

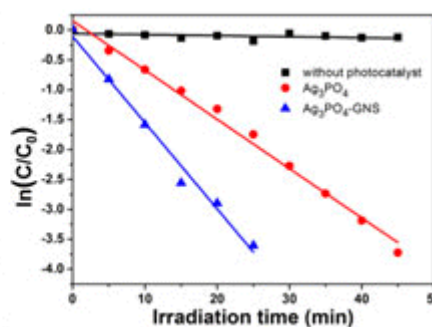
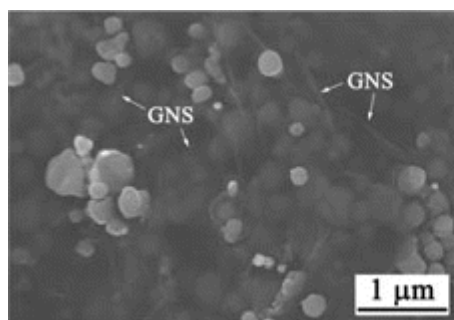
BRIEF REPORTS

1. Facile Synthesis of Graphene–Enwrapped Ag_3PO_4 Composites with Highly Efficient Visible Light Photocatalytic Performance

Lei Shi, Da Chen, Wenting Xie, Jing Zhang, Guangxing Ping, Meiqiang Fan, Laishun Qin, Liqun Bai, Zhi Chen, Chunju Lv, Kangying Shu

1650001

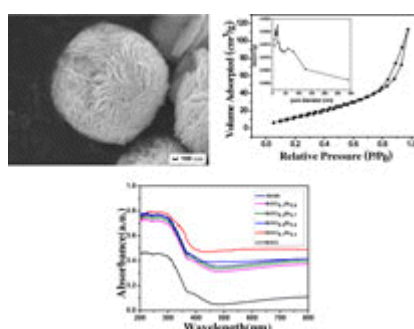
Thermally-exfoliated graphene nanosheets (GNS) were employed for the first time to prepare Ag_3PO_4 -GNS composite photocatalysts by a chemical precipitation approach. Compared with bare Ag_3PO_4 and Ag_3PO_4 -rGO composite, the Ag_3PO_4 -GNS composite exhibited enhanced photocatalytic activity and stability for rhodamine B photodegradation under visible light irradiation. This enhanced photocatalytic activity and stability was ascribed to the positive synergetic effects between Ag_3PO_4 and GNS, which could provide much more active adsorption sites, suppress charge recombination and reduce the serious photocorrosion of Ag_3PO_4 .



2. Surfactant-Assisted Solvothermal Synthesis and High Visible-Light-Induced Photocatalytic Activity of BiOBr Nanocomposite Photocatalyst

Jing Xu, Guogang Tang, Wei Liang, Dongyi Zhou, Changsheng Li, Hua Tang

1650002



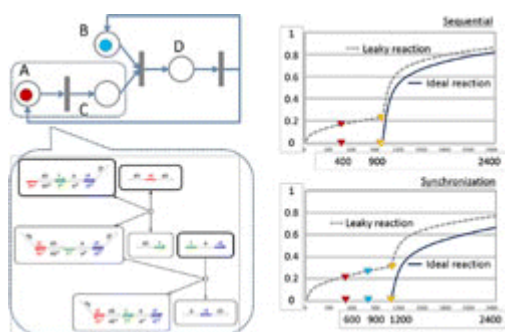
The paper describes BiOBr/BiOCl composite microspheres have been successfully synthesized through a one-pot mixed surfactant-assisted solvothermal method. BiOBr/BiOCl composites presented much higher photocatalytic activity than pure BiOBr and BiOCl in the degradation of RhB under visible light irradiation ($\lambda = 554\text{nm}$).

3. Model-Based Design and Control of Distributed DNA-Based Systems by Petri Nets

Rizki Mardian, Kosuke Sekiyama

1650003

Model-based design and control of distributed DNA-based systems is achieved by Petri Nets model and DNA strand displacement reaction. Petri Nets is utilized to abstract the chemical reactions as discrete event-based model, allowing the logical control and coordination of DNA-based agents. The design is evaluated by means of wet-lab experiment and a scenario of interacting DNA agents is simulated in-silico to show the practical applications of such model.

