Nanoscale

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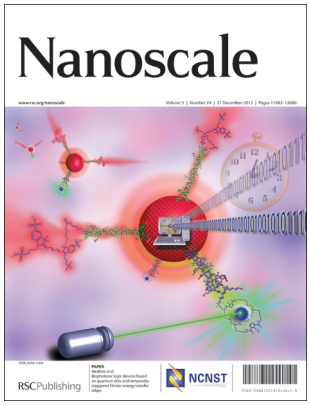
ISSN 2040-3364 CODEN NANOHL 5(24) 11983–12680 (2013)



Cover
See Medintz *et al.*, pp. 12156–12170.
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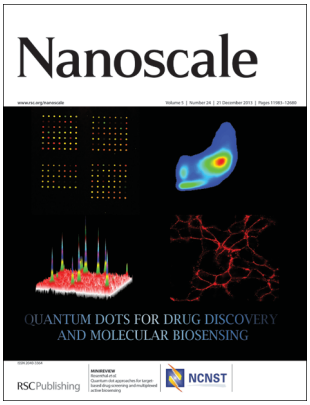

Inside cover
See Rosenthal *et al.*, pp. 12072–12081.
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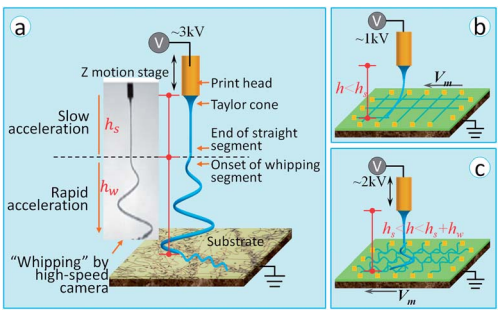
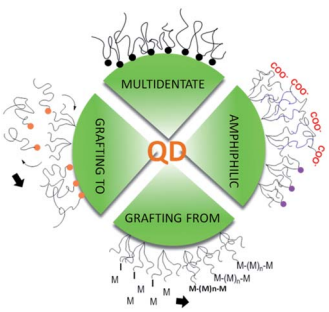
REVIEWS





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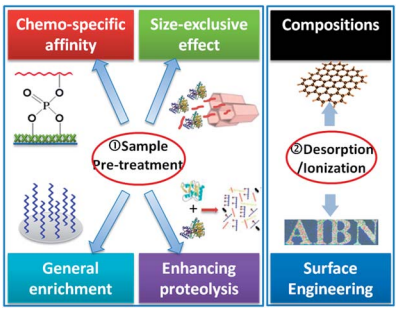
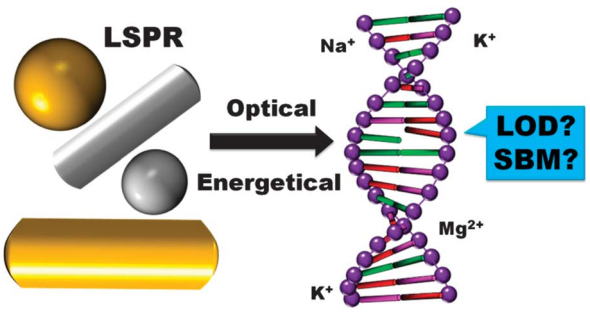
REVIEWS



FEATURE ARTICLE



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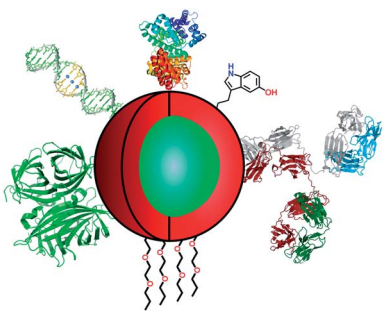

