



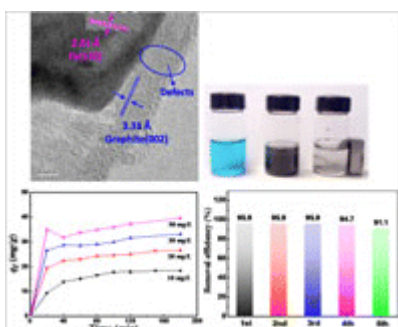
## BRIEF REPORTS

### 1. Novel *in situ* Synthesized Fe@C Magnetic Nanocapsules Used as Adsorbent for Removal of Organic Dyes and its Recycling

Ranran Li, Jieyi Yu, Asif Shah, Xinglong Dong, Xiaona Li, Hongtao Yu, Xie Quan, Youngguan Jung

1650013

Core-shell type carbon-coated Fe nanocapsules (Fe@C NCs) were *in situ* synthesized by DC arc-discharge plasma method in methane atmosphere, and they were modified by H<sub>2</sub>O<sub>2</sub> solution. Such m-Fe@C NCs were used as adsorbent to remove methylene blue in water. They exhibited excellent high removal efficiency (96%) and good recycling performance (after recycle for 5 times, the removal efficiency is maintained over 90%). They are also easily separated entirely from contaminative solution by a magnetic field.

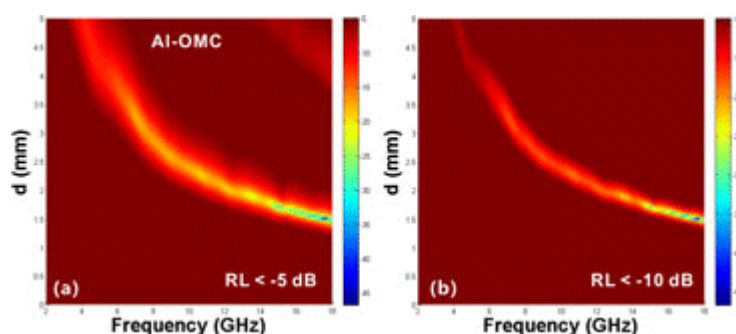


### 2. A Comparable Study on the Microwave Absorption Properties of Al/Fe/Co Doped OMC/Paraffin Wax Composites

Yanyan Ren, Hongfeng Li, Guanglei Wu, Le Yang, Chenhui Zheng, Liuding Wang, Fang Ren, Hui Xing, Hongjing Wu

1650014

Compared with Fe/Co-OMC composites, the Al-OMC nanocomposite played a great role in adjusting values and requencey dependent of complex permittivity, which gives rise to significant improved microwave absorption and reduced thickness of the corresponding paraffin wax composites. Reflection loss (RL) values less than -5 dB and -10 dB were obtained in the frequency range of 9.2–18 and 10.7–14.7 GHz, with a single thickness of 2.00 mm, respectively.

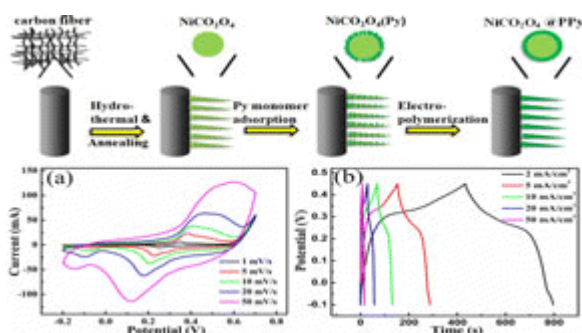


### 3. Rationally Designed Carbon Fiber@NiCo<sub>2</sub>O<sub>4</sub>@Polypyrrole Core–Shell Nanowire Array for High-Performance Supercapacitor Electrodes

Tingting Chen, Yong Fan, Guangning Wang, Jing Zhang, Huixin Chuo, Ruixiao Yang

1650015

The 3D core–shell composite electrodes of PPy coating on porous NiCo<sub>2</sub>O<sub>4</sub> nanowire arrays were synthesized directly on carbon fiber. Intimately covered PPy increases both the electrical conductivity of each NiCo<sub>2</sub>O<sub>4</sub> nanowire and the electrical contact of NiCo<sub>2</sub>O<sub>4</sub> with carbon fiber current collector, leading to the maximum utilization of NiCo<sub>2</sub>O<sub>4</sub> during the electrochemical reactions. The NiCo<sub>2</sub>O<sub>4</sub>@polypyrrole composite electrodes would have significant potential to be further ploited in practical applications.