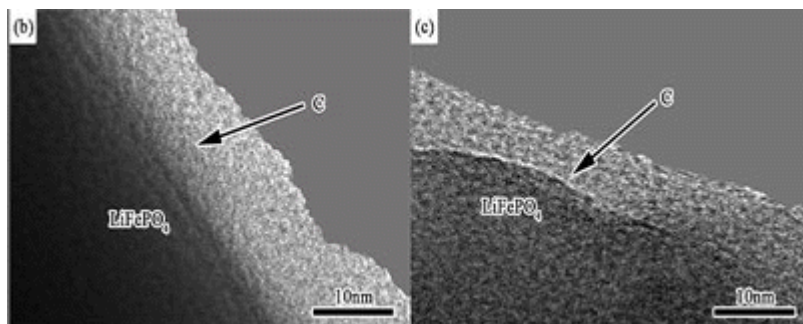


4. Synthesis of Carbon-Coated LiFePO₄ Cathode Material by One-Step Microwave-Assisted Pyrolysis of Ionic Liquid Process

Yanshuang Meng, Zhong Zhang, Wangqing Han, Yue Zhang, Fuliang Zhu, Dajian Wang

1650004

In this work, microwave pyrolysis of ionic liquid method has been, for the first time, used to synthesize carbon-coated LiFePO₄, using the ionic liquid [BMIm]N(CN)₂ as carbon source. N-doped carbon film has been successfully formed on the LiFePO₄ particles surface. The nanoscale, uniform and strongly bonded carbon film is beneficial to increase the electron and ion transfer rate of the LiFePO₄ particles, and thus improve the electrochemical performance of the LiFePO₄ particles.

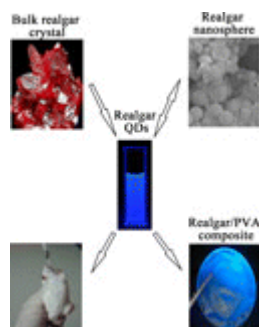


5. Fluorescent Realgar Quantum Dots: New Life for an Old Drug

J. Z. Wu, G. Chen, Y. B. Shao, J. Liu, Y. C. Sun, H. S. Lin, Paul C. Ho

1650005

Realgar quantum dots (QDs) were chemically synthesized from bulk realgar, exhibiting intense photoluminescence emission and superior stability. They are tolerable to healthy mice and effective against tumor-bearing mice, revealing their potential as an anticancer agent. Moreover, the colloidal realgar QDs in a solution could transfer to hollow nanospheres via self-assembly, and form fluorescent composite with polymeric matrix.

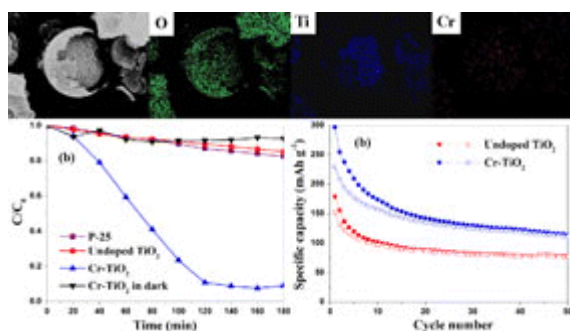


6. Cr-Doped TiO₂ Core-Shell Nanospheres with Enhanced Photocatalytic Activity and Lithium Storage Capacity

Hui Xu, Min Zeng, Jing Li, Fuyun Li

1650006

A facile one-pot hydrothermal strategy is used to synthesize Cr-doped TiO₂ core-shell nanospheres. The Cr-doped TiO₂ core-shell nanospheres exhibit an intense absorption in the visible region, resulting in a high photocatalytic activity. Moreover, as-prepared Cr-TiO₂ also possesses a high reversible capacity and excellent cycling when used as anode material of lithium-ion batteries.

