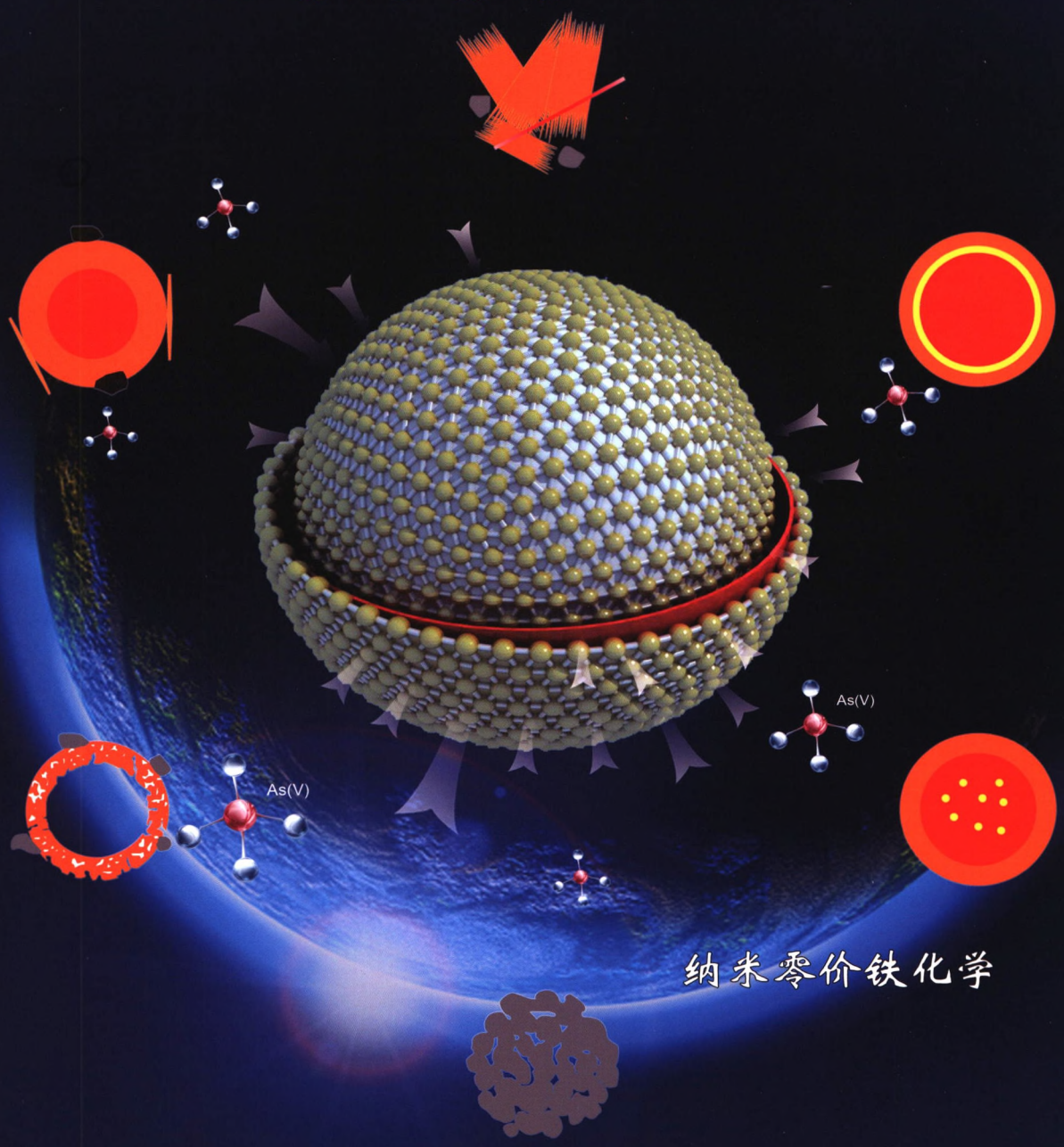
化 学 学 报

ACTA CHIMICA SINICA

2019 第77卷 第2期 Vol. 77 No. 2



纳米零价铁化学

ISSN 0567-7351

中国化学会
中国科学院上海有机化学研究所 主办

化 学 学 报

Acta Chimica Sinica

(Huaxue Xuebao)

第 77 卷　第 2 期　2019 年 2 月 15 日

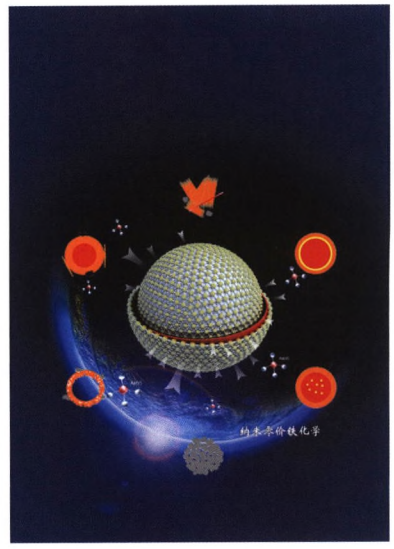
目　次

* 通信联系人.

