Journal of Materials Chemistry

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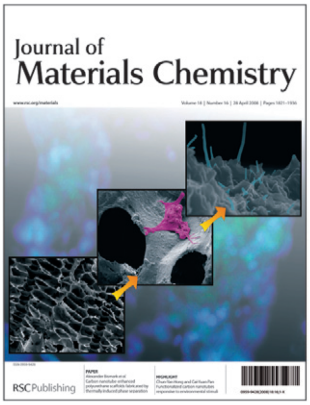
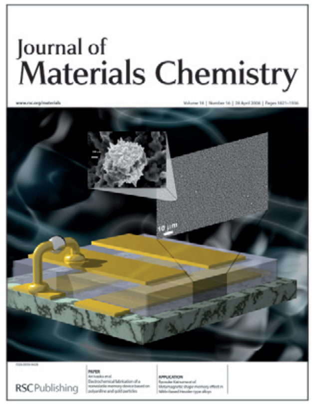
ISSN 0959-9428 CODEN JMACEP 18(16) 1821–1936 (2008)



Cover

See G. Jell *et al.*, pp. 1865–1872.
Nanocomposite–bone cell interactions: carbon nanotubes protruding from a polyurethane foam scaffold modify surface properties and cell phenotype. Image reproduced by permission of Alexander Bismarck from *J. Mater. Chem.*, 2008, **18**, 1865.



Inside cover

See D. Wei *et al.*, pp. 1853–1857.
A one-step electrochemical process to fabricate a high-density, low-cost nonvolatile memory device based on polyaniline and gold particles in room temperature ionic liquids has been reported.
Image reproduced by permission of Ari Ivaska from *J. Mater. Chem.*, 2008, **18**, 1853.

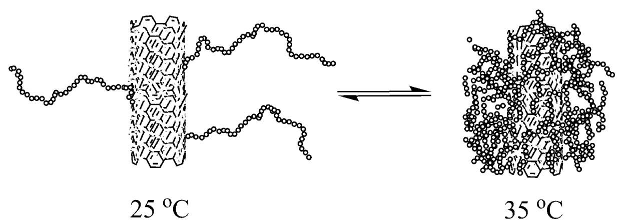
HIGHLIGHT

1831

Functionalized carbon nanotubes responsive to environmental stimuli

Chun-Yan Hong* and Cai-Yuan Pan*

Carbon nanotubes (CNTs) have many potential applications in biological and biomedical science, which need CNTs to be able to respond to biologically relevant stimuli. This highlight examines several representative CNTs responsive to pH, temperature, glucose, ions and DNA, covering both noncovalently and covalently functionalized CNTs for advanced biosensors and bioprobes.



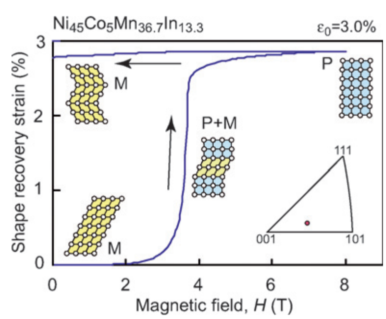
APPLICATION

1837

Metamagnetic shape memory effect in NiMn-based Heusler-type alloys

Ryosuke Kainuma,* Katsunari Oikawa, Wataru Ito, Yuji Sutou, Takeshi Kanomata and Kiyohito Ishida

In the NiCoMnIn Heusler-type alloys, a martensitic transformation from a ferromagnetic to an antiferromagnetic-like phase has been found and the magnetic field-induced strain, namely, "metamagnetic shape memory effect", has been confirmed.



