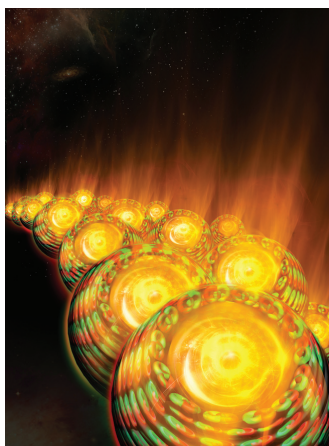


ADVANCED FUNCTIONAL MATERIALS

www.afm-journal.de

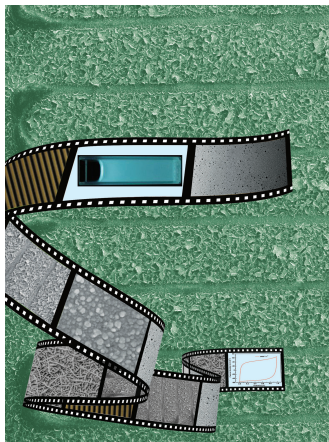
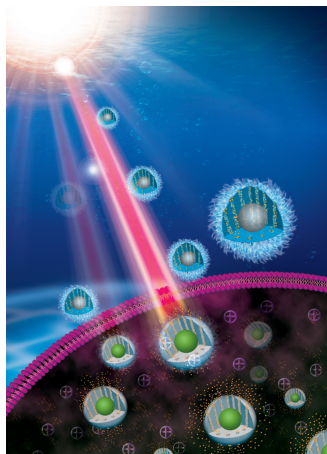


Organic Light Emitting Diodes

A bright orange emission is observed from a combination of red and green emitters. Jang-Joo Kim and co-workers report on page 4105 the creation of orange organic light-emitting diodes using an advanced quasi-host and quasi-emitter concept, where green and red phosphorescent dopants are doped into an exciplex-forming host, realizing a high external quantum efficiency, low driving voltage, and low roll-off efficiency at the same time.

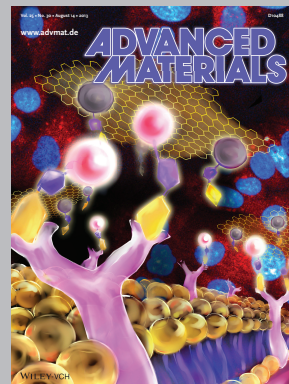
Drug Delivery

On page 4067, Z. Cheng, J. Lin, and co-workers report the synthesis of a multifunctional nanocomposite as an anticancer drug carrier based on a $\text{NaYF}_4:\text{Yb}^{3+}/\text{Er}^{3+}$ core and mesoporous silica shell with thermo/pH-coupled sensitive polymer brushes grafted onto the silica surface as gate molecules. The particles can be used as fluorescent up-converters for cell imaging, and the drug release property can be promoted either by decreasing the pH to match the acidic tumor environment or by NIR laser irradiation.



Supercapacitors

A new application of graphene quantum dots (GQDs) as an ideal electrode material for supercapacitors is explored by X.-B. Yan and co-workers. On page 4111 they build a GQD//GQD symmetric micro-supercapacitor and a GQD// MnO_2 asymmetric supercapacitor. Both devices show excellent rate capabilities, exceptionally high-frequency responses, and long-term cycle stability.



Advanced Materials has been bringing you the best in materials research for over twenty years.

With its increased ISI Impact Factor of 14.829, *Advanced Materials* is one of the most influential journals in the field. Publishing every week, *Advanced Materials* now brings you even more of the latest results at the cutting edge of materials science.

www.advmat.de



Small is the very best interdisciplinary forum for all experimental and theoretical aspects of fundamental and applied research at the micro and nano length scales.

With an ISI impact Factor of 7.823 and publishing every two weeks in 2013 with papers online in advance of print, *Small* is your first-choice venue for top-quality communications, detailed full papers, cutting-edge concepts, and in-depth reviews of all things micro and nano.

