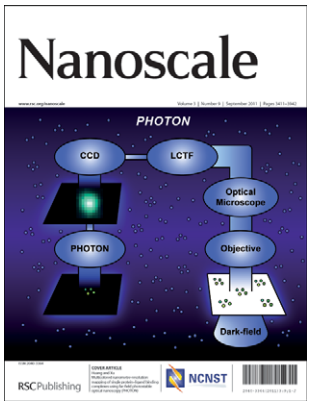
Nanoscale

www.rsc.org/nanoscale

RSC Publishing is a not-for-profit publisher and a division of the Royal Society of Chemistry. Any surplus made is used to support charitable activities aimed at advancing the chemical sciences. Full details are available from www.rsc.org

IN THIS ISSUE

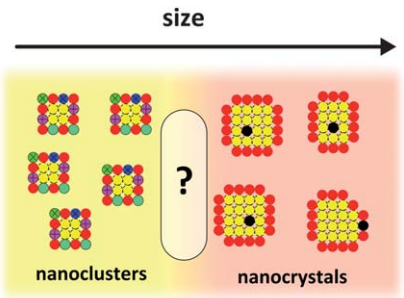
ISSN 2040-3364 CODEN NANOHL 3(9) 3411–3942 (2011)

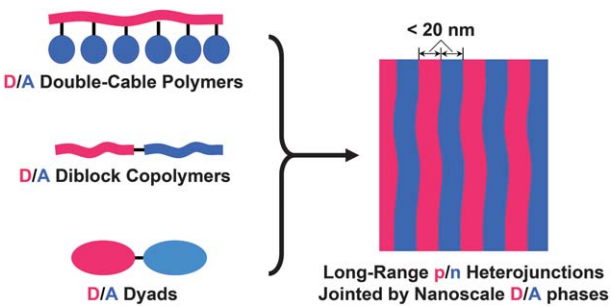


Cover
See Huang and Xu, pp. 3567–3572.
Design of PHOTON mapping of single ligand molecules in single protein–ligand complexes.
Image reproduced by permission of Prof Xiao-Hong Nancy Xu from *Nanoscale*, 2011, **3**, 3567.

Inside cover
See Cademartiri and Kitaev, pp. 3435–3446.
The cover highlights the poorly understood (yet exceedingly interesting) transition between atomically-defined compounds (the small, perfect cubes) and polydisperse nanoscale species (the defective, bigger cubes).
Image reproduced by permission of Dr Vladimir Kitaev from *Nanoscale*, 2011, **3**, 3435.

REVIEWS





Nanoscale (print: ISSN 2040-3364 electronic: ISSN 2040-3372) is published 12 times a year by the Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, UK CB4 0WF.

All orders, with cheques made payable to the Royal Society of Chemistry, should be sent to RSC Distribution Services, c/o Portland Customer Services, Commerce Way, Colchester, Essex, UK CO2 8HP. Tel +44 (0) 1206 226050; E-mail sales@rscdistribution.org

2011 Annual (print + electronic) subscription price: £1045; US$1890. 2011 Annual (electronic) subscription price: £940; US$1,701. Customers in Canada will be subject to a surcharge to cover GST. Customers in the EU subscribing to the electronic version only will be charged VAT.

If you take an institutional subscription to any RSC journal you are entitled to free, site-wide web access to that journal. You can arrange access via Internet Protocol (IP) address at www.rsc.org/ip. Customers should make payments by cheque in sterling payable on a UK clearing bank or in US dollars payable on a US clearing bank. Periodicals postage paid at Rahway, NJ, USA, and at additional mailing offices. Airfreight and mailing in the USA by Mercury Airfreight International Ltd., 365 Blair Road, Avenel, NJ 07001, USA.

US Postmaster: send address changes to Nanoscale, c/o Mercury Airfreight International Ltd., 365 Blair Road, Avenel, NJ 07001. All despatches outside the UK by Consolidated Airfreight.

