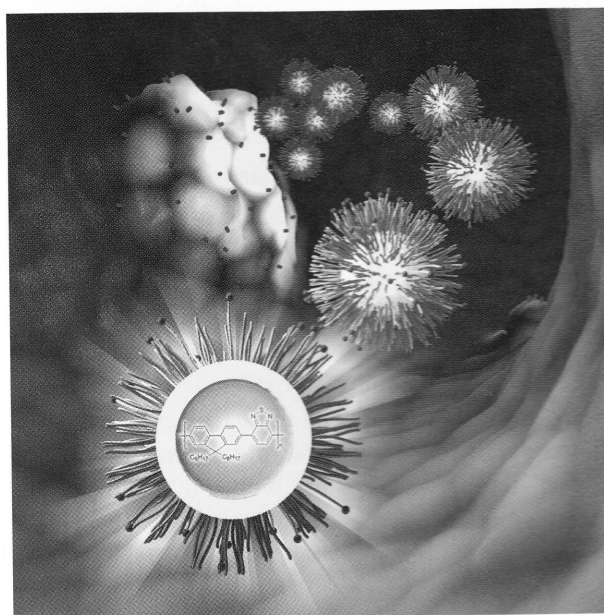


中国科学院科学出版基金资助出版

COVER PICTURE

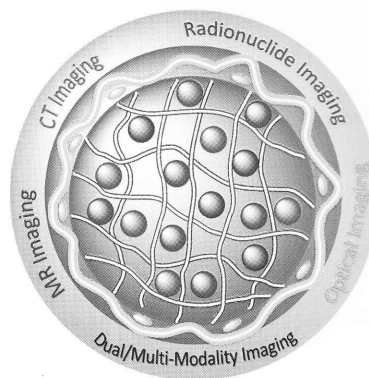
The cover picture shows folic acid functionalized fluorescent PFBT polymer dots for imaging tumor *in vivo*. We synthesized a homemade heptylamine modified folate (C₇-FA) as a target ligand for the folate receptor, and developed an economical, simple, and effective method to prepare C₇-FA functionalized PFBT fluorescent polymer dots, and demonstrated successful imaging of H1299 tumor in living mice by using these polymer dots. More details are discussed in the article by Xiong *et al.* on page 570—575.



REVIEWS

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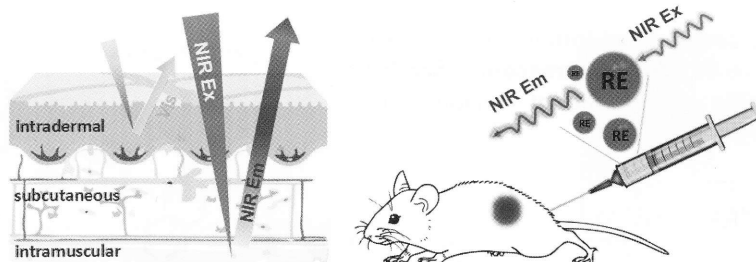
Nanogels as Contrast Agents for Molecular Imaging



This review summarizes the synthesis routes and applications of nanogels as contrast agents for molecular imaging applications including magnetic resonance, computed tomography, radionuclide, optical, and dual/multi-modality imaging.

Jianzhi Zhu, Wenjie Sun, Xiangyang Shi*

558

Lanthanide-Doped Nanoparticles with
Near-Infrared-to-Near-Infrared Luminescence for Bioimaging

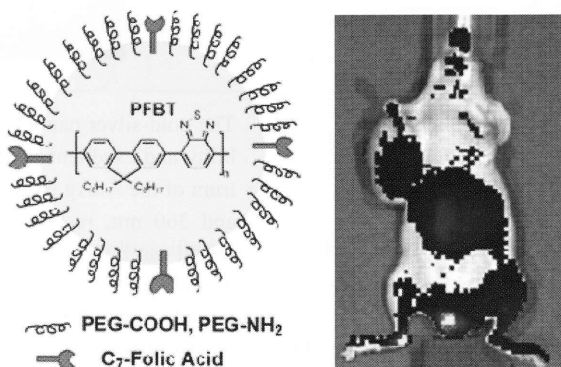
The past few years have witnessed the extensive utilization of fluorophores with either near infrared (NIR) excitation or NIR emission for biomedical imaging because NIR light possesses much deeper tissue penetration than visible light. Lanthanide-doped nanomaterials are among the most prominent NIR contrast agents due to their abundant 4f-4f intra-configurational transitions. Up till now, many kinds of lanthanide-doped nanoparticles with NIR-to-NIR luminescence have been rationally designed, and their applications in bioimaging have been systematically investigated with encouraging achievements made. In this review, we summarize the most recent development of bioimaging based on NIR-to-NIR lanthanide-doped nanoparticles. The NIR-to-NIR luminescence mechanisms, the methods for enhancement of NIR-to-NIR luminescence, the instrumentation, the imaging modes and the challenges in NIR-to-NIR bioimaging are all discussed in this review.