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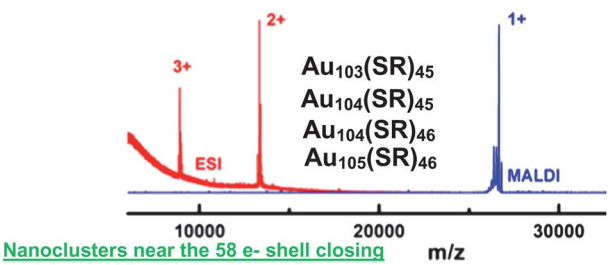

COMMUNICATIONS

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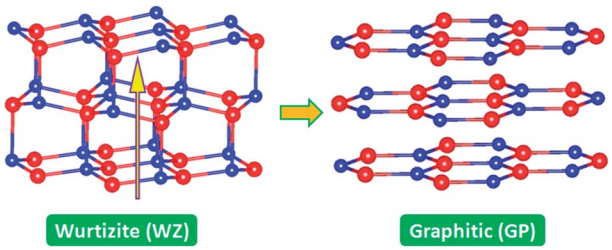
12111

Stability of graphitic-like zinc oxide layers under carriers doping: a first-principles study

Erjun Kan,* Kaiming Deng and Fang Wu*

The stability of graphitic–ZnO layers is gradually reduced with the increasing of doped electrons.

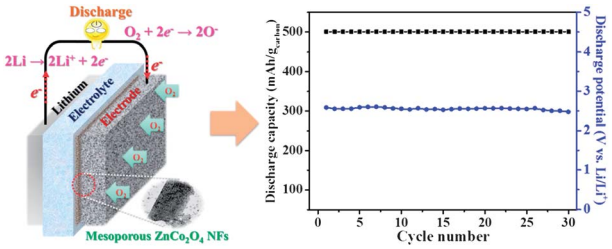


12115

Mesoporous $ZnCo_2O_4$ nanoflakes with bifunctional electrocatalytic activities toward efficiencies of rechargeable lithium–oxygen batteries in aprotic media

Tai-Feng Hung, Saad Gomaa Mohamed, Chin-Chang Shen, Yuan-Quei Tsai, Wen-Sheng Chang and Ru-Shi Liu*

2D mesoporous $ZnCo_2O_4$ nanoflakes yielded stable cyclability at a cut-off capacity of 500 mA h g_{carbon}^{-1} in the case of aprotic Li–O_2 batteries were demonstrated.

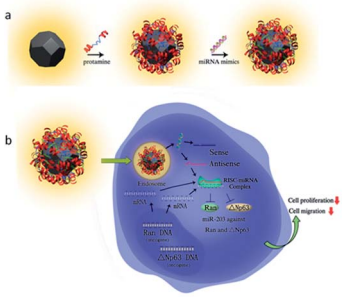


12120

Protamine sulfate–nanodiamond hybrid nanoparticles as a vector for MiR-203 restoration in esophageal carcinoma cells

Minjun Cao, Xiongwei Deng, Shishuai Su, Fang Zhang, Xiangqian Xiao, Qin Hu, Yongwei Fu, Burton B. Yang, Yan Wu,* Wang Sheng* and Yi Zeng

Protamine-functionalized nanodiamond has a great potential to be a biocompatible nanomaterial in miRNA-based cancer therapy.

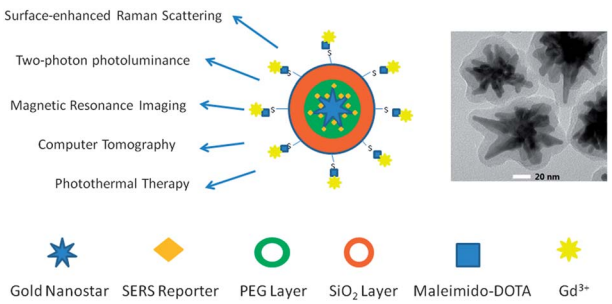


12126

Quintuple-modality (SERS-MRI-CT-TPL-PTT) plasmonic nanoprobe for theranostics

Yang Liu, Zheng Chang, Hsiangkuo Yuan, Andrew M. Fales and Tuan Vo-Dinh*

Quintuple-modal plasmonic nanoprobe for tumor diagnostics and theranostics.



