

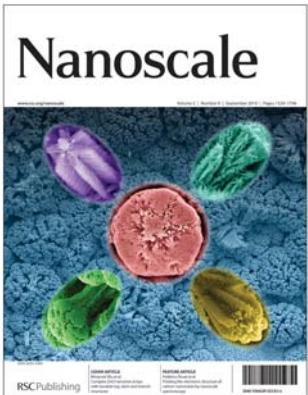
Nanoscale

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Cover

See Mingmei Wu *et al.*, pp. 1674–1683.
Hierarchical tree-, mushroom- and cockscomb-like ZnO arrays are grown *in situ* on zinc plates via a facile hydrothermal oxidation approach from *Nanoscale*, 2010, **2**, 1674.



Inside cover

See Jianjiang Wang *et al.*, pp. 1650–1652.
Sea cucumber-like hybrid nanostructures composed of a sulfide core decorated with gold nanoparticles on its surface from *Nanoscale*, 2010, **2**, 1650.

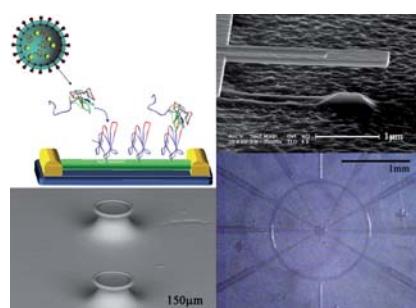
REVIEWS

1544

Label-free biological and chemical sensors

Heather K. Hunt and Andrea M. Armani*

The development of label-free biochemical sensors, including sensor modalities, measurand recognition techniques, and microfluidic delivery systems are discussed to provide a roadmap for future sensor design.



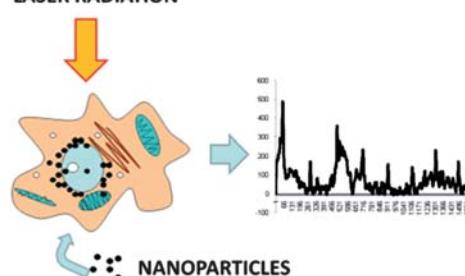
1560

Single metal nanoparticle spectroscopy: optical characterization of individual nanosystems for biomedical applications

Abhijit Biswas,* Tao Wang and Alexandru S. Biris

This manuscript presents the most up to date applications on single nanoparticle spectroscopy ranging from photonics, biomedical imaging and sensing.

LASER RADIATION



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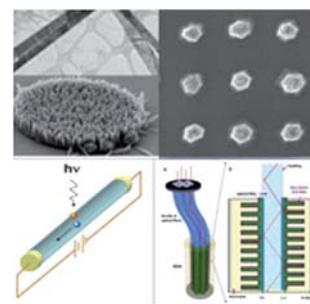
REVIEWS

1573

Solution synthesis of one-dimensional ZnO nanomaterials and their applications

Benjamin Weintraub, Zhengzhi Zhou, Yinhua Li and Yulin Deng*

Different one-dimensional nanostructures of ZnO, including wires, belts and rods synthesized with the wet chemical method have been reported in literature. This article reviews the recent progresses in synthesis, fabrication and application one-dimensional nanomaterials based on ZnO obtained from the wet-chemistry method.

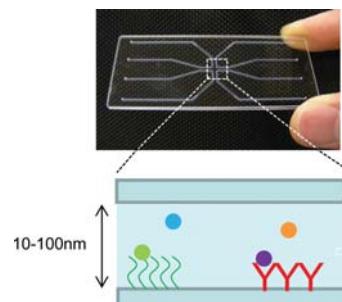


1588

Extended-nano fluidic systems for analytical and chemical technologies

Kazuma Mawatari, Takehiko Tsukahara, Yasuhiko Sugii and Takehiko Kitamori*

New devices for chemical and analytical technologies by using unique characteristics in extended-nano space.

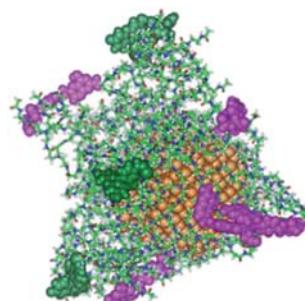


1596

Dendrimer-based organic/inorganic hybrid nanoparticles in biomedical applications

Mingwu Shen and Xiangyang Shi*

This review reports recent advances on the synthesis, self-assembly, and biofunctionalization of various dendrimer-based organic/inorganic hybrid nanoparticles for various biomedical applications, especially in targeted molecular imaging of cancer.