Yurong Wei, Xiangdong Yang, Yurou Ma, Shengfu Wang,* Quan Yuan*

COMMUNICATION

570

Folic Acid Functionalized PFBT Fluorescent Polymer Dots for Tumor Imaging

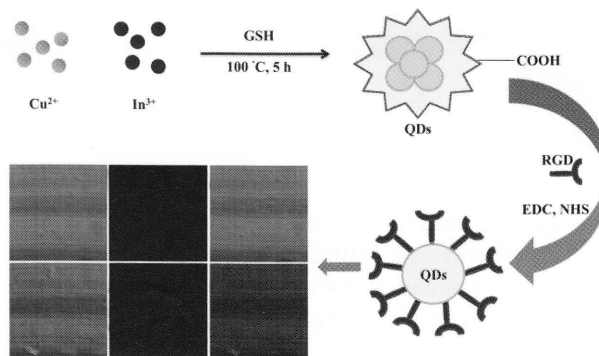


Fengwen Cao, Liqin Xiong*

Folic acid functionalized PFBT polymer dots were prepared using a nanoprecipitation method and their applications for *in vivo* tumor imaging were demonstrated.

FULL PAPERS

576

One-Pot Aqueous Synthesis of Highly Biocompatible Near Infrared CuInS₂ Quantum Dots for Target Cell Imaging

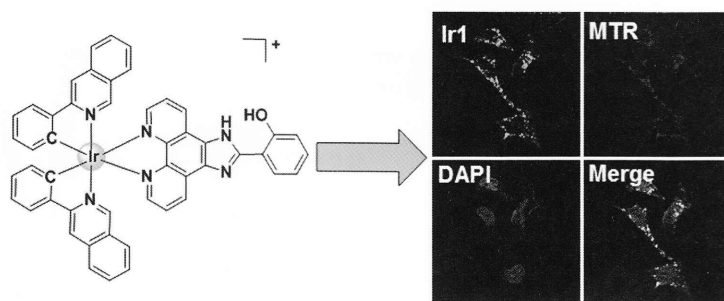
Anila Arshad, Hongli Chen, Xilin Bai, Suying Xu,* Leyu Wang*

A facile one-pot method was developed for preparing hydrophilic NIR CuInS₂ QDs, which were further bioconjugated with RGD for target cell imaging.

CONTENT

583

A Cyclometalated Iridium(III) Complex Serves as a Phosphorescent Probe for Specific Mitochondrial Imaging in Living Cells

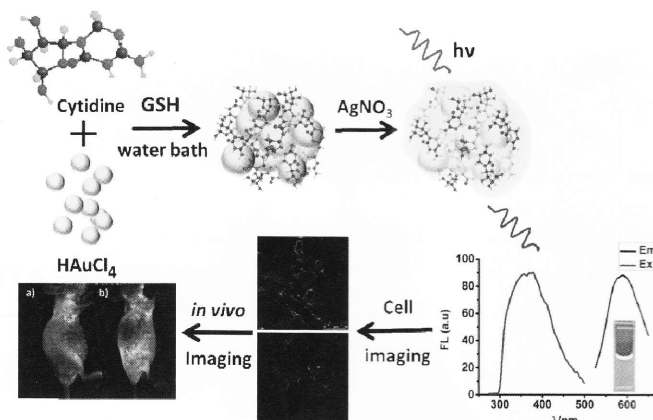


Jinquan Wang,* Xiaojuan Hou, Chengzhi Jin, Hui Chao*

A new cyclometalated iridium(III) $[\text{Ir}(2\text{-pq})_2(\text{HPIP})]\text{Cl}$ (**Ir1**, 2-pq=3-phenylisoquinoline, HPIP=2-(1*H*-imidazo[4,5-*f*][1,10]phenanthroline-2-yl) phenol), exhibited excellent photophysical properties and was developed to image mitochondria in living cells.

589

Cytidine Mediated AuAg Nanoclusters as Bright Fluorescent Probe for Tumor Imaging *in vivo*