COMMUNICATIONS

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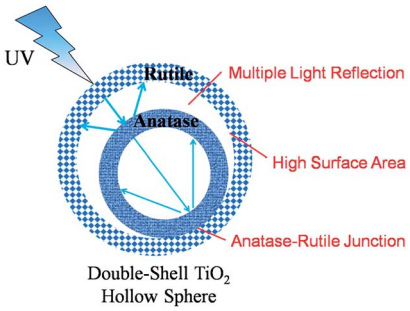
12150

Synthesis of the double-shell anatase–rutile TiO_2 hollow spheres with enhanced photocatalytic activity

Shunxing Li,* Jie Chen, Fengying Zheng, Yancai Li and Fuying Huang

Novel double-shell TiO_2 hollow spheres with an inner anatase shell and an outer rutile shell were synthesized and showed remarkably enhanced photoactivity for the degradation of rhodamine B.



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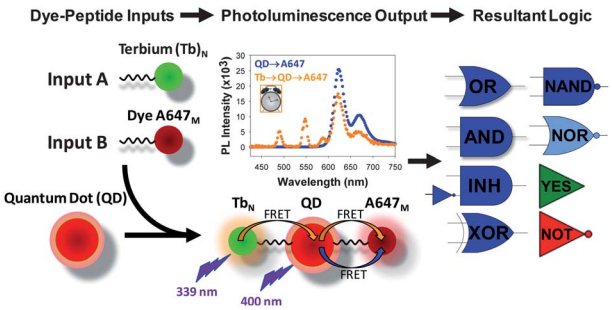
12156

Biophotonic logic devices based on quantum dots and temporally-staggered Förster energy transfer relays

Jonathan C. Claussen, W. Russ Algar, Niko Hildebrandt, Kimihiro Susumu, Mario G. Ancona and Igor L. Medintz*

Terbium complexes and Alexa Fluor 647 are conjugated to quantum dots *via* polyhistidine-peptides producing spectrotemporal photoluminescence that is converted into logic gates.

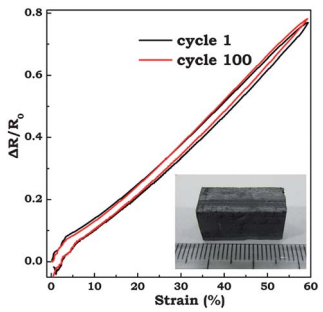


12171

A hierarchically structured graphene foam and its potential as a large-scale strain-gauge sensor

Jun Kuang, Luqi Liu,* Yun Gao, Ding Zhou, Zhuo Chen, Baohang Han and Zhong Zhang*

Electrically conductive ReG foam with macroporous hierarchical structures has excellent piezoresistivity and has potential as a large-scale strain-gauge sensor.

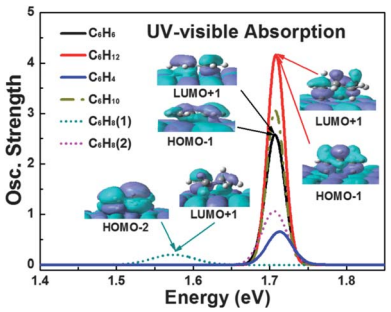


12178

Signatures in vibrational and UV-visible absorption spectra for identifying cyclic hydrocarbons by graphene fragments

Yan Meng, Qi Wu, Lei Chen, Sonam Wangmo, Yang Gao, Zhigang Wang,* Rui-Qin Zhang,* Dajun Ding, Thomas A. Niehaus and Thomas Frauenheim

Obvious different characteristics in the spectra of different cyclic organic hydrocarbons adsorbed on graphene fragments are useful for the design of molecular recognition devices based on graphene.