Advertisement sales: Tel +44 (0) 1223 432246; Fax +44 (0) 1223 426017; E-mail advertising@rsc.org

For marketing opportunities relating to this journal, contact marketing@rsc.org

Nanoscale

www.rsc.org/nanoscale

Nanoscale publishes experimental and theoretical work across the breadth of nanoscience and nanotechnology.

NCNST

Published in collaboration with the National Centre for Nanoscience and Technology, Beijing, China

INFORMATION FOR AUTHORS

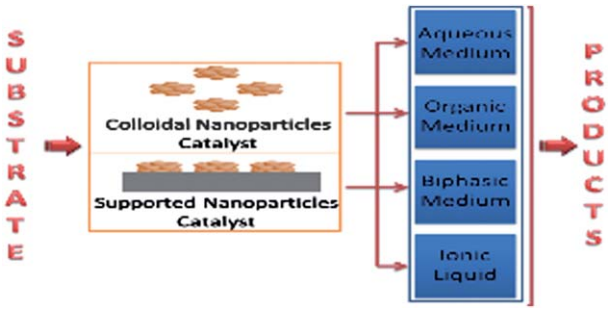
Full details on how to submit material for publication in Nanoscale are given in the Instructions for Authors (available from http://www.rsc.org/authors). Submissions should be made *via* the journal's homepage: http://www.rsc.org/nanoscale.

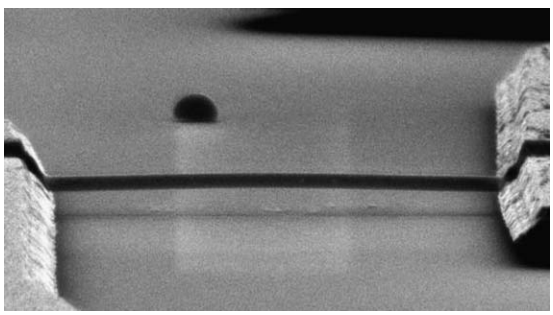
Authors may reproduce/republish portions of their published contribution without seeking permission from the RSC, provided that any such republication is accompanied by an acknowledgement in the form: (Original Citation)–Reproduced by permission of The Royal Society of Chemistry.

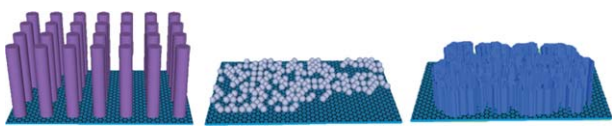
The paper used in this publication meets the requirements of ANSI/NISO Z39.48–1992 (Permanence of Paper).

Royal Society of Chemistry: Registered Charity No. 207890.

REVIEWS







RSC Advances

An international journal to further the chemical sciences

RSC Advances is a new peer-reviewed journal covering all the chemical sciences, including interdisciplinary fields. Published articles report high quality, well-conducted research that adds to the development of the field.

- An expert editorial team led by Professor Mike Ward, University of Sheffield, UK
- Free access to all content throughout 2011 and 2012
- Free colour, no page charges
- Published online only

Sophisticated behind-the-scenes topic modelling classifies content into one or more of twelve subject categories in the chemical sciences: analytical; biological; catalysis; chemical biology and medicinal; energy; environmental; food; inorganic; materials; nanoscience; organic; and physical.