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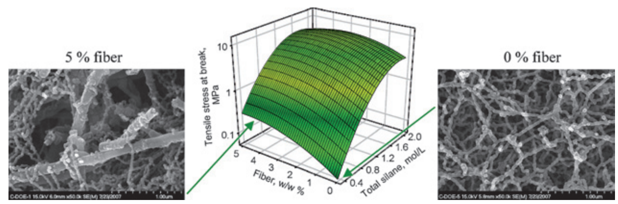
PAPERS

1843

Reinforcing polymer cross-linked aerogels with carbon nanofibers

Mary Ann B. Meador,* Stephanie L. Vivod, Linda McCorkle, Derek Quade, Roy M. Sullivan, Louis J. Ghosn, Nicholas Clark and Lynn A. Capadona

Incorporating up to 5% carbon nano-fiber in low density di-isocyanate cross-linked silica aerogel monoliths provides as much as a five-fold improvement in tensile strength, compared to the un-reinforced aerogels.

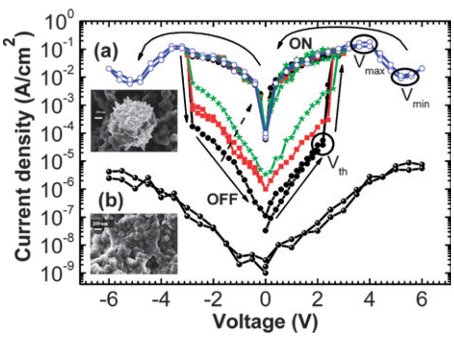


1853

Electrochemical fabrication of a nonvolatile memory device based on polyaniline and gold particles

Di Wei, Jayanta K. Baral, Ronald Österbacka* and Ari Ivaska*

A one step electrochemical process to fabricate a high-density, low-cost nonvolatile memory device based on polyaniline and gold particles in room temperature ionic liquids has been reported.

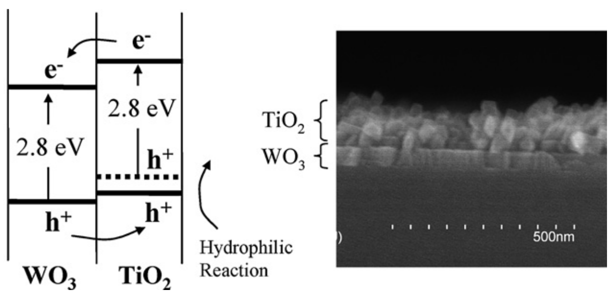


1858

Visible light induced super-hydrophilicity on single crystalline TiO_2 nanoparticles and WO_3 layered thin films

Masahiro Miyauchi*

Single crystalline nitrogen and sulfur doped anatase TiO_2 octahedral nanoparticles coated on a WO_3 layer exhibited super-hydrophilic conversion under 0.2 mW cm^{-2} visible light illumination.

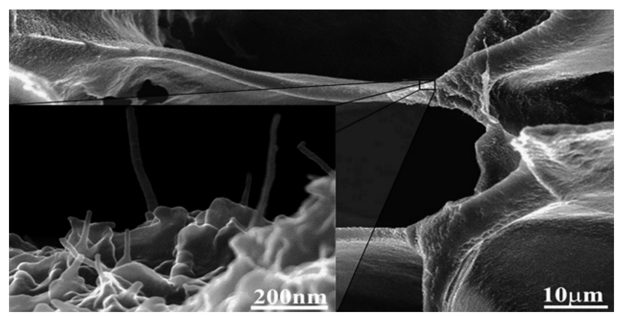


1865

Carbon nanotube-enhanced polyurethane scaffolds fabricated by thermally induced phase separation

Gavin Jell, Raquel Verdejo, Laleh Safinia, Milo S. P. Shaffer, Molly M. Stevens* and Alexander Bismarck*

Oxidised carbon nanotubes, incorporated into polyurethane foams using temperature-induced phase separation, provide mechanical reinforcement; at the same time, many of the nanotubes protrude from the polymer modifying the surface chemistry. The interactions of these composite scaffolds with osteoblast cells are described.