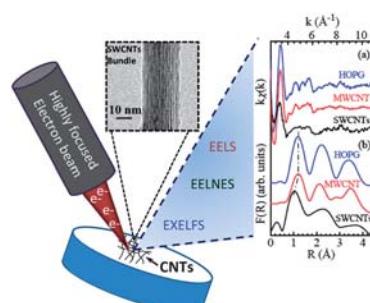
FEATURE ARTICLES

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Probing the electronic structure of carbon nanotubes by nanoscale spectroscopy

Paola Castrucci,* Manuela Scarselli, Maurizio De Crescenzi, My Ali El Khakani and Federico Rosei*

How to access the nanoscale electronic structure of carbon nanotubes: a review of the latest advances.



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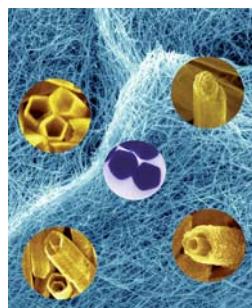
FEATURE ARTICLES

1626

Silver nanowires – unique templates for functional nanostructures

Yugang Sun*

This feature article reviews the synthesis and application of silver nanowires as well as the use of silver nanowires as templates for the synthesis of many other functional nanostructures, which are difficult (or even impossible) to achieve from conventional synthetic approaches.



MINIREVIEW

1643

Electrochemically powered self-propelled electrophoretic nanosubmarines

Martin Pumera*

This minireview focuses on a discussion of the fundamentals of the electrophoretic mechanism underlying the propulsion of nanosubmarines, as well as a demonstration of the proof-of-concept capabilities of nanosubmarines.



COMMUNICATIONS

1650

Hydrothermal transformation from Au core–sulfide shell to Au nanoparticle-decorated sulfide hybrid nanostructures

Zhihong Bao, Zhenhua Sun, Manda Xiao, Linwei Tian* and Jianfang Wang*

Au nanoparticle-decorated sulfide nanostructures with morphologies similar to those of sea cucumbers were hydrothermally synthesized with Au nanorods and metal thiobenzoates as the starting reactants.



1653

Fullerol ionic fluids

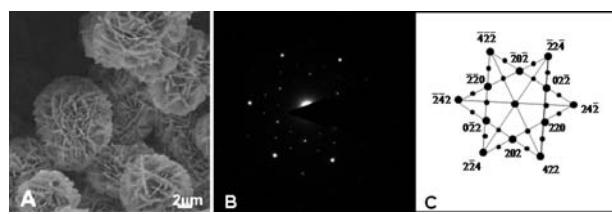
Nikhil Fernandes, Panagiotis Dallas, Robert Rodriguez, Athanasios B. Bourlinos, Vasilios Georgakilas and Emmanuel P. Giannelis*

Fullerenes are versatile building blocks leading to new nanohybrid materials. An ionic fluid based on hydroxylated fullerene, fullerol and an amine terminated polyethylene/polypropylene oxide is presented, and is contrasted with a physical mixture of the constituents with the same composition by weight.



COMMUNICATIONS

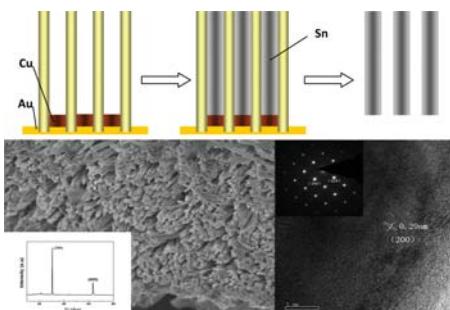
1657

**Synthesis and surface activity of single-crystalline Co_3O_4 (111) holey nanosheets**

Lifang Chen, Juncheng Hu,* Ryan Richards,* Sergey Prikhodko and Suneel Kodambaka

Crystalline, thermally stable, catalytically active, Co_3O_4 (111) holey nano-sheets were prepared by an efficient, template-free, wet chemical synthetic approach.