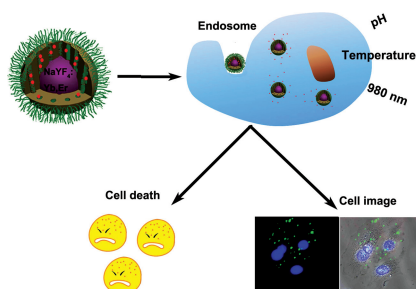
www.small-journal.com

FULL PAPERS

Drug Delivery

X. Zhang, P. Yang, Y. Dai, P. Ma, X. Li, Z. Cheng,* Z. Hou, X. Kang, C. Li, J. Lin*4067–4078

Multifunctional Up-Converting Nanocomposites with Smart Polymer Brushes Gated Mesopores for Cell Imaging and Thermo/pH Dual-Responsive Drug Controlled Release

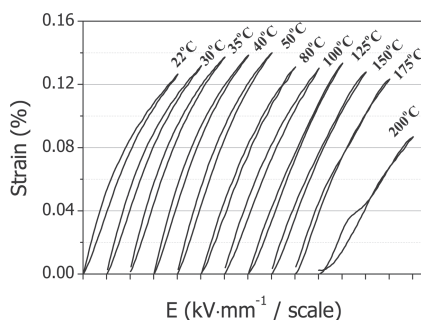


Multifunctional nanocarriers based on up-conversion luminescent nanoparticles of $\text{NaYF}_4:\text{Yb}^{3+}/\text{Er}^{3+}$ core (UCNPs) and thermo/pH-coupling sensitive polymer poly[(*N*-isopropylacrylamide)-*co*-(methacrylic acid)] brushes gated mesoporous silica shell are reported. They have applications in cancer theranostics, including fluorescence imaging, and for controlled drug release for therapy.

Ceramics

K. Wang,* F.-Z. Yao, W. Jo, D. Gobeljic, V. V. Shvartsman, D. C. Lupascu, J.-F. Li, J. Rödel4079–4086

Temperature-Insensitive $(\text{K},\text{Na})\text{NbO}_3$ -Based Lead-Free Piezoactuator Ceramics

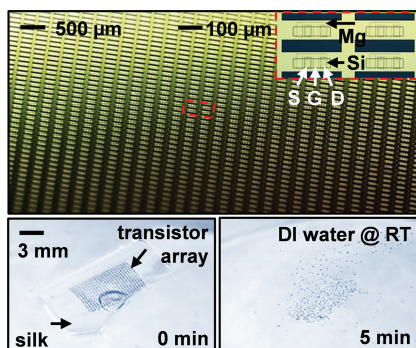


The development of $(\text{K},\text{Na})\text{NbO}_3$ -based lead-free piezoceramics is attracting great interest because of growing environmental concerns. A material concept that yields an average piezoelectric coefficient, d_{33} , of about 300 pC/N and a high level of unipolar strain up to 0.16% is reported. Most intriguingly, field-induced strain varies less than 10% from room temperature to 175 °C.

Transistors

S.-W. Hwang, D.-H. Kim, H. Tao, T.-i. Kim, S. Kim, K. J. Yu, B. Panilaitis, J.-W. Jeong, J.-K. Song, F. G. Omenetto, J. A. Rogers*4087–4093

Materials and Fabrication Processes for Transient and Bioresorbable High-Performance Electronics

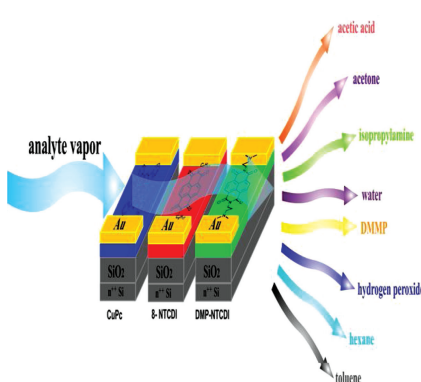


Materials, designs, and integration techniques are presented for a class of water-soluble electronics capable of fabrication using wafer-based processes. The active components exploit biocompatible and bioresorbable materials that are capable of dissolution in biofluids. Characterization of the electronic properties of the devices, their kinetics for dissolution, and preliminary evaluations in animal models highlight key aspects of the materials and concepts.