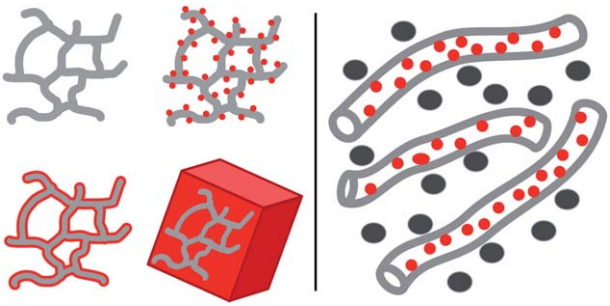
Read the latest issue

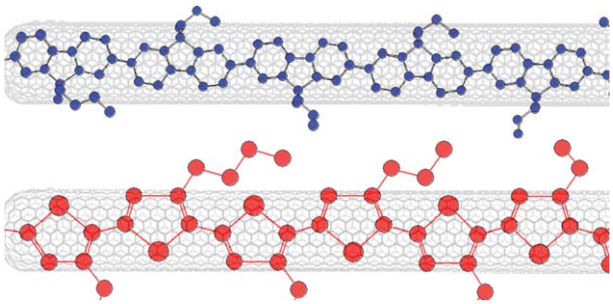
RSC Publishing

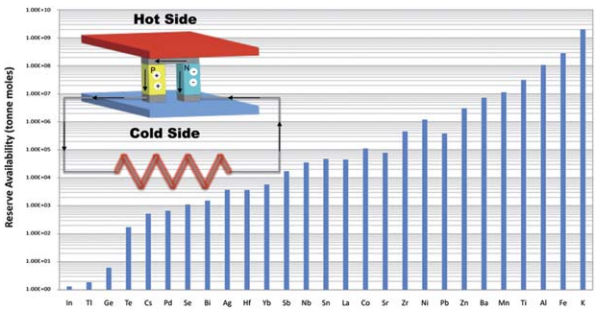
www.rsc.org/advances

Registered Charity Number 207890

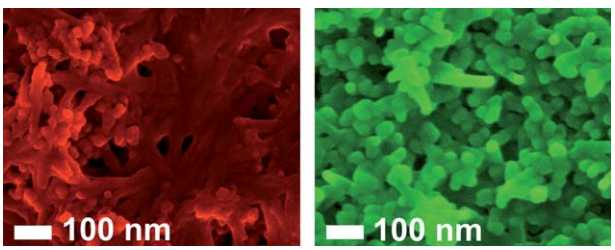
FEATURE ARTICLES

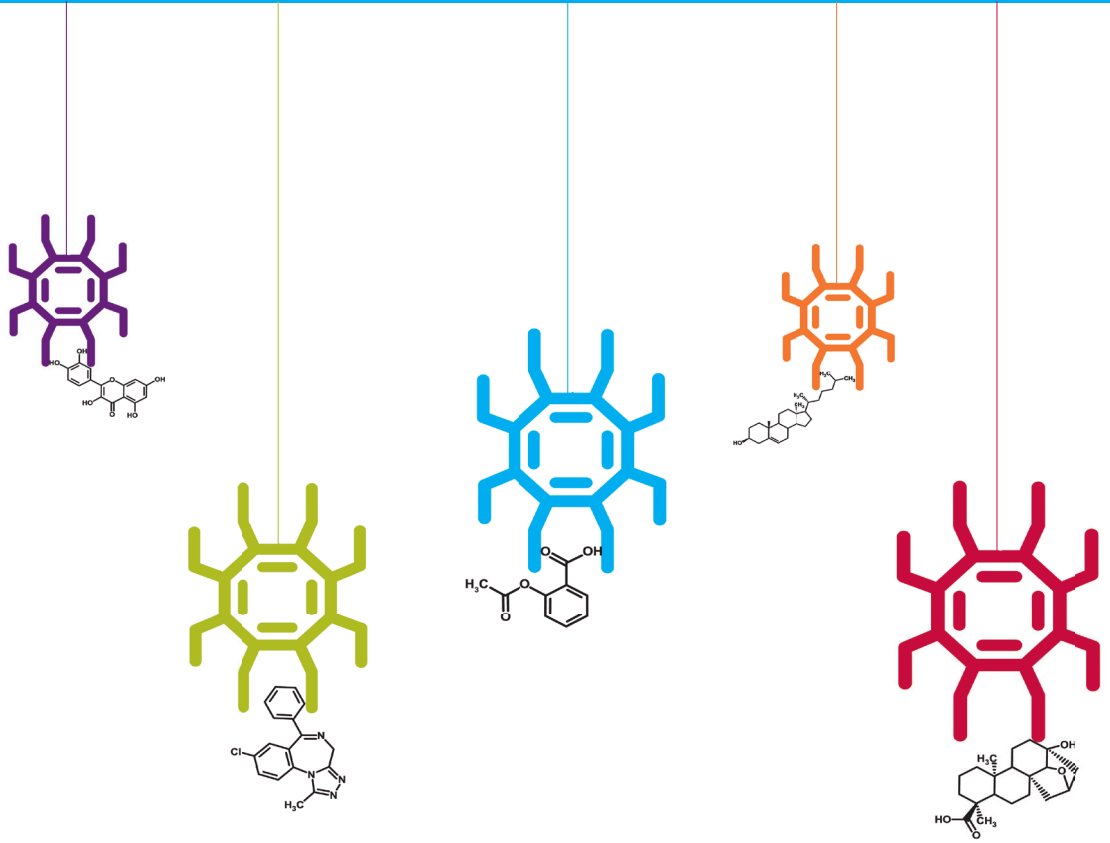






COMMUNICATIONS



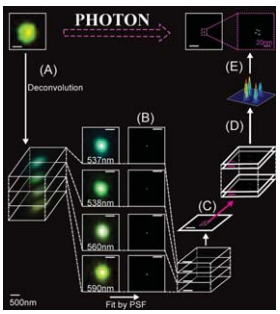


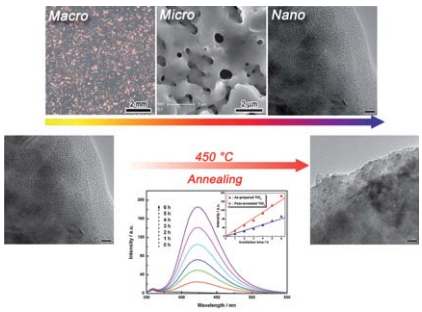
ChemSpider

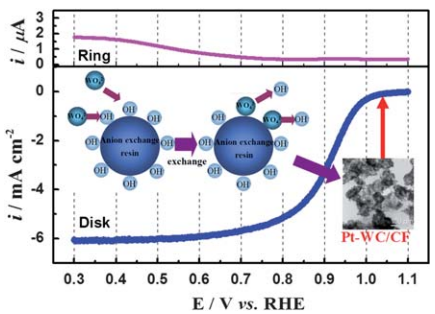
The free chemical database

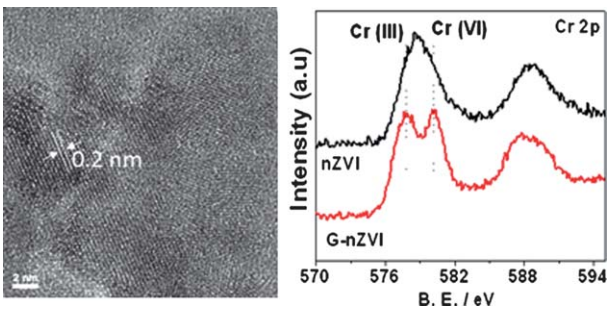
ChemSpider is a free chemical structure database providing fast access to over 25 million structures, properties and associated information. By integrating and linking compounds from more than 400 data sources, *ChemSpider* enables researchers to discover the most comprehensive view of freely available chemical data from a single online search.

www.chemspider.com









Click through to a great career

@ ChemCareers 2011

THE CAREERS FAIR WITH A DIFFERENCE

31 October – 4 November 2011

Hosted on MyRSC, the online professional network for the chemical sciences

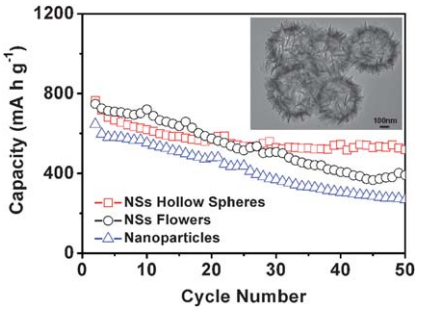
ChemCareers is the careers fair with a difference. An online event, featuring employees from over 30 top firms, ChemCareers will allow you to:

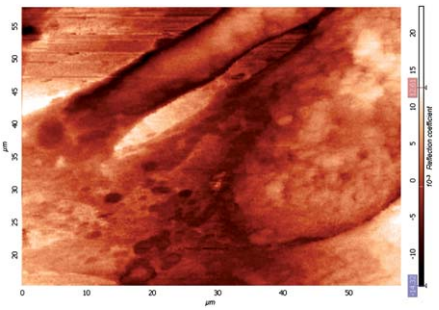
- **Discover** the huge range of career opportunities available to chemical scientists
- **Learn** how to market yourself to employers in job applications and interviews
- **Seek** expert advice on career planning and making your next career move
- **Investigate** further study options
- **Network** globally with both employers and other chemical scientists

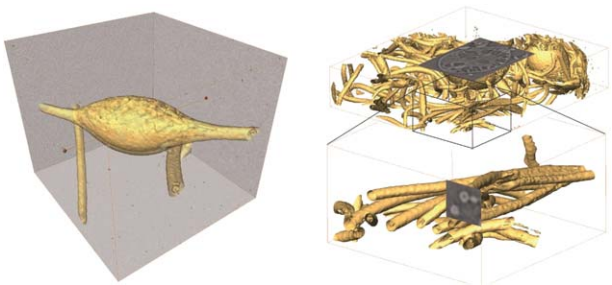
Register now at **http://my.rsc.org/chemcareers** and sign up to the 'ChemCareers' group to be kept up-to-date with the programme of events.

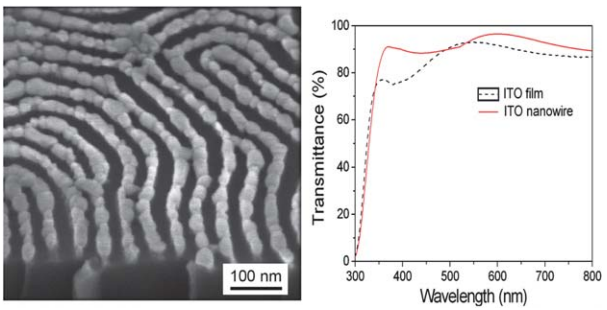
RSC | Advancing the Chemical Sciences

http://my.rsc.org/chemcareers



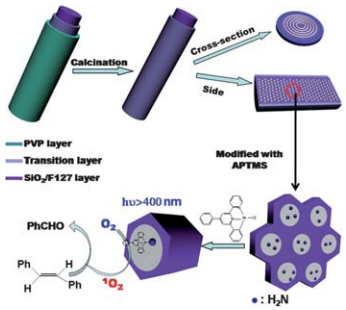






COMMUNICATIONS

3601

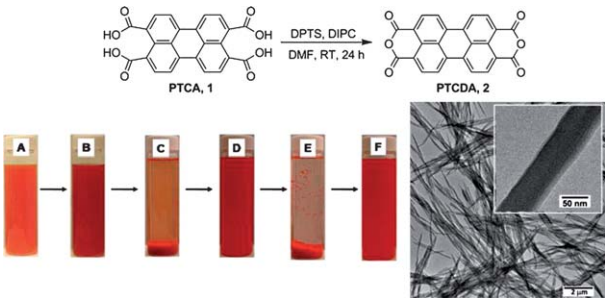


Fabrication of continuous highly ordered mesoporous silica nanofibre with core/sheath structure and its application as catalyst carrier

Haiyan Wang, Dayong Wu,* Dongzhou Li, Zhongwei Niu, Yuzhe Chen, Daihua Tang, Min Wu, Jianhua Cao and Yong Huang

Continuous highly ordered mesoporous silica nanofibres with core/sheath structure were prepared by coaxial electrospinning and used as a catalyst carrier.