1661

**Large-scale fabrication of single crystalline tin nanowire arrays**

Bin Luo, Dachi Yang, Minghui Liang and Linjie Zhi*

Large-scale single crystalline tin nanowire arrays with preferred lattice orientation along the [100] direction were fabricated in porous anodic aluminium oxide (AAO) membranes by the electrodeposition method using copper nanorod as a second electrode.

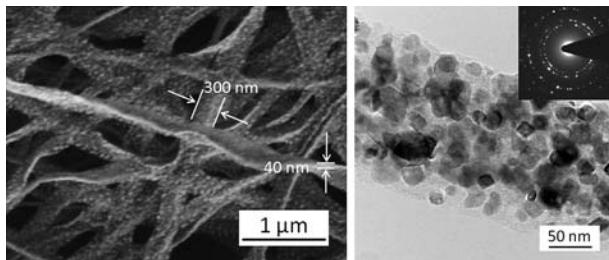
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**Surface plasmon resonance of gold nanoparticles assemblies at liquid | liquid interfaces**

Mohamad Hojeij, Nathalie Younan, Lydie Ribeaucourt and Hubert H. Girault*

Surface plasmon resonance of gold nanoparticles assemblies at liquid|liquid interfaces.

1670

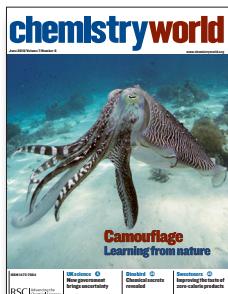
**Synthesis of continuous TiC nanofibers and/or nanoribbons through electrospinning followed by carbothermal reduction**

Lifeng Zhang, Jianjun Hu,* Andrey A. Voevodin and Hao Fong*

Continuous TiC nanofibers that possess intriguing nanoribbon morphology with width and thickness of 300 nm and 40 nm, respectively, and containing TiC crystallites with sizes ranging from 5 nm to 30 nm were synthesized through electrospinning followed by carbothermal reduction.

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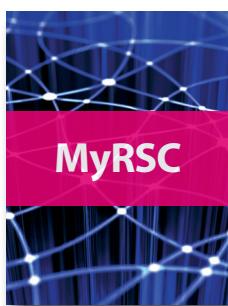
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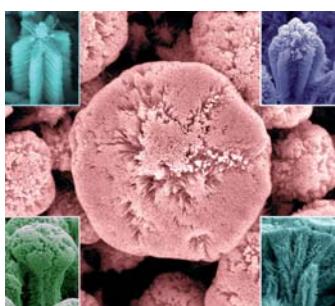
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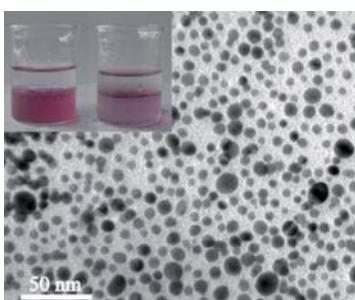
1674

**Complex ZnO nanotree arrays with tunable top, stem and branch structures**

Fenghua Zhao, Jian-Guo Zheng, Xianfeng Yang, Xiuyan Li, Jing Wang, Fuli Zhao, Kam Sing Wong, Chaolun Liang and Mingmei Wu*

Complex tree-, mushroom- and cockscomb-like ZnO nanostructure arrays have been grown in the presence of ethylenediamine, suggesting simple strategies to rationally design novel and hierarchical nanostructures and their arrays.

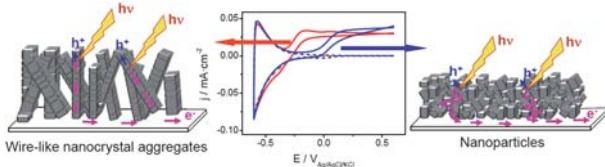
1684

**Interfacial entrapment of noble metal nanoparticles and nanorods capped with amphiphilic multiblock copolymer at a selective liquid–liquid interface**

Binyang Du,* Xiujuan Chen, Bin Zhao, Aixiong Mei, Qi Wang, Junting Xu and Zhiqiang Fan

Interfacial assembly of multiblock copolymer (P4VP-PS-P4VP)_n capped Au nanoparticles at (DMF-H₂O)/diethyl ether interface.