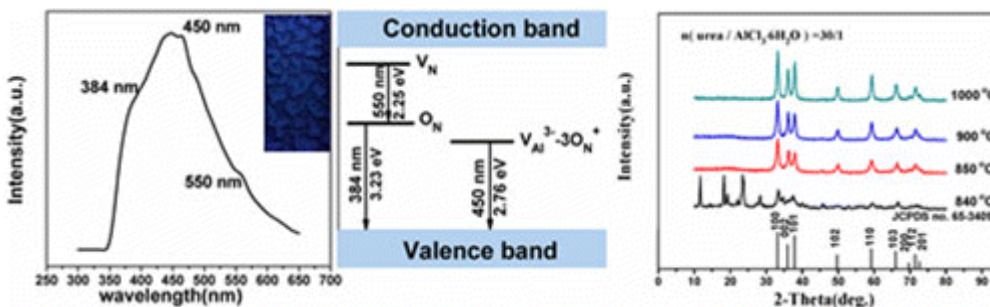


### 4. AlN with Strong Blue Emission Synthesized Through a Solventless Route

Wei Wang, Peng Zhang, Xiaobai Wang, Xiang Lei, Xiaodong Chen, Hong Ding, Hua Yang

1650016

A facile solventless route was applied to synthesize hexagonal aluminum nitride (AlN) with the strong blue emission originated from the defects in AlN lattice. Meanwhile, the effects of calcination temperatures and the aluminum and nitrogen sources on the AlN nucleation process were explored in detail.

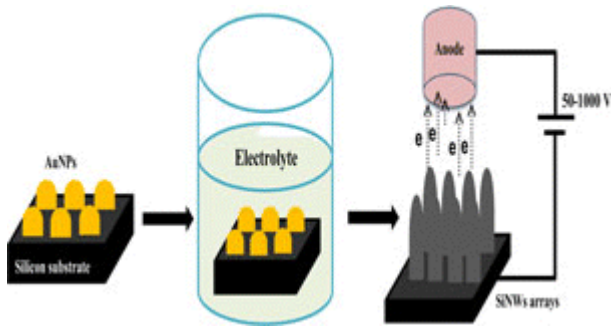


## 5. Morphological Dependence of Field Emission Properties of Silicon Nanowire Arrays

Sumanta Kumar Sahoo, Arumugam Marikani

1650017

In the present study, silicon nanowire field-emitter arrays have been fabricated from silicon substrate by electroless metal deposition process. The morphological variation in the emitting surface of the silicon nanowires and the density of arrays are tuned by controlling the Au sputtering time, have been studied by SEM and AFM analyses. Furthermore analysis was carried out for the enhancement of field emission properties of the bare silicon nanowire arrays.

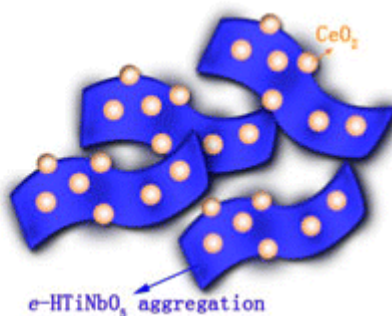
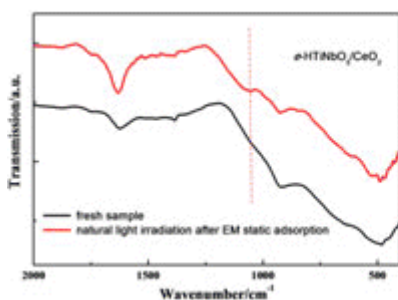