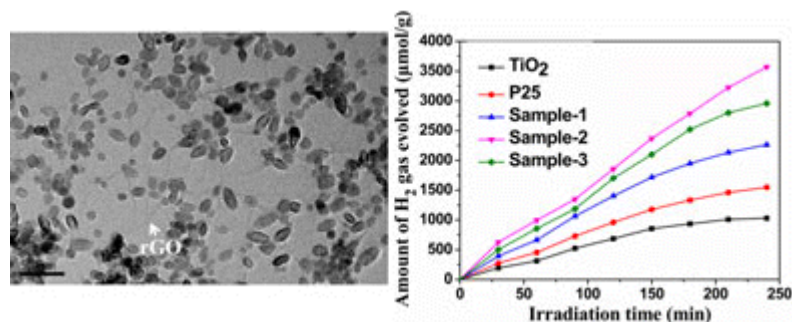


7. Synthesis of TiO₂/rGO Nanocomposites with Enhanced Photoelectrochemical Performance and Photocatalytic Activity

Dewang Kong, Min Zhao, Shikuo Li, Fangzhi Huang, Jiming Song, Yupeng Yuan, Yuhua Shen, Anjian Xie

1650007

TiO₂ nanocomposites were prepared by employing a modified sol-gel technology, combined with hydrothermal method. The TiO₂ short nanorods, with average size of 15nm in length and 10nm in diameter, were uniformly grown on the rGO sheets with high dispersion. The obtained TiO₂/rGO nanocomposites with 1 wt% rGO exhibit high photoelectrochemical performance and excellent photocatalytic activity towards water splitting.

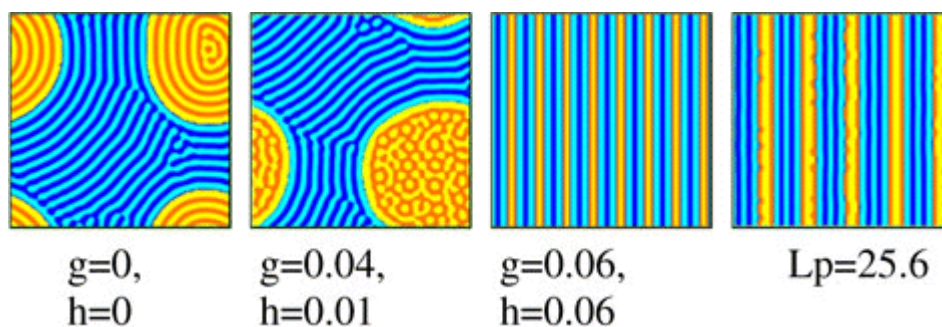


8. Ordered Morphologies on the Binary Blend of Diblock Copolymers Film Induced by Nanoparticles

Min-Na Sun, Jin-Jun Zhang, Jun-Xing Pan, Bao-Feng Wang, Hai-Shun Wu

1650008

The highly-ordered striped morphologies of the diblock copolymer/diblock copolymer film are obtained by adjusting the wetting strength and the chemical potential amplitude of the mobile nanoparticles. The oriented structures are due to the competitions between the wetting energy and the coupling energy getting the equilibrium state.

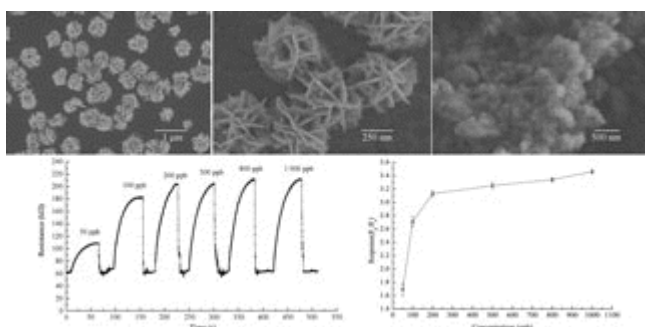


9. A ppb-Level Formaldehyde Gas Sensor Based on Rose-Like Nickel Oxide Nanoparticles Prepared Using Electrodeposition Process