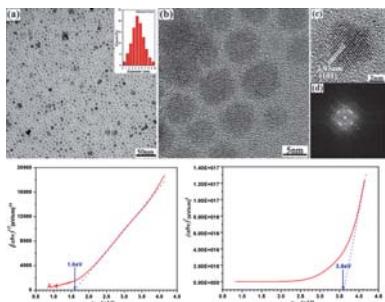
1690

**Photoelectrochemical behaviour of anatase nanoporous films: effect of the nanoparticle organization**

Teresa Lana-Villarreal,* Yuanbing Mao, Stanislaus S. Wong and Roberto Gómez

Anatase thin films composed of nanoparticles either assembled in nanowires or randomly distributed have been prepared. The superior performance of more ordered nanostructures as photoelectrodes is demonstrated.

1699

**Facile synthesis of IV–VI SnS nanocrystals with shape and size control: Nanoparticles, nanoflowers and amorphous nanosheets**

Jiajia Ning, Kangkang Men, Guanjun Xiao, Li Wang, Quanquin Dai, Bo Zou,* Bingbing Liu and Guangtian Zou

A simple synthesis of SnS nanocrystals. By changing the reaction conditions nanocrystals with different shape and size can be produced.

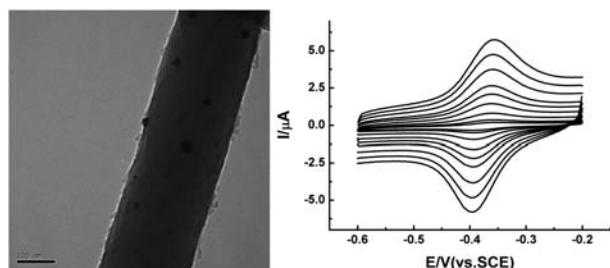
PAPERS

1704

A silicon nanowire-based electrochemical glucose biosensor with high electrocatalytic activity and sensitivity

Shao Su, Yao He, Shiping Song, Di Li, Lihua Wang, Chunhai Fan* and Shuit-Tong Lee*

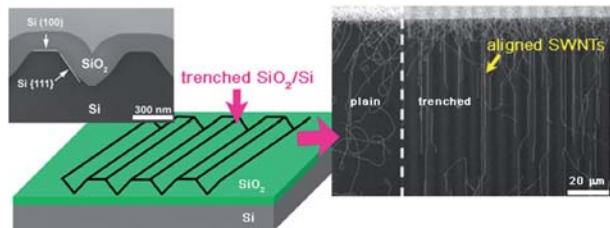
A silicon nanowire-based electrochemical glucose biosensor with high electrocatalytic activity and sensitivity.



1708

Growth of horizontally aligned single-walled carbon nanotubes on anisotropically etched silicon substrate

Carlo M. Orofino, Hiroki Ago,* Tatsuya Ikuta, Koji Takahashi and Masaharu Tsuji

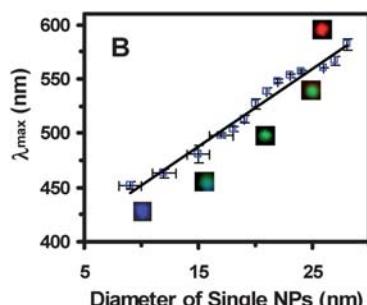
A new method to align SWNTs on anisotropically etched SiO_2/Si provides new insights on the alignment mechanism on amorphous substrates.

1715

Design and characterization of optical nanorulers of single nanoparticles using optical microscopy and spectroscopy

Prakash D. Nallathamby, Tao Huang and Xiao-Hong Nancy Xu*

Optical nanorulers for measuring the sizes of single nanoparticles using optical microscopy.

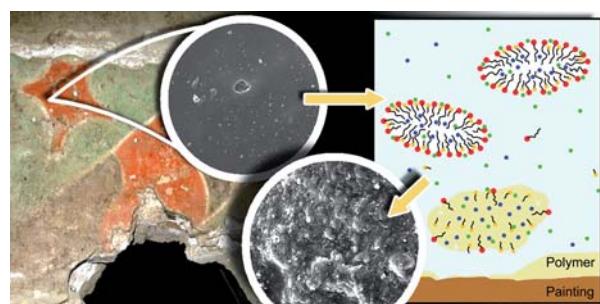


1723

Removal of acrylic coatings from works of art by means of nanofluids: understanding the mechanism at the nanoscale

Michele Baglioni, Doris Rengstl, Debora Berti, Massimo Bonini, Rodolico Giorgi and Piero Baglioni*

Conservation of Cultural Heritage: nanostructured fluids for the removal of polymer coatings.