## 6. Synthesis of CeO<sub>2</sub>/e-HTiNbO<sub>5</sub> Nanocomposite and Its Application for Photocatalytic Oxidation Desulfurization

Yuanjiao Zhang, Ningning Wang, Jie He, Liangguo Da, Zhong Li

1650018

CeO<sub>2</sub>/e-HTiNbO<sub>5</sub> nanocomposite has been fabricated successfully through an exfoliation-restacking method, and CeO<sub>2</sub> sol may cause an orderly stacking structure of e-HTiNbO<sub>5</sub> nanosheet. The interaction between CeO<sub>2</sub> particles and e-HTiNbO<sub>5</sub> may result in a synergistic effect. The as-prepared CeO<sub>2</sub>/e-HTiNbO<sub>5</sub> nanocomposite exhibited high photo-ODS activity after adsorption of ethyl mercaptan under natural light.

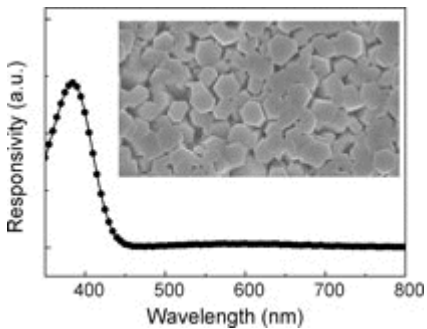


## 7. Low-Cost Fabrication of UV Photodetector Based on Hexagonal Nanocrystal ZnO:Al/p-Si Heterojunction

Li Duan, Feng Wei, Jibin Fan, Xiaochen Yu, Wenxue Zhang, Yan Zhang, Fengni He, Xiaojiao Cheng, Ye Tian

1650019

ZnO:Al/p-Si heterojunction was fabricated by depositing a hexagonal nanocrystal ZnO:Al film on *p*-type Si substrate using a simple chemical bath deposition method. The heterojunction shows good ultraviolet photodetection performance. The response speed of the photodetector based on ZnO:Al hexagonal nanocrystal film is faster than that of most previously reported photodetectors based on ZnO:Al nanorods.

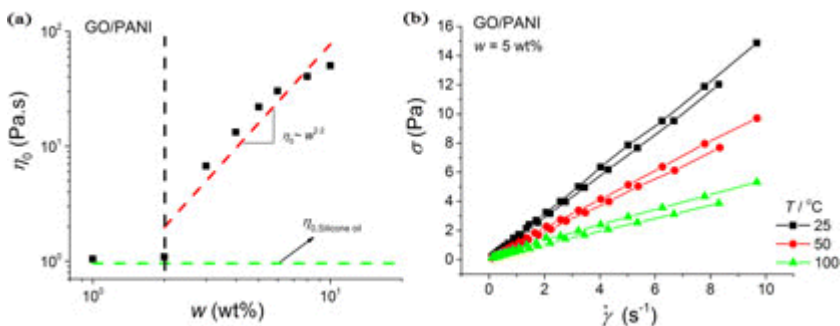


## 8. Rheological Behavior and Electrical Properties of Graphene Oxide/Polyaniline Nanocomposites

Qing Yin, Ruiwen Shu, Honglong Xing, Dexin Tan, Ying Gan, Guocai Xu

1650020

In the current study, graphene oxide/polyaniline (GO/PANI) nanocomposites were synthesized by an *in situ* polymerization of aniline monomer in GO aqueous dispersions. Microstructural studies showed that the PANI formed with highly oriented structure on the GO sheets. Steady state shear viscosity, thixotropic loop and electrical conductivity results demonstrated that the GO sheets were effective fillers for improving the rheological and electrical performance of PANI matrix.