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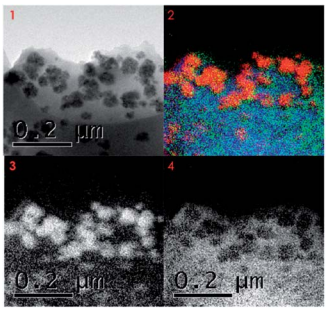

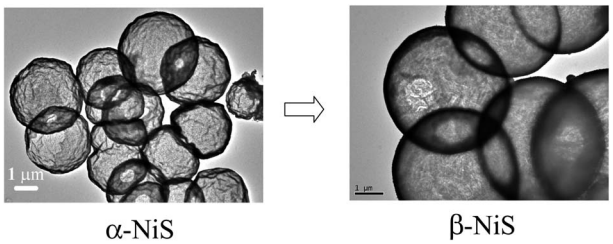

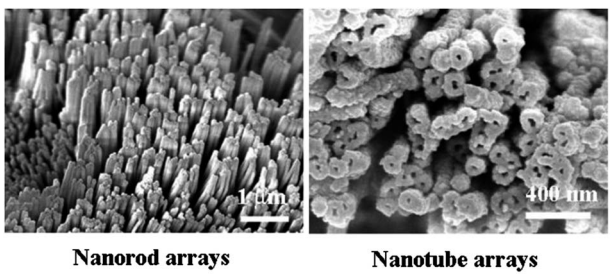

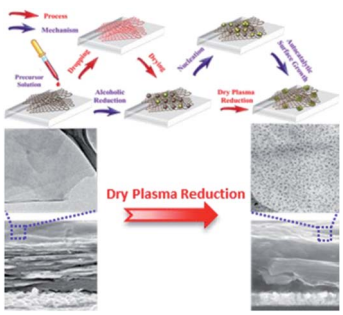

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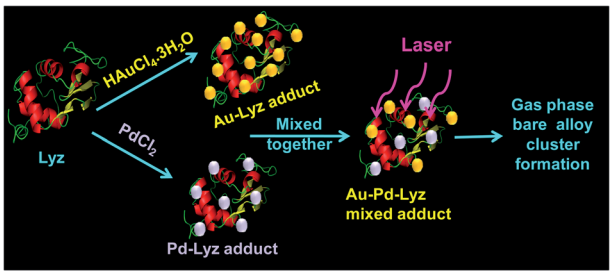
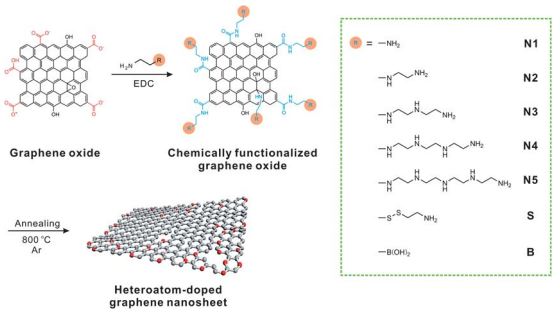


Noble metal alloy clusters in the gas phase derived from protein templates: unusual recognition of palladium by gold

Ananya Baksi and T. Pradeep*

Matrix assisted laser desorption ionization of Au-Pd mixed adduct of lysozyme produces naked alloy clusters in the gas phase. Pd is selectively recognized by gold in the gas phase among a series of metal ions used to form adducts.

12255

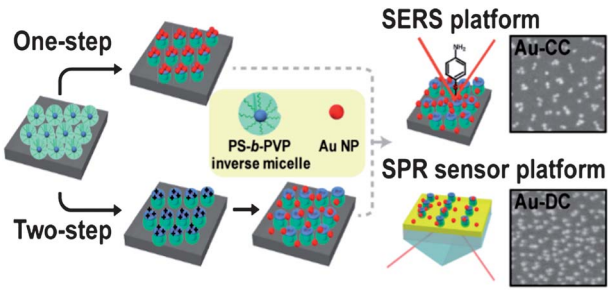


Covalent functionalization based heteroatom doped graphene nanosheet as a metal-free electrocatalyst for oxygen reduction reaction

Minju Park, Taemin Lee and Byeong-Su Kim*

We report a facile synthesis of heteroatom doped graphene oxide nanosheets through covalent functionalization for metal-free electrocatalysts.