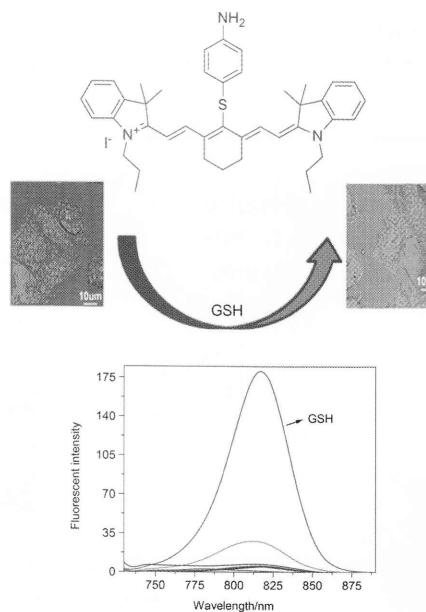


Leifeng Chen, Yuanyuan Zhang, Hui Jiang, Xuemei Wang,* Chongyang Liu*

The gold-silver nanoclusters (AuAg NCs) with good water solubility, good biocompatibility and excellent fluorescence properties have been prepared. The fluorescence spectrum of the AuAg NCs shows an emission and excitation maxima wavelength at 590 nm and 360 nm, respectively. Further experiments were explored to verify the clusters which can be used as a sensitive fluorescent probe for cancer cells/tissue detection. Especially, it is evident that under the relevant light irradiation with the wavelength of 488 nm, obviously bright fluorescence signal could be readily detected from focus location of inoculating tumor mouse, implying its possible application for the effective *in vivo* tumor bioimaging.

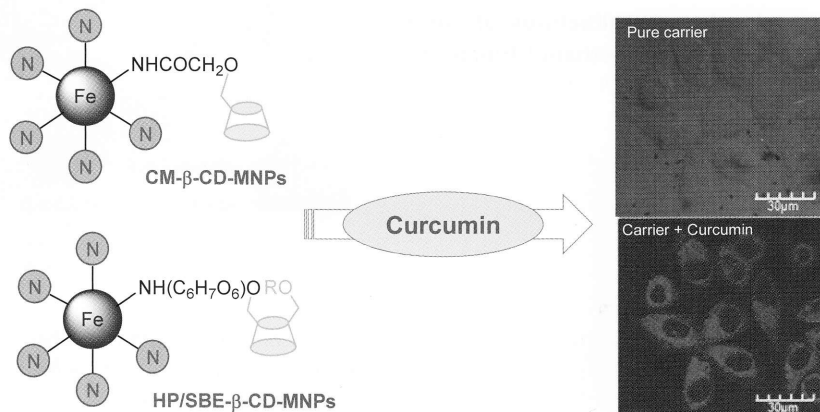
594

A Near Infrared Cyanine-Based Fluorescent Probe for Highly Selectively Detecting Glutathione in Living Cells



Xiaole Sheng, Dan Chen, Meijiao Cao, Yufeng Zhang, Xie Han, Xiaoqiang Chen, Shenghua Liu, Haiyan Chen,* Jun Yin*

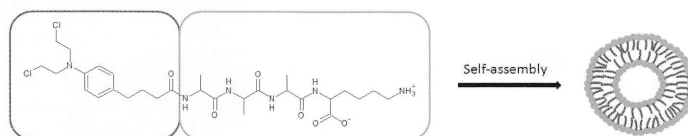
599

 β -Cyclodextrin and Its Derivatives Functionalized Magnetic Nanoparticles for Targeting Delivery of Curcumin and Cell Imaging

Yehong Zhou, Congli Wang, Fei Wang, Chenzhong Li, Chuan Dong, Shaomin Shuang*

The experiments revealed derivative β -CD-MNPs possessing the loading and release capacity. Cellular imaging suggested that curcumin was able to be successfully delivered into the cell by derivative β -CD-MNPs nanocarrier. The as-prepared magnetic composites were expected to have their potential applications in biomedical field.

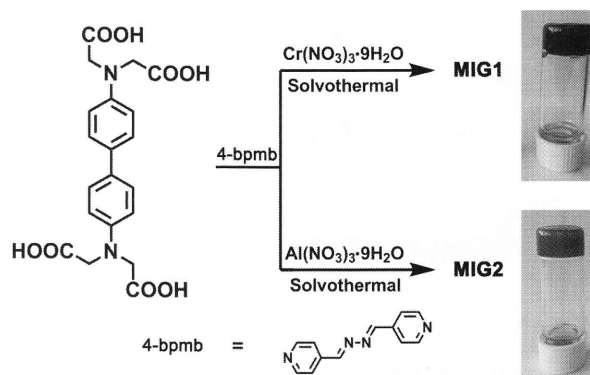
609

Improvement of Stability and Anti-cancer Activity of Chlorambucil-Tetrapeptide Conjugate Vesicles

Wei Zhang, Wenjun Zhu, Ruiyu He, Shuo Fang, Yemin Zhang, Chen Yao, Muhammad Ismail, Xinsong Li*

Formation of vesicles by self-assembly of chlorambucil-tetrapeptide conjugate.