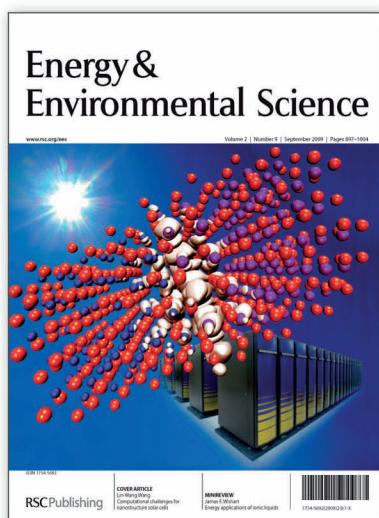
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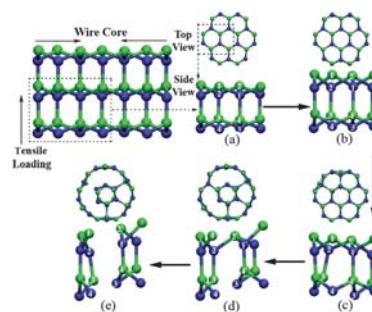
PAPERS

1733

Numerical investigations into mechanical properties of hexagonal silicon carbon nanowires and nanotubes

Bin Zheng* and John E. Lowther

2H-SiC nanowires and nanotubes represent excellent mechanical properties and size-dependent structure transformation, with potential for application in nanoscale devices.

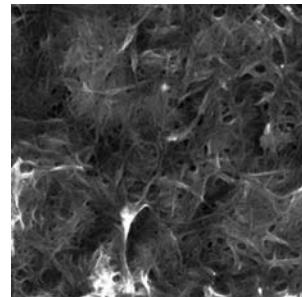


1740

Gel–carbon nanotube materials: the relationship between nanotube network connectivity and conductivity

Naratip Songmee, Pisith Singjai and Marc in het Panhuis*

The conductivity behaviour of eight carbon nanotube networks prepared using evaporative casting and vacuum filtration of HiPCO SWNT and CVD MWNT dispersed in gellan gum, xanthan gum and Triton X-100 solutions is discussed.

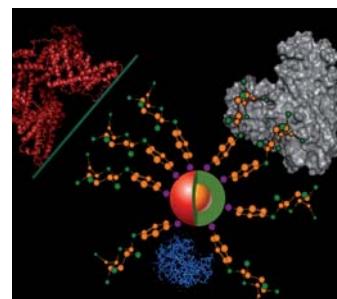


1746

Engineering biofunctional magnetic nanoparticles for biotechnological applications

Maria Moros, Beatriz Pelaz, Pilar López-Larrubia, Maria L. García-Martin, Valeria Grazú and Jesus M. de la Fuente*

Synthesis and characterization of magnetic nanoparticles with excellent size control are shown here.

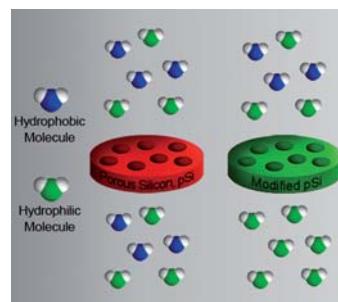


1756

Fabrication of self-supporting porous silicon membranes and tuning transport properties by surface functionalization

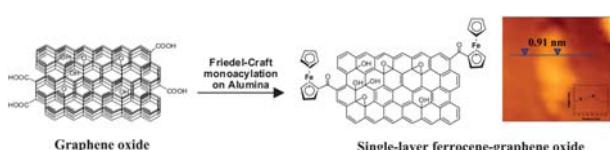
Leonora Velleman, Cameron James Shearer, Amanda Vera Ellis, Dusan Losic, Nicolas Hans Voelcker and Joseph George Shapter*

Chemically specific transport of molecules through surface modified porous silicon membranes is reported. The flux of probe molecules through the membrane is found to depend upon the nature of the surface modification. Chemically sensitive transport coupled with the biocompatibility of pSi could lead to new advances in membrane based bio-separations.