ACTA CHIMICA SINICA

Vol. 77, No. 2 February 15, 2019

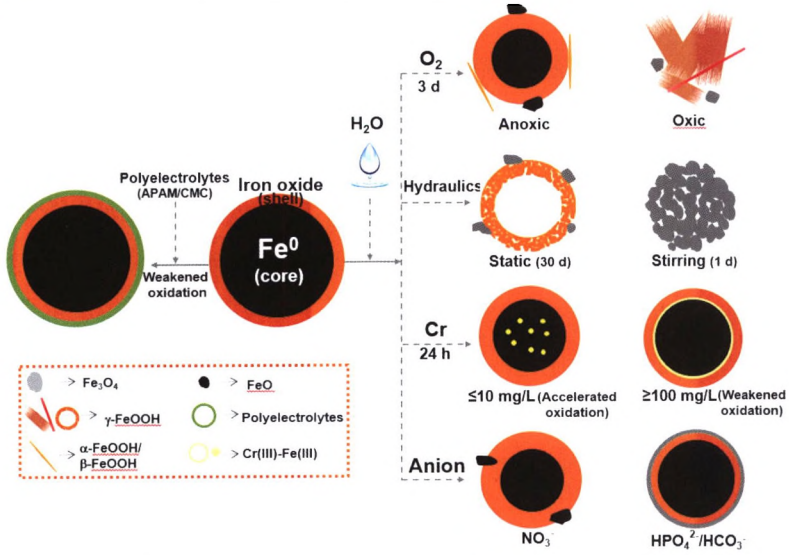
Contents



On the cover: Transformation of surface chemistry and phase of nanoscale zero-valent iron (nZVI) affect its reactivity and environmental transport and fate. This paper highlights our recent advances on the nZVI particles surface chemistry and crystal phase transformation in aqueous media, including the presence of dissolved oxygen, hydraulic conditions (static and stirring), types and concentrations of heavy metals (U(VI), Cr(VI), Se(IV))/anions (NO_3^-, SO_4^{2-}, HPO_4^{2-} and HCO_3^-) and modification of polyelectrolytes (anionic polyacrylamide (APAM) and carboxymethylcellulose sodium (CMC)). [Zhang, Wei-xian *et al.* on page 121-129.]

Account

Surface Chemistry and Phase Transformation of Nanoscale Zero-Valent Iron (nZVI) in Aquatic Media



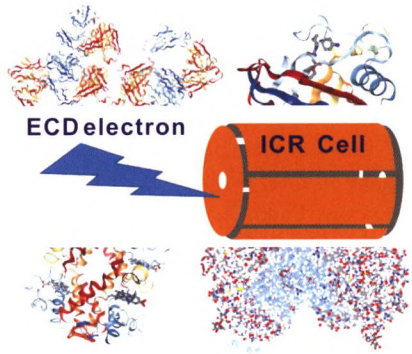
Transformation of surface chemistry and phase of nanoscale zero-valent iron (nZVI) affect its reactivity and environmental transport and fate. This paper highlights our recent advances on the nZVI particles surface chemistry and crystal phase transformation in aqueous media, including the presence of dissolved oxygen, hydraulic conditions (static and stirring), types and concentrations of heavy metals (U(VI), Cr(VI), Se(IV))/anions (NO_3^-, SO_4^{2-}, HPO_4^{2-} and HCO_3^-) and modification of polyelectrolytes (anionic polyacrylamide (APAM) and carboxymethylcellulose sodium (CMC)). More research on the effect of dynamic structure transformation by different types of pollutants, and a reaction model between the surface chemistry/phase transformation and removal performance are needed to deepen our understanding on nZVI surface chemistry, and develop more effective technologies of environmental applications.