12261

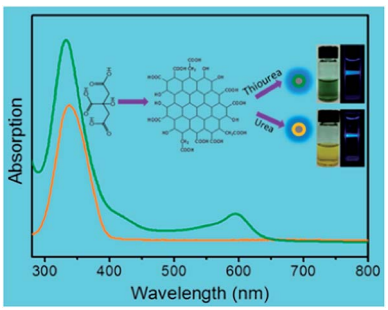


Configuration-controlled Au nanocluster arrays on inverse micelle nano-patterns: versatile platforms for SERS and SPR sensors

Yoon Heę Jang, Kyungwha Chung, Li Na Quan, Barbora Špačková, Hana Šípová, Seyoung Moon, Won Joon Cho, Hae-Young Shin, Yu Jin Jang, Ji-Eun Lee, Saji Thomas Kochuveedu, Min Ji Yoon, Jihyeon Kim, Seokhyun Yoon, Jin Kon Kim, Donghyun Kim, Jiří Homola and Dong Ha Kim*

Au nanocluster arrays with controlled configuration are exploited as advanced platforms for SERS and SPR sensors.

12272



Highly luminescent S, N co-doped graphene quantum dots with broad visible absorption bands for visible light photocatalysts

Dan Qu, Min Zheng, Peng Du, Yue Zhou, Ligong Zhang,* Di Li, Huaqiao Tan, Zhao Zhao, Zhigang Xie and Zaicheng Sun*

A facile hydrothermal synthesis route to N and S, N co-doped graphene quantum dots (GQDs) was developed by using citric acid as the C source and urea or thiourea as N and S sources.

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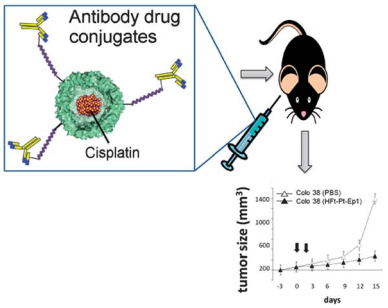

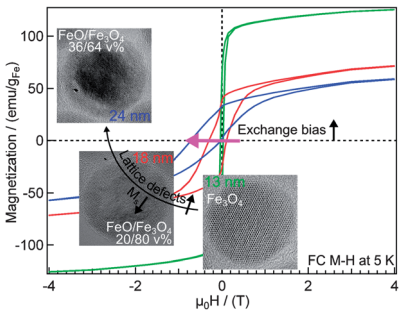

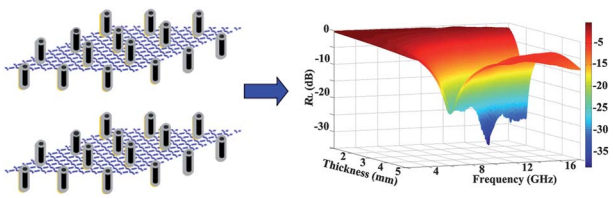

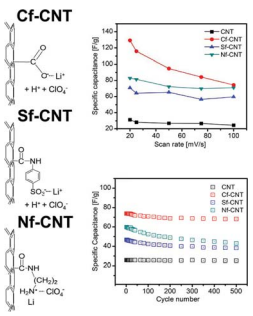

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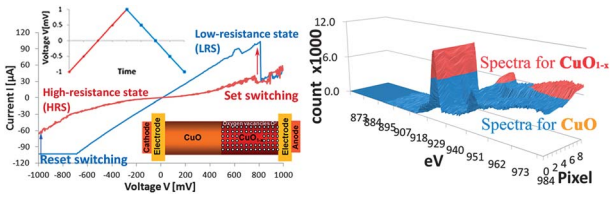
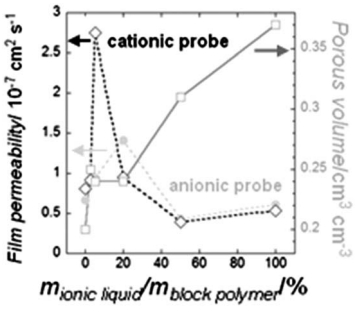