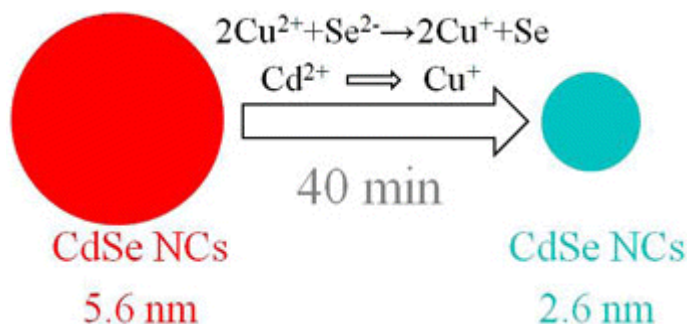


## 9. Copper Acetate Etching of Colloidal CdSe Nanocrystals

Boping Yang, Huichao Zhang, Jiayu Zhang

1650021

A maneuverable method for etching colloidal CdSe NCs was demonstrated. The NCs were etched for 40 min, decreased to ~46% of their original size, and maintained effective emissive properties and a favorable structure. No new clusters were formed and no other elements were interfused into the CdSe NCs during etching. The etching mechanism was speculated through the EPR spectra of the samples, before and after reaction.

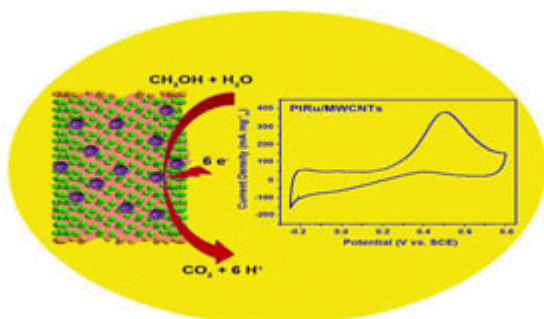


## 10. Bimetallic PtRu Nanoparticles Supported on Functionalized Multiwall Carbon Nanotubes as High Performance Electrocatalyst for Direct Methanol Fuel Cells

Chunhui Tan, Juhui Sa, Feipeng Cai, Bo Jiang, Gai Yang, Bo Wang, Jinhua Gao, Hua Chen, Xianzhong Qin

1650022

PtRu/MWCNTs catalysts were synthesized by modified polyol method without surfactant or protective agent. The high catalytic activity, excellent CO tolerance and stability for methanol oxidation as anode catalysts of DMFCs were confirmed by cyclic voltammetry (CV), CO stripping voltammetry and chronoamperometry. Application of PtRu/MWCNTs into practical DMFCs was successful and the power density ( $126.1 \text{ mW/cm}^2$ ) was outstanding.

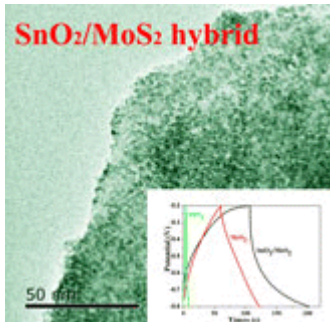


## 11. Microwave-Assisted Hydrothermal Preparation of SnO<sub>2</sub>/MoS<sub>2</sub> Composites and their Electrochemical Performance

Lin Ma, Xiaoping Zhou, Limei Xu, Xuyao Xu, Lingling Zhang

1650023

A facile microwave method has been developed to prepare SnO<sub>2</sub>/MoS<sub>2</sub> hybrid, in which ultrafine SnO<sub>2</sub> nanoparticles are well-dispersed and anchored on MoS<sub>2</sub> nanosheets. This novel SnO<sub>2</sub>/MoS<sub>2</sub> hybrid demonstrates prominently improved electrochemical performances as an electrode for supercapacitor due to the resultant synergistic effect.



## 12. Multistep Controllability Synthesis and Growth Mechanism of ZnO Nanopagoda for Schottky Diode Device

Yang Liu, Guishan Liu, Yongbing Wang, Wenyuan Gao, Hongshun Hao, Bopu Huang

1650024

A peculiar nanostructure which is similar to hexagonal pagoda with a tiny top and large bottom was observed via seed-induced method. However, semi-ZnO/metal-Al Schottky diodes were assembled, and that structure exhibits a typical rectifying behavior, and obtained low turn-on voltages which represent current responses, 0.52 V, 0.40 V, 0.18 V, respectively. The as-grown ZnO nanopagoda along grown ZnO seed with the deposition time of 60 s exhibited a slightly higher reverse saturation current than the as-grown ZnO arrays without ZnO seed.

