfeng Yao, Dan Li, Jenny Ho, Xinyi Zhang, Chun-Hua (Charlie) Kong, Zhi-Min Zong, Xian-Yong Wei* and Huanting Wang*

Hollow sodalite spheres and hollow zeolite A crystals were prepared by *in situ* crystallization in crosslinked polyacrylamide hydrogels.

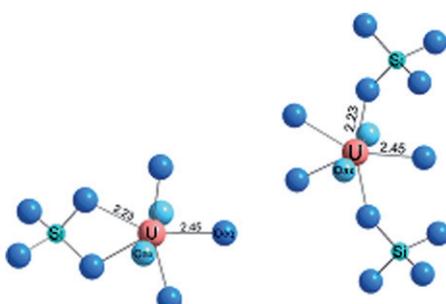


3342

Improvement of retention capacity of ETS-10 for uranyl ions by porosity modification and their immobilization into a titanosilicate matrix

Claudiu C. Pavel, Marcus Walter and Karin Popa*

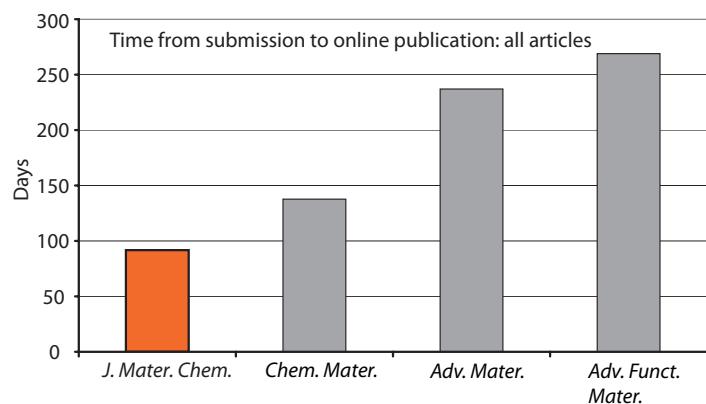
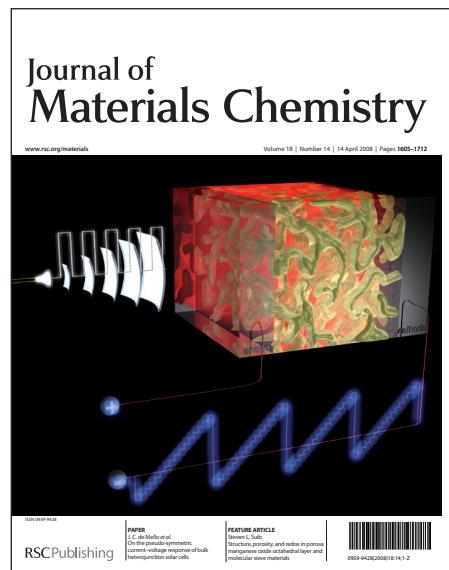
The retention capacity of ETS-10 titanosilicate for uranyl ions was improved by generation of additional intra-crystalline porosity. The uranium-loaded ETS-10 transforms by calcinations into a inert matrix that encapsulates uranium.



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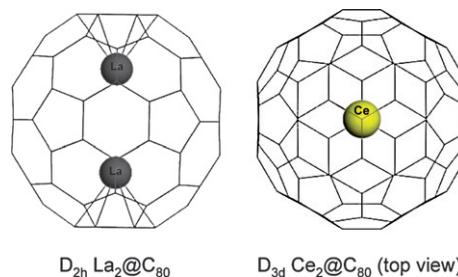
PAPERS

3347

Explanation of the different preferential binding sites for Ce and La in $M_2@C_{80}$ ($M = Ce, La$)—a density functional theory prediction

K. Muthukumar* and J. A. Larsson

In $Ce_2@C_{80}$ the Ce atoms attain an unusual cage wall binding site to avoid $Ce(f)\cdots Ce(f)$ binding in favor of strong Ce–C bonds, leading to a D_{3d} symmetric ground state structure.