In situ forming, characterization, and transduction of nanowire memristors

Zheng Fan, Xudong Fan, Alex Li and Lixin Dong*

We report the nanorobotic *in situ* forming, characterization, and transduction of memristors based on individual copper oxide nanowires.

12316

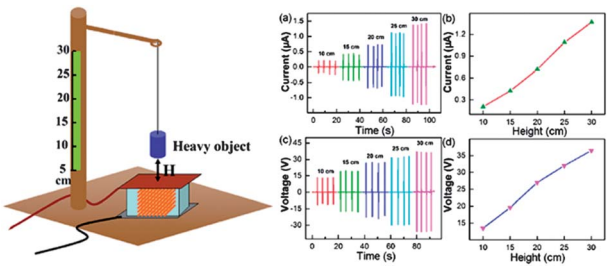


Bimodal mesoporous titanium dioxide anatase films templated by a block polymer and an ionic liquid: influence of the porosity on the permeability

Sébastien Sallard,* Michael Schröder, Cédric Boissière, Christian Dunkel, Mathieu Etienne, Alain Walcarius, Torsten Oekermann, Michael Wark and Bernd M. Smarsly

The highest permeability of bimodal mesoporous anatase films does not correspond to the highest porous volume recorded.

12330

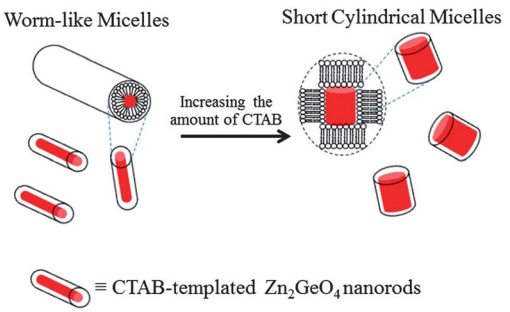


Silicon nanowires nanogenerator based on the piezoelectricity of alpha-quartz

Kui Yin, Haiyang Lin, Qian Cai, Yi Zhao, Shuit-Tong Lee,* Fei Hu and Mingwang Shao*

Alpha-quartz was grown in silicon nanowires and fabricated piezoelectric nanogenerators with maximal output of 36.5 V and 1.4 μA.

12335



Core–shell Zn_2GeO_4 nanorods and their size-dependent photoluminescence properties

Songping Wu,* Zhuolin Wang, Xin Ouyang and Zhiqun Lin*

Size-tunable crystalline core–crystalline shell Zn_2GeO_4 nanorods synthesized *via* a facile hydrothermal reaction possessed size-dependent photoluminescence.

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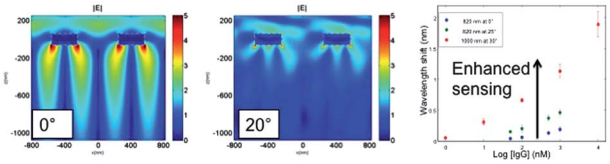