Liu, Jing; Gu, Tianhang; Wang, Wei; Liu, Ai-rong*; Zhang, Wei-xian

Acta Chim. Sinica **2019**, *77*(2), 121-129

Review

Recent Progress on Electron Capture Dissociation Mass Spectrometry

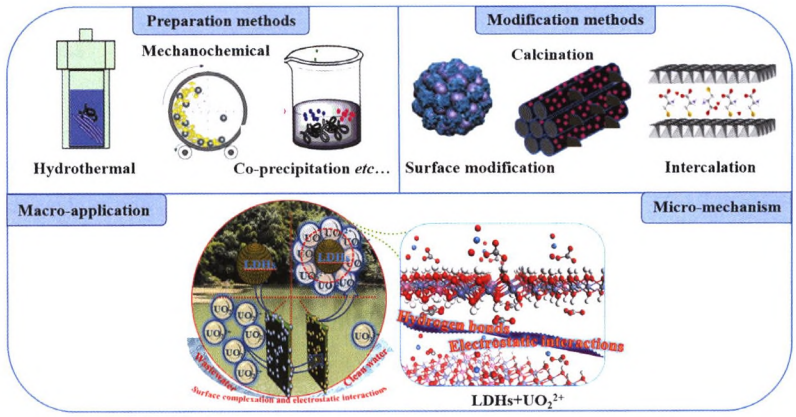


Wang, Ze; Wong, Y.-L. Elaine; Ren, Juan; Chen, Xiangfeng*; Chan, T.-W. Dominic*

Acta Chim. Sinica **2019**, *77*(2), 130-142

Development in instrumentation and mechanism of electron capture dissociation (ECD) significantly improves its applications in the analysis of biomolecules.

Investigation of Adsorption Mechanism of Layered Double Hydroxides and Their Composites on Radioactive Uranium: A Review



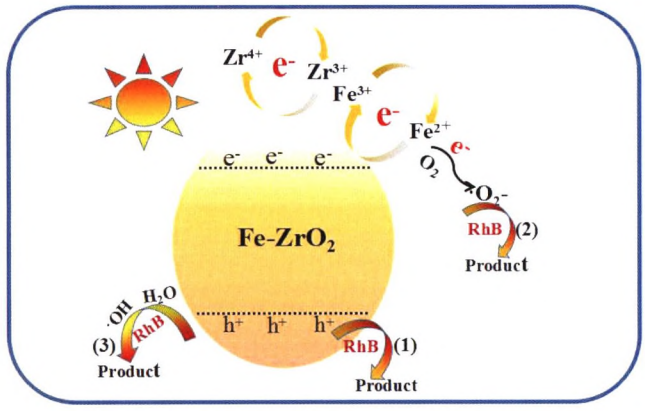
Wang, Ning; Pang, Hongwei; Yu, Shujun; Gu, Pengcheng; Song, Shuang; Wang, Hongqing*; Wang, Xiangke*

Acta Chim. Sinica **2019**, *77*(2), 143-152

Recent research on the synthesis, modification, macro-application and micro-mechanism of layered double hydroxides for the efficient removal of radioactive uranium from environment was summarized.

Article

Preparation and Photocatalytic Activity of Fe-ZrO_2 Composites from UiO-66 Precursor under Visible Light Irritation

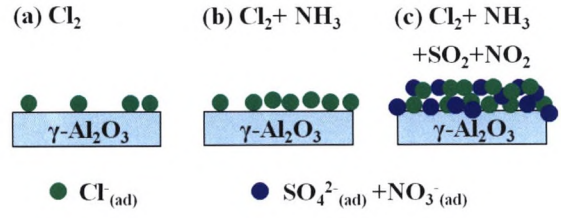


Ma, Yali; Liu, Ruxue; Meng, Shuangyan; Niu, Litong; Yang, Zhiwang*; Lei, Ziqiang*

Acta Chim. Sinica **2019**, *77*(2), 153-159

Fe-doped nano-ZrO_2 photocatalyst of Fe-ZrO_2 were successfully prepared by the adsorption of Fe^{3+} onto UiO-66, and the calcination of the precursor of Fe^{3+}/UiO-66. Fe-ZrO_2 was applied to degradation of rhodamine B and the results showed that the degradation rate of rhodamine B (RhB) under visible light irritation was 83% in 120 min. The catalyst has a promising stability. The degradation rate to RhB could still reach 78% after three cycles.