Field-Effect Transistors

W. G. Huang, J. Sinha, M.-L. Yeh, J. F. M. Hardigree, R. LeCover, K. Besar, A. M. Rule, P. N. Breyse, H. E. Katz* 4094–4104

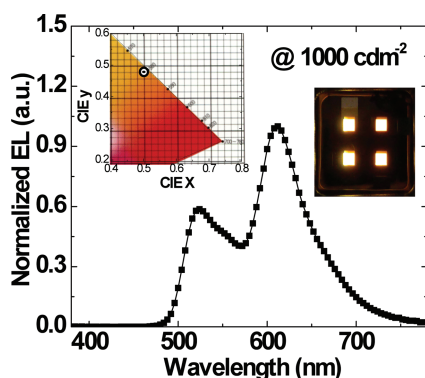
Diverse Organic Field-Effect Transistor Sensor Responses from Two Functionalized Naphthalenetetracarboxylic Diimides and Copper Phthalocyanine Semiconductors Distinguishable Over a Wide Analyte Range



Naphthalenetetracarboxylic diimide derivatives (octyl “8” NTCDI, dimethylaminopropyl “DMP” NTCDI) and copper phthalocyanine (CuPc) are used to form a diverse organic field-effect transistor sensor array. The three-response patterns obtained from representative polar, nonpolar, acidic, and basic vapors are all different, showing the potential for this approach in rapid, low-cost electronic detection of volatile compounds.

FULL PAPERS

An orange organic light emitting diode (OLED) with controlled co-doping of green and red phosphorescent dopants achieves a low turn-on voltage of 2.4 V and a very high EQE of 25.0%. The OLED demonstrates an external quantum efficiency over 21% at $10\,000\text{ cdm}^{-2}$. The orange OLED displays a very good orange color (Commission Internationale d'Eclairage of (0.501, 0.478) at 1000 cdm^{-2}) with very little color shift with increasing luminance.

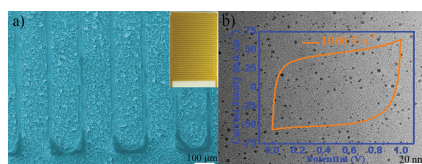


Organic Light-Emitting Diodes

S. Lee, K.-H. Kim, D. Limbach,
Y.-S. Park, J.-J. Kim*4105–4110

Low Roll-Off and High Efficiency Orange Organic Light Emitting Diodes with Controlled Co-Doping of Green and Red Phosphorescent Dopants in an Exciplex Forming Co-Host

Graphene quantum dots (GQDs)-based micro-supercapacitors are prepared using a simple electrodeposition approach and their electrochemical properties in aqueous and ionic liquid electrolytes are studied. The GQDs-based micro-supercapacitors exhibit superior rate capability, high power response capability, and excellent cyclic stability.

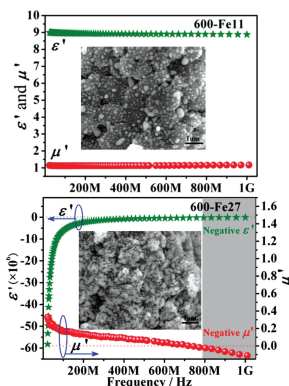


Supercapacitors

W.-W. Liu, Y.-Q. Feng, X.-B. Yan*
J.-T. Chen, Q.-J. Xue4111–4122

Superior Micro-Supercapacitors Based on Graphene Quantum Dots

Iron particles are hosted in porous alumina via a facile impregnation-reduction process. When the iron content exceeds the percolation threshold, iron networks are formed. The iron content and reduction temperature can easily tune the amplitude and frequency range of the negative permittivity and permeability. The impregnation-reduction process has great potential for the preparation of random composites with tunable double negative properties.

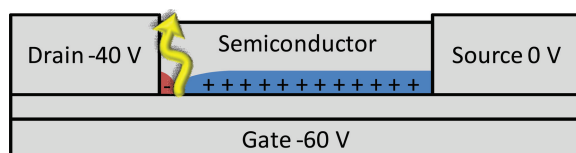


Metamaterials

Z.-C. Shi, R.-H. Fan,* K.-I. Yan, K. Sun,
M. Zhang, C.-G. Wang,* X.-F. Liu,
X.-H. Zhang4123–4132

Preparation of Iron Networks Hosted in Porous Alumina with Tunable Negative Permittivity and Permeability

Light emission from ambipolar organic field-effect transistors is observed when they are operated in the unipolar regime. This counterintuitive unipolar light emission is quantitatively explained by injection of minority carriers into deep tail states of the semiconductor. The density of the injected minority carriers is small; they are relatively immobile and recombine close the contact with accumulated majority carriers.