617

Synthesis of Highly Stable Porous Metal-Iminodiacetic Acid Gels from a Novel IDA Compound

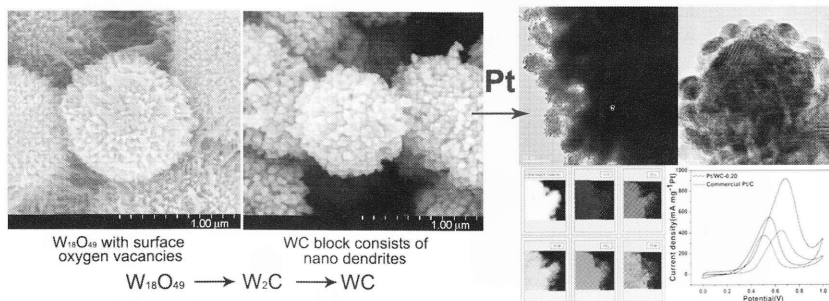
A novel and simple flexible aromatic multi-carboxylate compound *N,N'*-(4,4'-biphenyl) iminodiacetic acid (BP-IDA) was synthesized, with which two new stable metal-IDA gels (MIG1 and MIG2) with three-dimensional network structures have been prepared successfully by employing Cr^{3+} and Al^{3+} as the metal ions, respectively. Owing to easy preparation, good stability, and three-dimensional network structure, the as-prepared metal-organic gels will possess potential applications in separation, catalysis, and drug delivery.

Wenjing Chen, Yanhong Jiang, Xuesong Ding,* Chaoguo Yan,* Baohang Han*

CONTENT

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Nanostructure Architectures of Tungsten Carbide for Methanol Electrooxidation Catalyst

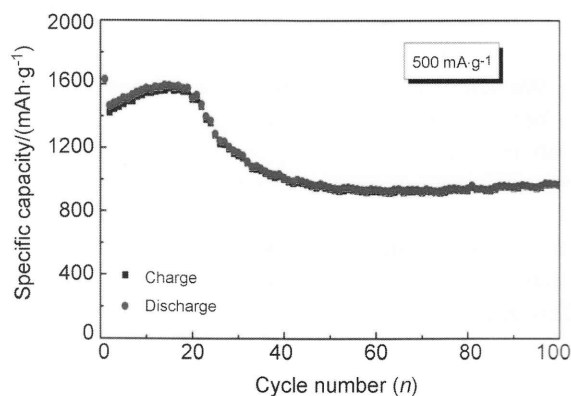
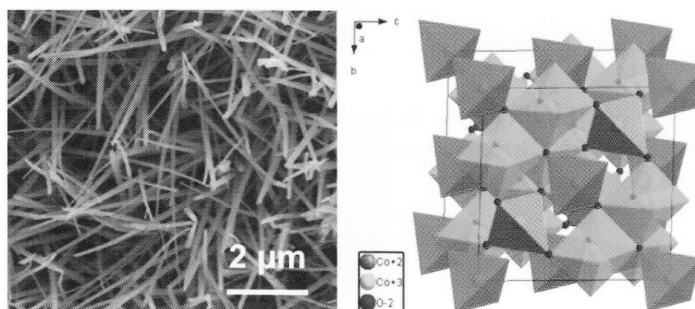


WC nanomaterials with pure phase and specific morphologies were synthesized by the precursor $W_{18}O_{49}$ with surface oxygen vacancies which become the channels for diffusion in the carbonization process. And Pt was assembled on dendrites structure of sea urchin like WC to form “pearl necklace” structure, which exhibits more than two times higher catalytic activity than commercial Pt/C (JM).

Yekun Jiang, Meiqin Shi,* Xue Tong, Youqun Chu, Chunan Ma*

631

Hierarchical Co_3O_4 Nanowires as Binder Free Electrodes for Reversible Lithium Storage

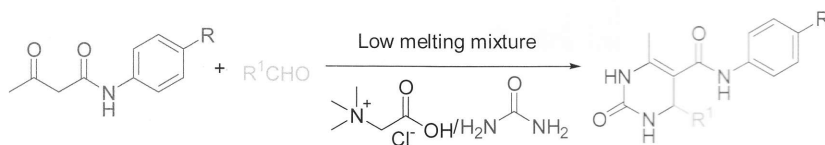


Hierarchical Co_3O_4 nanowires are fabricated by a very facile and green hydrothermal process. When applied in LIBs anode, the hierarchical Co_3O_4 nanowires exhibit high reversible discharge capacity, excellent rate capability and good cycling performance.

Zichao Zhang, Li Li,* Quan Ren, Qi Xu, Bingqiang Cao*

637

A General, Efficient and Green Procedure for Synthesis of Dihydropyrimidine-5-carboxamides in Low Melting Betaine Hydrochloride/Urea Mixture



Dihydropyrimidine-5-carboxamide derivatives were effectively synthesized in low melting mixture of betaine hydrochloride/urea. In this procedure, the low melting mixture of betaine hydrochloride/urea plays a triple role: as a catalyst, solvent and reactant.

Peng Liu, Jianwu Hao, Zhanhui Zhang*