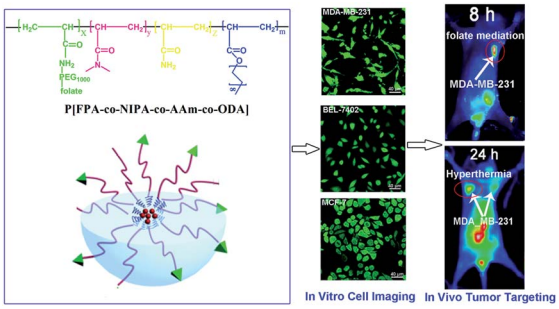

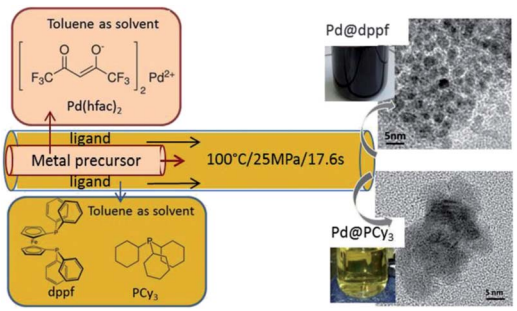

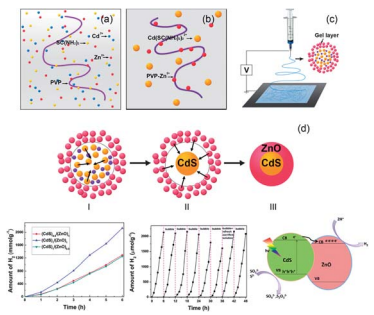

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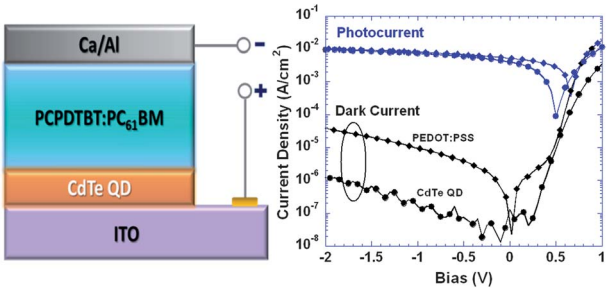

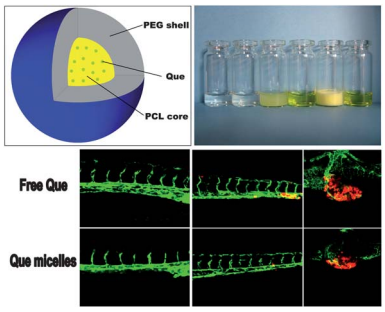

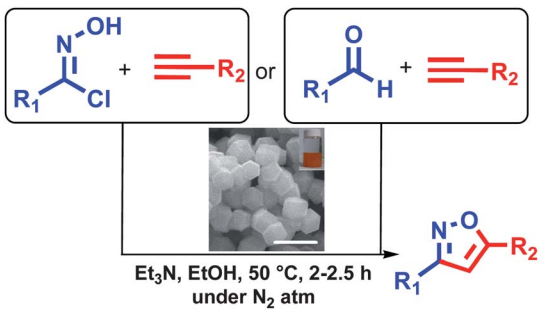

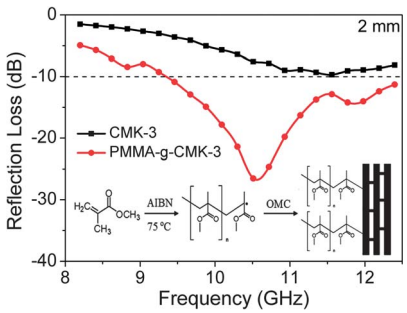

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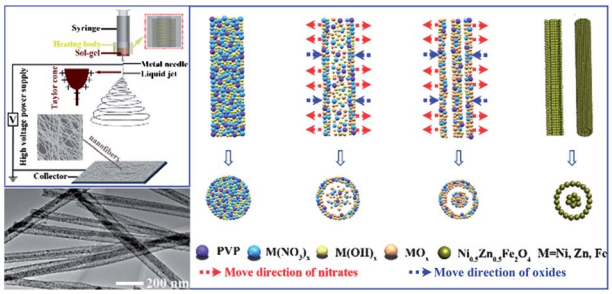