Organic Electronics

W. S. C. Roelofs,* W. H. Adriaans,
R. A. J. Janssen, M. Kemerink,
D. M. de Leeuw4133–4139

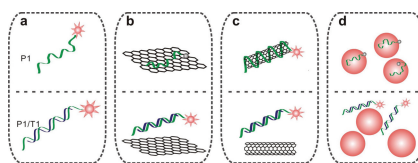
Light Emission in the Unipolar Regime of Ambipolar Organic Field-Effect Transistors

FULL PAPERS

Fluorescence

F. Li, H. Pei, L. Wang,* J. Lu, J. Gao,*
B. Jiang, X. Zhao, C. Fan*4140–4148

Nanomaterial-Based Fluorescent DNA Analysis: A Comparative Study of the Quenching Effects of Graphene Oxide, Carbon Nanotubes, and Gold Nanoparticles

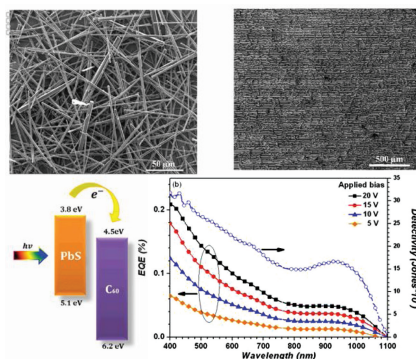


Three nanomaterials-based fluorescent biosensors are used for DNA detection in homogeneous solution. The quenching efficiency, kinetics, differentiation ability, and influencing factors are studied, and graphene oxide (GO) exhibits the best performance, characterized by superior quenching abilities, limit of detection, and the highest discrimination for single-base mismatches.

Photodetectors

R. Saran, M. N. Nordin,
R. J. Curry*4149–4155

Facile Fabrication of PbS Nanocrystal/C₆₀ Fullerite Broadband Photodetectors with High Detectivity

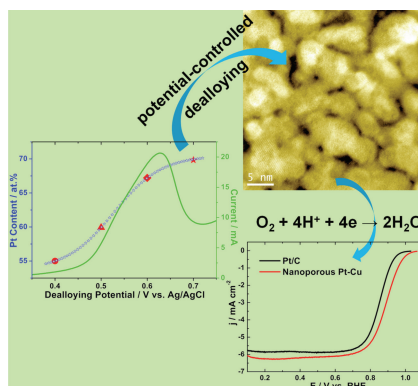


PbS nanocrystal/C₆₀ fullerite photodetectors exhibiting broadband UV-vis-near IR response with high detectivity are demonstrated using a simple one-step deposition process. The devices operate without the need of a transparent conducting substrate under ambient air conditions exhibiting a fast photocurrent rise time and a biexponential microsecond decay. These devices offer an attractive low-cost solution for large-area broadband photodetectors.

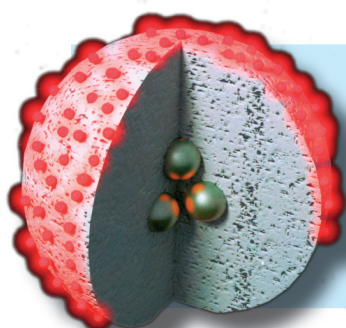
Catalysts

X. B. Ge, L. Y. Chen, J. L. Kang,
T. Fujita, A. Hirata, W. Zhang,
J. H. Jiang, M. W. Chen*4156–4162

A Core-Shell Nanoporous Pt-Cu Catalyst with Tunable Composition and High Catalytic Activity



Using a potential-controlled dealloying approach, a core-shell nanoporous Pt-Cu bimetallic catalyst with a widely tunable Pt/Cu ratio is fabricated. The nanoporous Pt-Cu catalyst consists of a Pt-Cu alloy core and a pure Pt skin, showing high catalytic activities toward the oxygen reduction reaction and formic electro-oxidation.



How to contact us:

Editorial Office:

Phone: (+49) 6201-606-286/531
Fax: (+49) 6201-606-500
Email: afm@wiley-vch.de

Reprints:

cherth@wiley-vch.de

Copyright Permission:

Fax: (+49) 6201-606-332
Email: rights@wiley-vch.de