PAPERS

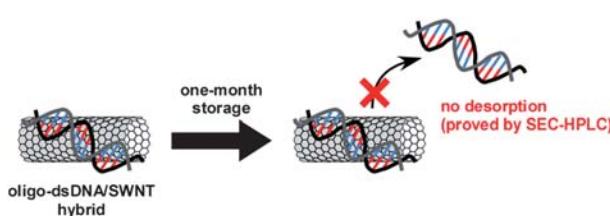
1762

**Covalent modification and exfoliation of graphene oxide using ferrocene**

M. B. Avinash, K. S. Subrahmanyam, Y. Sundarayya and T. Govindaraju*

Covalent functionalization of the graphene oxide with ferrocene on solid phase alumina results in intercalation and exfoliation of graphene oxide to single-layer ferrocene-graphene oxide.

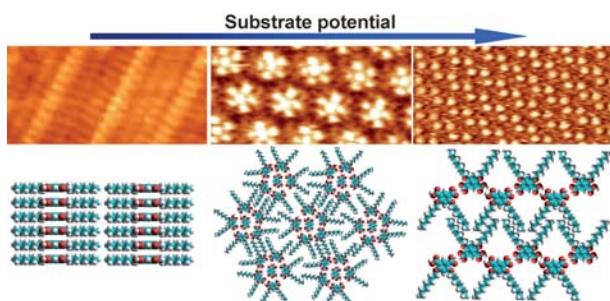
1767

**Fundamental properties of oligo double-stranded DNA/single-walled carbon nanotube nanobiohybrids**

Yuki Yamamoto, Tsuyohiko Fujigaya, Yasuro Niidome and Naotoshi Nakashima*

Fundamental properties of single-walled carbon nanotubes (SWNTs) that are individually dissolved using twenty base paired-double-stranded (ds) DNA as well as single-stranded (ss) twenty-mers of oligo DNAs for comparison are described.

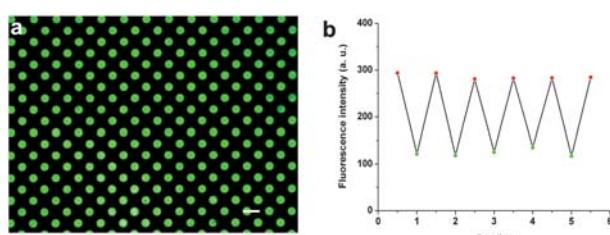
1773

**2D analogues of the inverted hexagonal phase self-assembled from 4,6-dialkoxylated isophthalic acids at solid–liquid interfaces**

Andrey S. Klymchenko,* Shuhei Furukawa, Tanya Balandina, Klaus Müllen, Mark Van der Auweraer and Steven De Feyter*

At an electrified solid–liquid interface, 4,6-dialkoxylated isophthalic acid monolayers undergo major structural transformations in response to a change in substrate potential.

1781

**Structuration of pH-responsive fluorescent molecules on surfaces by soft lithographic techniques**

Alberto Martínez-Otero, Félix Busqué, Jordi Hernando* and Daniel Ruiz-Molina*

Arrays of fluorescent pH-responsive multistate molecules show fluorescence sensing capabilities when they are exposed to atmospheres of different acidity over large pH-windows.

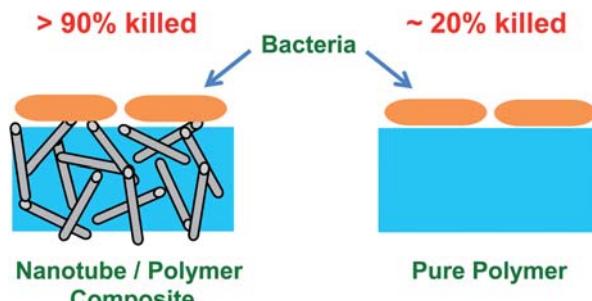
PAPERS

1789

Antimicrobial biomaterials based on carbon nanotubes dispersed in poly(lactic-*co*-glycolic acid)

Seyma Aslan, Codruta Zoican Loebick, Seoktae Kang, Menachem Elimelech, Lisa D. Pfefferle and Paul R. Van Tassel*

Carbon nanotubes dispersed within the biomedical polymer poly(lactic-*co*-glycolic acid) (PLGA) inactivate >90% of contacting bacteria vs. 20% for pure polymer.



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