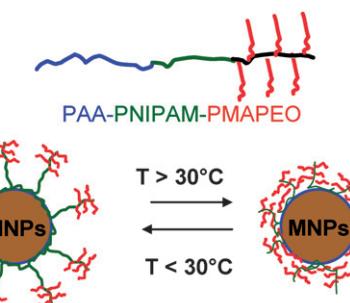


3352

Magnetic nanoparticles coated by temperature responsive copolymers for hyperthermia

A. Aqil, S. Vasseur, E. Duguet, C. Passirani, J. P. Benoît, R. Jérôme and C. Jérôme*

Magnetic iron oxide nanoparticles coated with thermoresponsive *N*-isopropylacrylamide-based copolymers are stable in suspensions whatever the temperature. The suspensions exhibit local heating upon magnetic field excitation and are therefore promising for hyperthermia.

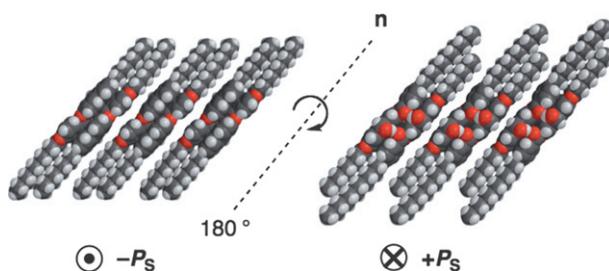


3361

The influence of alkoxy chain length on the ferroelectric properties of chiral fluorene liquid crystals

Jeffrey C. Roberts, Zachary M. Hudson and Robert P. Lemieux*

A series of isomeric chiral fluorene mesogens are designed to test a model for the origin of polar order in the chiral SmC* phase based on the rotational order of antiparallel hydrogen-bonded dimers.

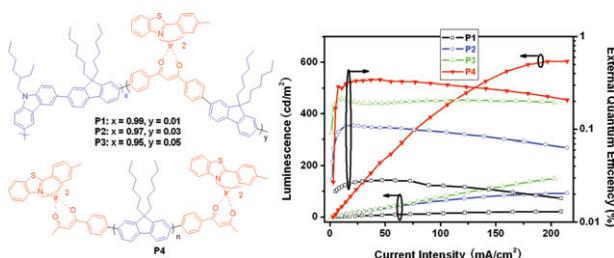


3366

Iridium complexes embedded into and end-capped onto phosphorescent polymers: optimizing PLED performance and structure–property relationships

Kai Zhang, Zhao Chen, Chuluo Yang,* Yang Zou, Shaolong Gong, Youtian Tao, Jingui Qin* and Yong Cao

A novel polyfluorene end-capped by a 2-*p*-tolyl-benzothiazole-iridium complex shows improved device performance in comparison with a series of partially conjugated copolymers with similar iridium complexes embedded on the polyfluorene-*alt*-carbazole backbone.



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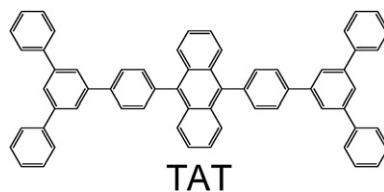
PAPERS

3376

**Exceedingly efficient deep-blue electroluminescence from new anthracenes obtained using rational molecular design**

Soo-Kang Kim, Bing Yang, Yuguang Ma, Ji-Hoon Lee and Jong-Wook Park*

A new deep blue-light emitter with bulky side groups exhibits *ca.* 40% higher PL fluorescence QE and >30°C higher T_g than 2-methyl-9,10-di(2'-naphthyl)anthracene, excellent color coordinates (0.156, 0.088), and an external quantum efficiency of 7.18%, the best reported results for blue OLED emitters.



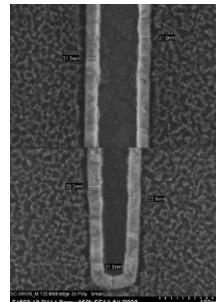
TAT

3385

Advanced cyclopentadienyl precursors for atomic layer deposition of ZrO_2 thin films

Jaakko Niinistö,* Kaupo Kukli, Aile Tamm, Matti Putkonen, Charles L. Dezelah, IV, Lauri Niinistö, Jun Lu, Fuquan Song, Paul Williams, Peter N. Heys, Mikko Ritala and Markku Leskelä

Cyclopentadienyl-type compounds of Zr were applied to produce high-quality ZrO_2 thin films by atomic layer deposition at high temperatures.



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