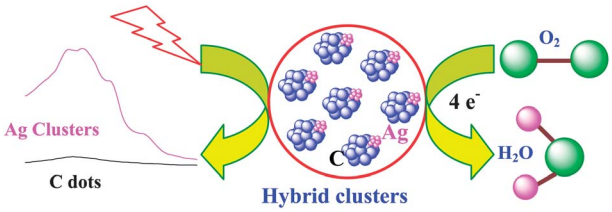

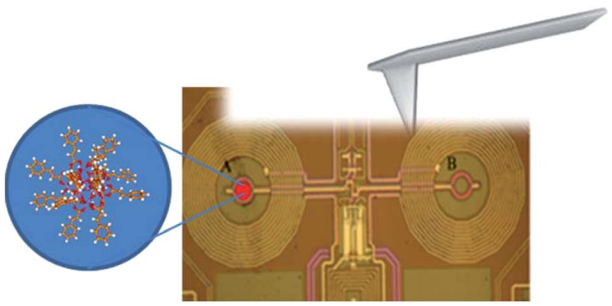

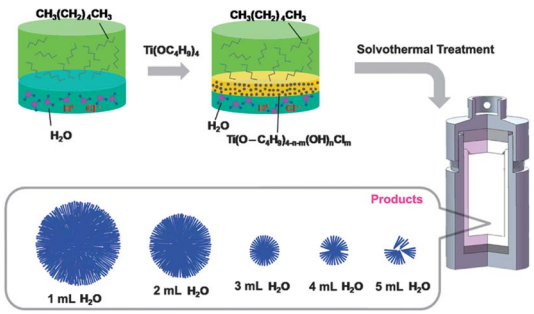

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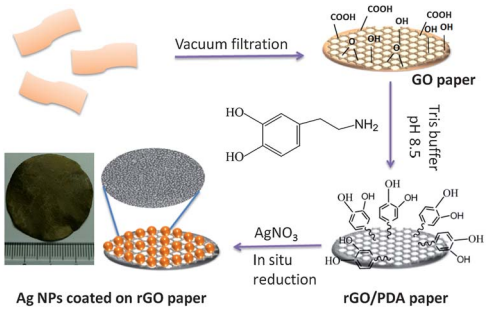

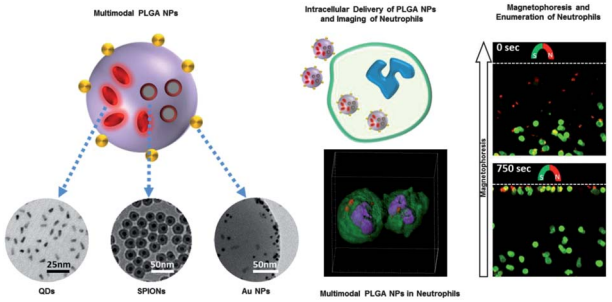

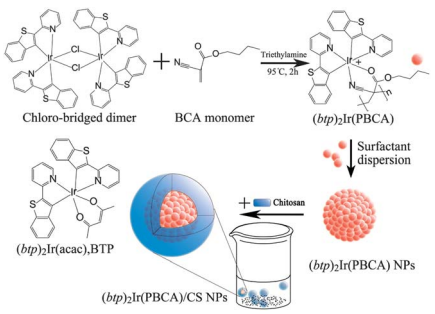

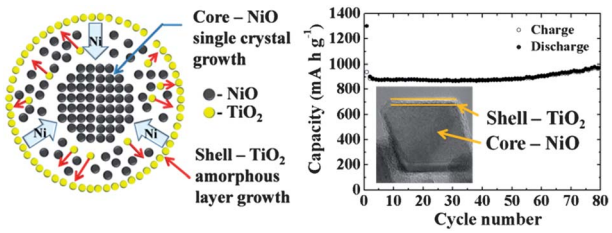

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ADDITIONS AND CORRECTIONS