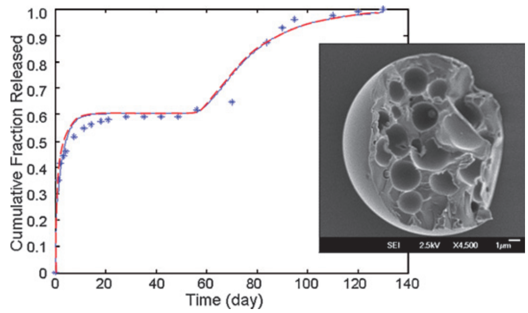
PAPERS

1873

A simple model framework for the prediction of controlled release from bulk eroding polymer matrices

Sam N. Rothstein, William J. Federspiel and Steven R. Little*

A broadly applicable mathematical model for predicting controlled release from biodegradable polymer matrices is described. Regression-free predictions from this model compare favorably with experimental data from various hydrolysable matrix systems including poly(lactide-co-glycolide) (PLGA) and polyanhydride microspheres.

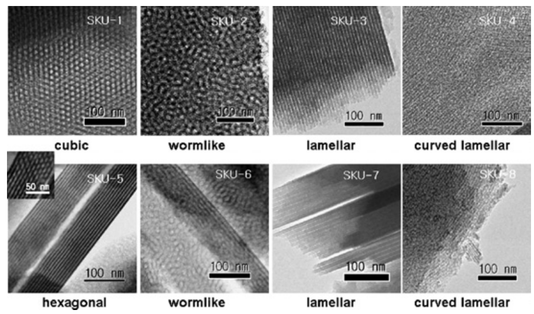


1881

Facile and adaptable synthesis method of mesostructured silica thin films

U-Hwang Lee, Jae-Hun Yang, Hyun-ju Lee, Jin-Young Park, Ki-Rim Lee and Young-Uk Kwon*

A simple new method for synthesizing silica thin films with various mesostructures by changing the water and/or acid catalyst contents in the coating solutions was developed.

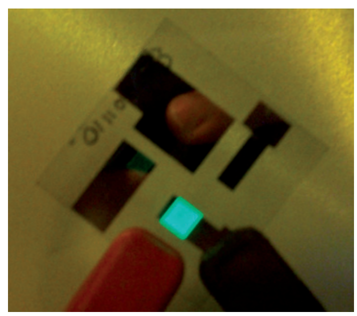


1889

Red, green, and blue quantum dot LEDs with solution processable ZnO nanocrystal electron injection layers

Jan W. Stouwdam and René A. J. Janssen*

ZnO nanocrystals are used as an electron injection layer in multilayered quantum dot LEDs processed from solution.

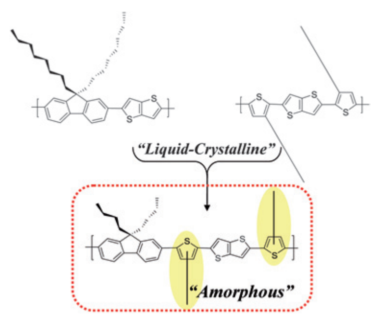


1895

New amorphous semiconducting copolymers containing fluorene and thiophene moieties for organic thin-film transistors

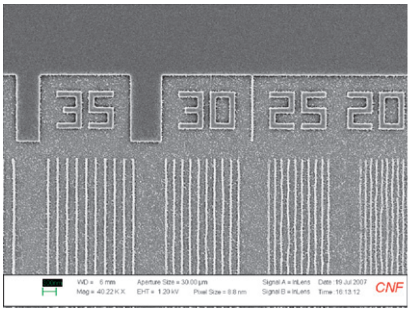
Hoyoul Kong, Dong Hoon Lee, In-Nam Kang, Eunhee Lim, Young Kwan Jung, Jong-Hwa Park, Taek Ahn, Mi Hye Yi, Chan Eon Park* and Hong-Ku Shim*

New amorphous semiconducting materials consisting of fluorene-based thiophene copolymers have been successfully synthesized *via* a palladium-catalyzed Suzuki coupling reaction. Their high stability and mobility in the amorphous state make them promising candidates for organic thin-film transistors.