Heterogeneous Reaction of NH_3 and Cl_2 on the Surface of γ-Al_2O_3 Particles

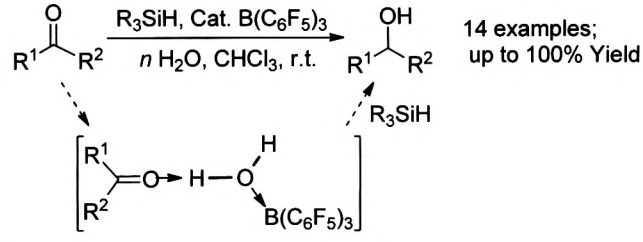


Tang, Siqun; Ma, Lingling*; Luo, Min; Zhang, Zhaohui; Qiu, Ye; Feng, Shuo; Xia, Chuanqin; Jin, Yongdong; Xu, Diandou*

Acta Chim. Sinica **2019**, *77*(2), 160-165

In the presence of active chlorine, NH_3 significantly promoted the generation of the adsorptive species on the surface, such as Cl^-, NO_3^- and SO_4^{2-}, and the most obvious synergistic effect was induced to form on the conditions of four gases co-existence.

$B(C_6F_5)_3$-Catalyzed Chemoselective Reduction of Carbonyl Compounds under Water Conditions

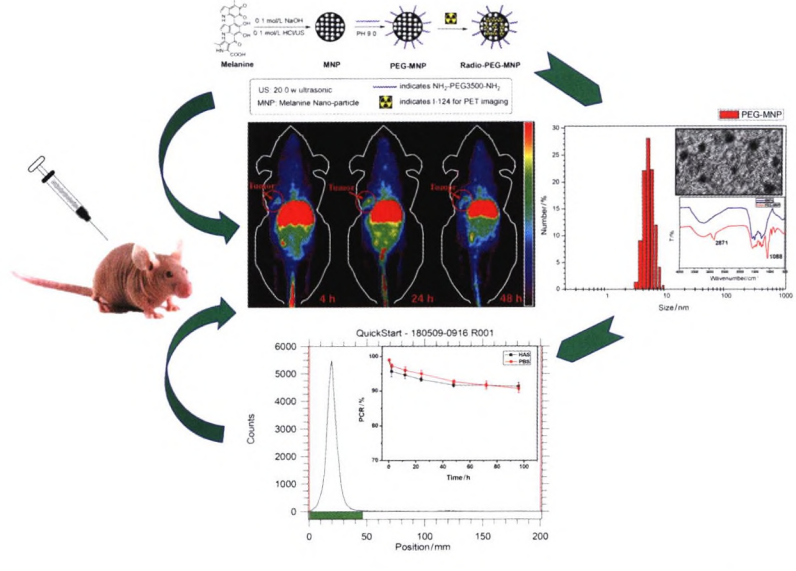


Sun, Guofeng; He, Yunqing; Tian, Chong; Borzov, Maxim; Hu, Qishan; Nie, Wanli*

Acta Chim. Sinica **2019**, *77*(2), 166-171

One-step hydrogenation of carbonyl compounds has been fulfilled catalyzed by BCF ($B(C_6F_5)_3$) with hydridosilanes as reduction agent under mild condition. The effect of water concentration on the chemoselectivity of the reaction has been investigated. It has been found that a 2～3 fold excess of water relatively to hydridosilanes usually exhibits better selectivity and overall yields than in the equimolar case. The reduction reaction can even be successfully performed with pure water as a solvent without any loss of the reactivity. Both experimental and computational methods have been performed to confirm the possibility of the water mediated mechanism and the effects of different Lewis bases on the "LB---H-OH---LA" three-component aggregates.

Preparation and Preliminary Molecular Imaging Study of ^{124}I *in-situ* Labeled Organic Melanin Nanoparticles

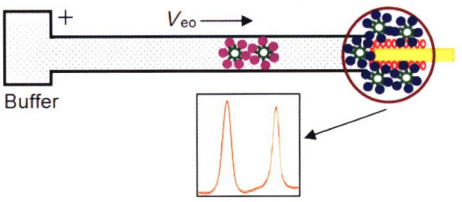


Xia, Lei; Cheng, Zhen; Zhu, Hua*; Yang, Zhi*

Acta Chim. Sinica **2019**, *77*(2), 172-178

Ultrafine particle size melanin nanoparticles (MNPs) were prepared and evaluated, and NH_2-PEG_{3500}-NH_2 was used to obtain novel PEG-MNP nanocarriers with better water solubility. Then, longer half-life nuclides ^{124}I (100.8 h) were labeled. After that, ^{124}I and ^{124}I-PEG-MNP were used to study the micro-PET imaging of normal Kunming mice, and the ROI target areas of heart, liver and thyroid were delineated for semi-quantitative analysis. Then, human pancreatic cancer BxPC3 xenografts were built to verify the imaging ability of ^{124}I-PEG-MNP in solid tumor.