3605

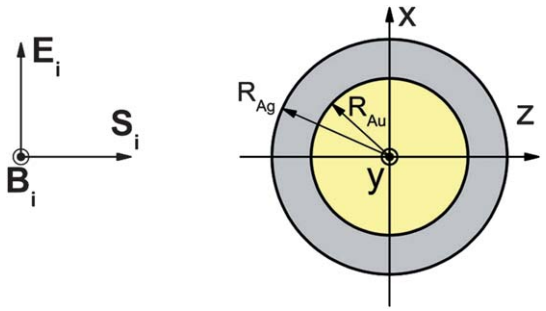


Chemical reaction mediated self-assembly of PTCDA into nanofibers

Arshad S. Sayyad, Kaushik Balakrishnan* and Pulickel M. Ajayan*

Highly crystalline nanofibers of PTCDA have been synthesized by chemically converting an appropriately designed soluble precursor.

3609

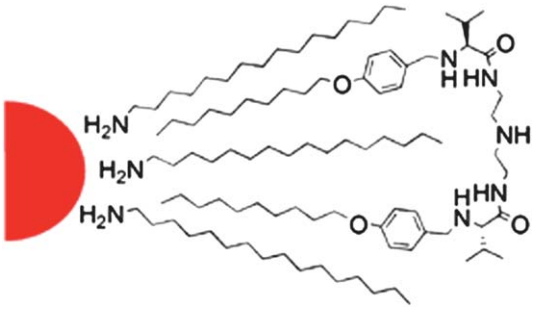


Au@Ag core–shell nanoparticles: efficient all-plasmonic Fano-resonance generators

Ovidio Peña-Rodríguez* and Umapada Pal

Intense Fano resonances in simple Au@Ag core–shell nanoparticles.

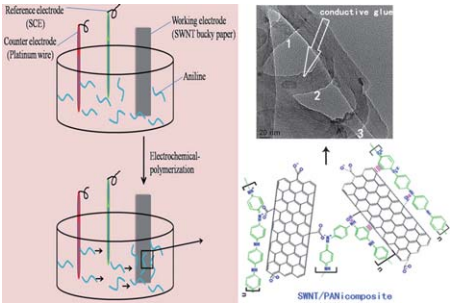
3613

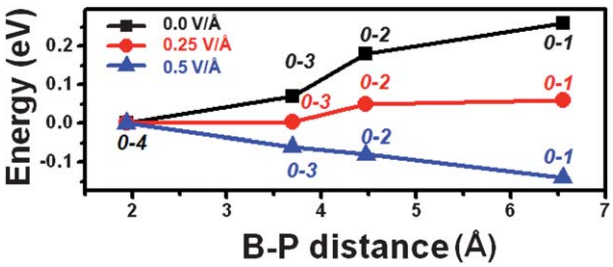


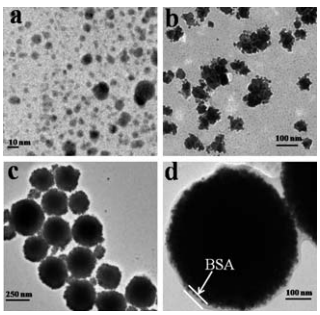
Photoluminescence of CdSe/ZnS core–shell quantum dots stabilized in water with a pseudopeptidic gemini surfactant

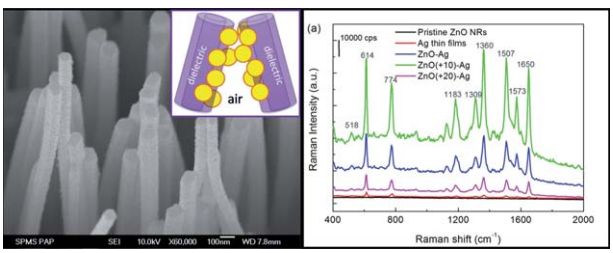
Jenifer Rubio, M. Angeles Izquierdo, M. Isabel Burguete, Francisco Galindo* and Santiago V. Luis*

Pseudopeptidic gemini compounds act as intercalators with hydrophobic ligands of QDs transferring them to water.