Yong Zhang, Long-Zhen Xie, Chao-Xin Yuan, Chun-Lin Zhang, Su Liu, Ying-Quan Peng, Hai-Rong Li, Miao Zhang

1650009

3D rose-like NiO nanoparticles have been prepared by electrodeposition method. Gas sensing properties of the as-synthesized rose-like NiO nanoparticles were evaluated by the detection of formaldehyde gas. It was found that NiO nanoroses exhibited a high response to the formaldehyde gas at 230°C. At 1000 ppb, the NiO nanorose-based sensors gave a high response ($R_g/R_a = 3.43$) to formaldehyde gas. Therefore, this manifests 3D hierarchical structure may play an important role in enhancing the gas-sensing performs.



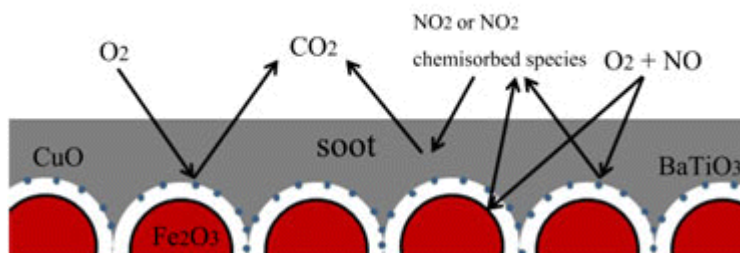
10. Effect of Supports on Soot Oxidation of Copper Catalysts: BaTiO₃ Versus Fe₂O₃@BaTiO₃ Core/Shell Microsphere

Guoliang Fan, Liu Zhao, Cairong Gong, Jia Ma, Gang Xue

1650010

Fe₂O₃@BaTiO₃ core-shell microspheres were successfully fabricated and used as catalysts support for soot combustion. Fe₂O₃@BaTiO₃ support has large specific surface area, which optimizes the contact condition of the gas-soot-catalyst three-phase reaction and affects the property of the supported active component. As a result, Fe₂O₃@BaTiO₃ supported copper catalysts show higher catalytic activity than BaTiO₃ supported copper catalysts.

CuO/Fe₂O₃@BaTiO₃

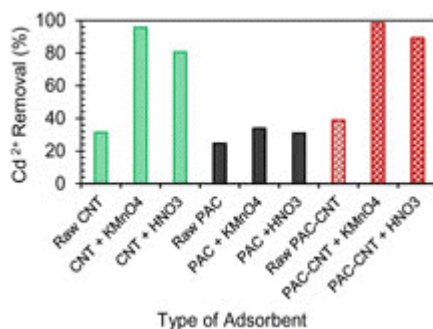


11. Removal of Cadmium from Water by CNT–PAC Composite: Effect of Functionalization

Mohammed A. AlSaadi, Abdullah Al Mamun, Md. Zahangir Alam, Mutiu Kolade Amosa, Muataz Ali Atieh

1650011

Unlike many other toxic heavy metals, it is difficult to remove cadmium ions (Cd^{2+}) from aqueous solutions. A novel PAC-CNT nanocomposite adsorbent was tested to remove Cd^{2+} from aqueous solution and the results were compared with the removal efficiency of commercial raw CNTs and PAC. Functionalization of the new PAC-CNT nanocomposite by KMnO_4 exhibited the best performance compared to those of the other combinations of modified adsorbents.



12. One-Step Fabrication of Fluorescent Carbon Dots for Selective and Sensitive Detection of Cr (VI) in Living Cells

Dan Zhang, Yingnan Jiang, Chuanxi Wang

1650012

A facile method is developed to synthesize fluorescent CDs by hydrothermal treatment of glucose in the presence of H_3BO_3 . The spherical CDs have an average diameter of 3.7 nm and the fluorescence of CDs can be effectively and selectively quenched by Cr (VI) ions based on the inner filter effect (IFE) induced fluorescent quenching of CDs. Particularly, on the basis of IFE mechanism, utilization of CDs for monitoring Cr (VI) in living cells has been successfully demonstrated.