PAPERS

1903

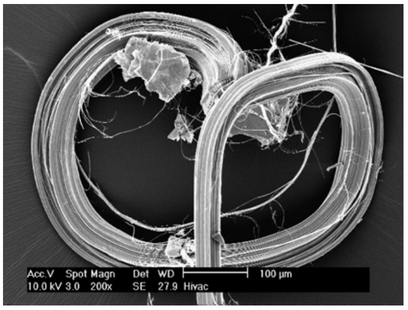


Hydroxyphenylbenzene derivatives as glass forming molecules for high resolution photoresists

Anuja De Silva and Christopher K. Ober*

This research presents the design of patternable hydroxyphenylbenzene structures that can achieve sub-30 nm resolution with next generation lithography techniques.

1911

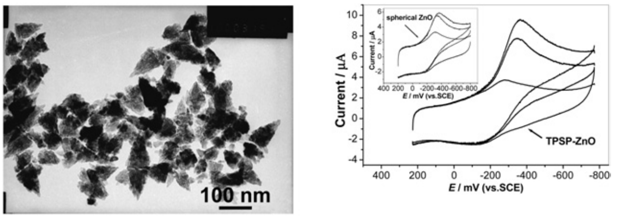


Synthesis of silica–ammonium chloride macrofibers generated by anionic surfactant templated nanotubes

Ramon Colorado, Jr., Sarah Y. Zeigler and Andrew R. Barron*

Silica-ammonium chloride nanotubes generated in aqueous solution under neutral conditions self-assemble into thicker nanotubes, microbelts, and ultimately into centimetre long macrofibers.

1919

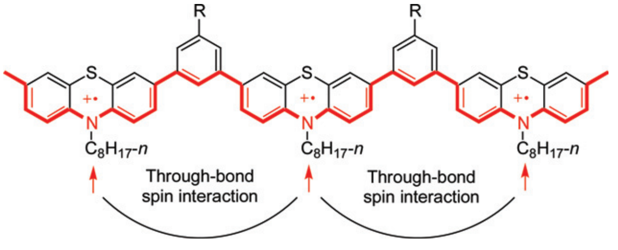


A novel tetragonal pyramid-shaped porous ZnO nanostructure and its application in the biosensing of horseradish peroxidase

Zhihui Dai, Ke Liu, Yawen Tang, Xiaodi Yang, Jianchun Bao* and Jian Shen*

A novel nano-sized tetragonal pyramid-shaped porous ZnO (TPSP-ZnO) nanostructure was prepared and used to sense hydrogen peroxide (H_2O_2), with better biosensing properties than solid spherical ZnO nanoparticles.

1927



Synthesis and through-bond spin interaction of stable 1,3-phenylene linked poly(phenothiazine cation radical)

Hiroyuki Oka*

Stable 1,3-phenylene linked poly(phenothiazine cation radical)s were synthesized. Through-bond spin interaction in the polymers was ferromagnetic and gave a spin state of $S = 2/2–3/2$.

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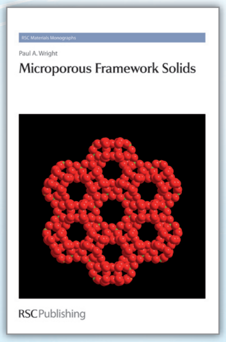

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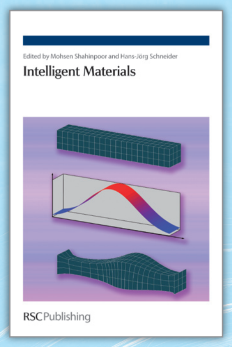

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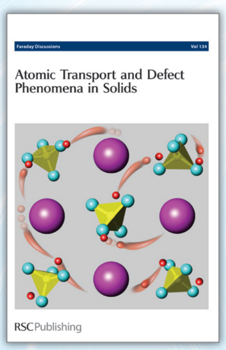

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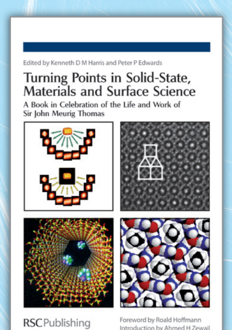

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