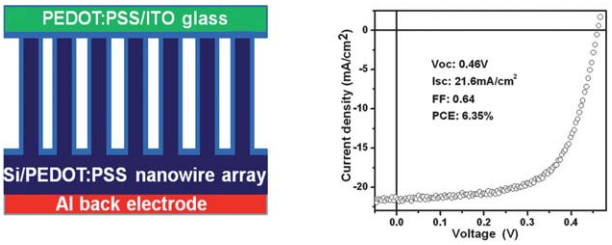








COMMUNICATIONS

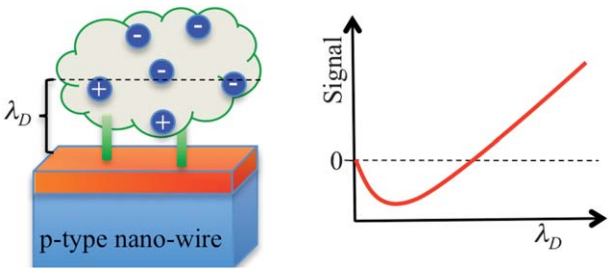


Si/PEDOT:PSS core/shell nanowire arrays for efficient hybrid solar cells

Wenhui Lu, Chengwei Wang, Wei Yue and Liwei Chen*

Schematics of Si/PEDOT:PSS core/shell nanowire array based hybrid solar cells and the corresponding current density–voltage (J–V) characteristics.

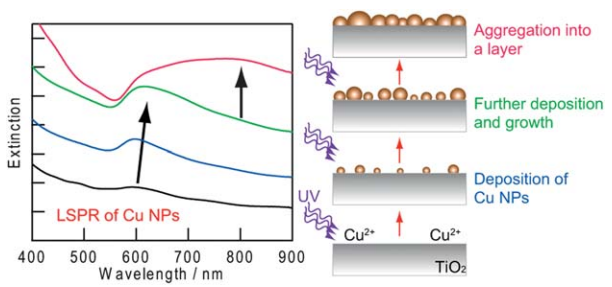
PAPERS



Predicting and rationalizing the effect of surface charge distribution and orientation on nano-wire based FET bio-sensors

Luca De Vico,* Lars Iversen, Martin H. Sørensen, Mads Brandbyge, Jesper Nygård, Karen L. Martinez and Jan H. Jensen*

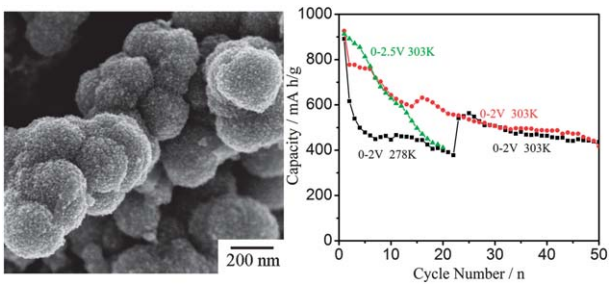
We analyze how appropriate combinations of buffer conditions and charge distributions and orientation may lead to a counter-intuitive signal in BioFETs.



Growth behaviour and plasmon resonance properties of photocatalytically deposited Cu nanoparticles

Emiko Kazuma, Taishi Yamaguchi, Nobuyuki Sakai and Tetsu Tatsuma*

Cu nanoparticles are easily prepared on TiO_2 by photocatalytic reactions. Although the nanoparticles exhibit plasmon resonance-based optical properties, excessive deposition gives aggregates exhibiting a spectrum characteristic of a Cu layer.



Facile solvothermal synthesis of mesoporous Cu_2SnS_3 spheres and their application in lithium-ion batteries

Baihua Qu, Ming Zhang, Danni Lei, Yaping Zeng, Yuejiao Chen, Libao Chen, Qiuhong Li, Yanguo Wang* and Taihong Wang*

Three dimensional (3D) mesoporous Cu_2SnS_3 spheres as anode materials for lithium-ion batteries with remarkably enhanced cycling performances have been investigated.