Capillary Electrophoresis and Quantum Dot Electrochemiluminescence by Micellar Reversed Sweeping

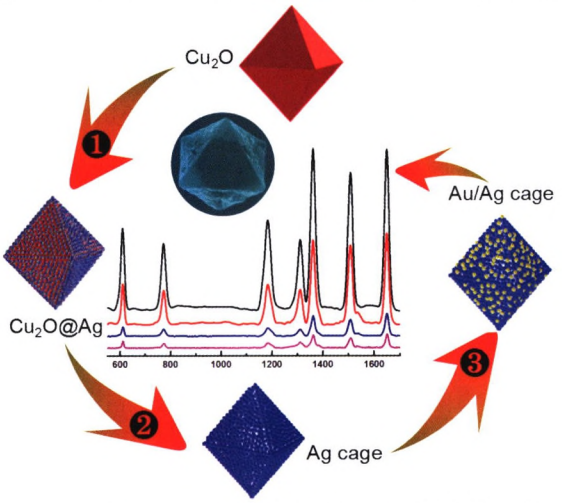


Zhang, Zhaoxiang*; Liu, Yujie; Wang, Qi; Wang, Jingjing

Acta Chim. Sinica **2019**, *77*(2), 179-183

The amines were found that they can lead to the enhancement of ECL intensity of CdSe quantum dots. A novel amines detection platform based on micellar reversed sweeping, CE separation, and quantum dots ECL detection was proposed for simultaneous detection of ractopamine and clenbuterol.

Application of Au/Ag Composite Nanocages in Surface-enhanced Raman Spectroscopy

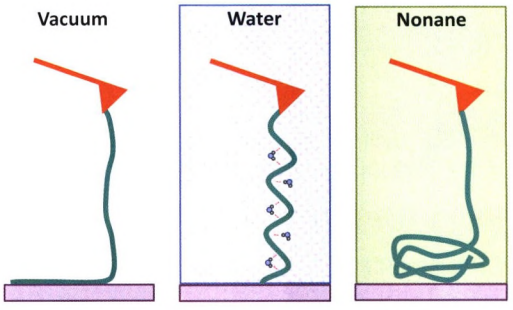


Wang, Meng*; Yan, Xin*; Wei, Dequan; Liang, Lanju; Wang, Yueping

Acta Chim. Sinica **2019**, *77*(2), 184-188

Au/Ag composite nanocages were synthesized through a $NaBH_4$ reduction-acid etching template method. The surface plasmon resonance (SPR) endows the Au/Ag composite nanocages with excellent surface-enhanced Raman spectroscopy (SERS) sensitivity, realizing the trace detection of R6G at an ultralow concentration of 5×10^{-14} mol/L, which can be attributed to the high electromagnetic field intensity generated by plasmon resonance and certificated by finite difference time domain simulation. The addition of the Au element provides the Au/Ag composite nanocages with excellent oxidation resistance and chemical stability.

Single-chain Elasticity of Poly(ethylene glycol) in High Vacuum



Wei, Junhao; Cai, Wanhao; Cui, Shuxun*

Acta Chim. Sinica **2019**, *77*(2), 189-194

Due to the influence of local environment, PEG presents environment-dependent single-chain mechanics in high vacuum, nonpolar solvent (nonane) and water.

Go Now!!

http://sioc-journal.cn

SCI影响因子 (2017)
2.735

化学学报
ACTA CHIMICA SINICA

- 同行评审
- 中国创刊最早的化学期刊(始于1933年)
- 中国第一个被SCI收录的化学期刊
- 中国“百强科技期刊”
- 高水平、高质量、高效率
- 免费投稿、审稿、发表
- 免费阅读、开放获取
- SCI影响因子最高的中文期刊

Tel.: +86-21-54925242
E-mail: hxxb@sioc.ac.cn

SCI影响因子 (2017)
2.378

CHINESE JOURNAL OF CHEMISTRY
中国化学

- 同行评审
- 1983年创刊（原名*Acta Chimica Sinica English Edition*
- 与Wiley-VCH合作出版
- 免费审稿、免费发表
- SCI收录

Tel.: +86-21-54925243-27
E-mail: cjc@sioc.ac.cn

SCI影响因子 (2017)
1.392

有机化学
Chinese Journal of Organic Chemistry

- 同行评审
- 1980年创刊
- 全面覆盖有机化学领域
- 设有研究专题、 综述与进展、 研究论文、研究简报、亮点介绍 等栏目
- 开放获取
- SCI收录

Tel.: +86-21-54925244-28
E-mail: yjhx@sioc.ac.cn

中国化学会
中国科学院上海有机化学研究所 主办