



QK2140082

ISSN 0567-7351
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化学学报

ACTA CHIMICA SINICA

Volume 79 Number 10 October 2021

ISSN 0567-7351



10 >

9 770567 735219

万方数据



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 79 卷 第 10 期 2021 年 10 月 15 日

目 次

综述

螺芳基钙钛矿太阳能电池空穴传输材料研究进展	刘庆琳, 任保轶*, 孙亚光*, 解令海, 黄维, 化学学报, 2021, 79(10), 1181-1196
固态锂电池电极过程的原位研究进展	田建鑫, 郭慧娟, 万静, 刘桂贤, 严会娟, 文锐*, 万立骏, 化学学报, 2021, 79(10), 1197-1213
典型芳香烃大气氧化机理研究进展	宋梦迪, 刘莹, 李敬*, 陆思华, 化学学报, 2021, 79(10), 1214-1231
钠离子电池钴酸钠正极材料研究进展	谢佑晟, 肖竹梅, 左文华, 杨勇*, 化学学报, 2021, 79(10), 1232-1243
基于石墨烯独特生物界面效应的功能化载体研究进展	岳华, 马光辉*, 化学学报, 2021, 79(10), 1244-1256

研究论文

ECL 金属-有机框架(MOF)生物传感平台用于肿瘤细胞分泌 H_2O_2 的测定	廖妮, 钟霞, 梁文斌, 袁若, 卓颖*, 化学学报, 2021, 79(10), 1257-1264
硫化纳米零价铁对水中 U(VI) 的高效去除研究	白子昂, 陈瑞兴, 庞宏伟, 王祥学, 宋刚, 于淑君*, 化学学报, 2021, 79(10), 1265-1272
柔性高储能 TPU/P(VDF-HFP) 全有机复合薄膜的制备及性能表征	冯启琨, 张冬丽, 刘畅, 张涌新, 党智敏*, 化学学报, 2021, 79(10), 1273-1280
Ag_2S 基近红外 II 区荧光量子点的水相合成优化探究	余梦, 张子俊, 朱国委, 谷振华, 段玉霖, 余良翀, 高冠斌*, 孙涛垒*, 化学学报, 2021, 79(10), 1281-1285
基于 $PtIr/C$ 阳极催化剂的直接氨燃料电池性能研究	陈日懿, 郑滋生*, 林志彬, 刘运权, 王兆林*, 化学学报, 2021, 79(10), 1286-1292
2D/3D $ZnIn_2S_4/TiO_2$ 复合物的原位构筑及其提高的光催化性能	刘欢, 李京哲, 李平*, 张广智, 徐迅, 张豪, 邱灵芳, 齐晖, 多树旺*, 化学学报, 2021, 79(10), 1293-1301

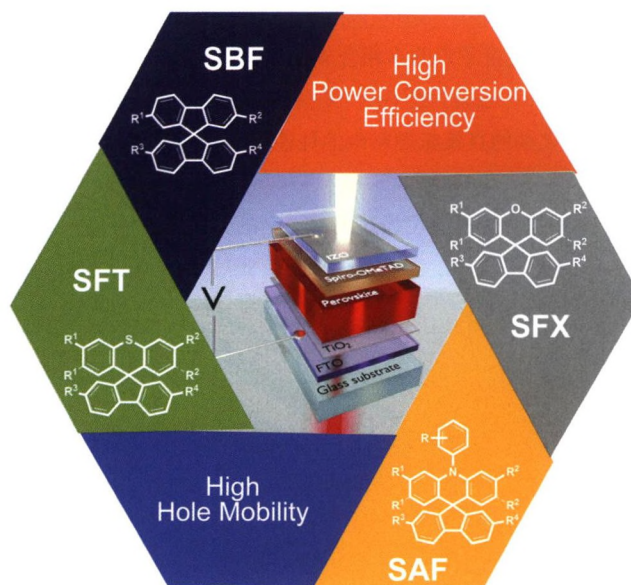
* 通信联系人.

On the cover: Taking advantages of the pore confinement effect, the proposed metal-organic framework (MOF) material (abbreviated as Zr-TCPE) was prepared via highly ordered assembly of electrochemiluminescence (ECL) molecules as ligands, achieving the remarkable intensity and reaction efficiency to *in situ* monitor hydrogen peroxide (H_2O_2) released from the tumor cells. [Ying Zhuo *et al.* on page 1257-1264.]



Review

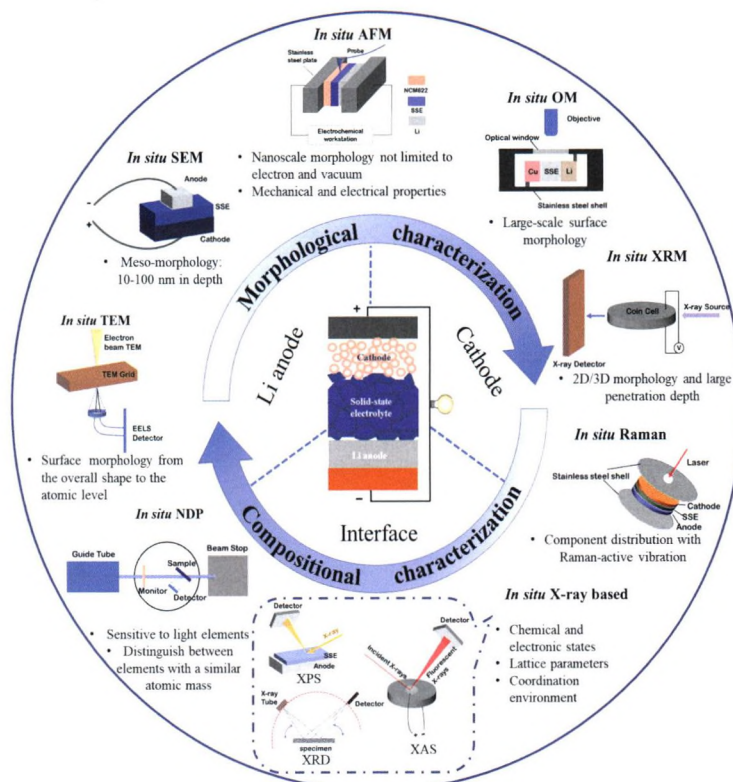
Research Progress of Hole Transport Materials Based on Spiro Aromatic-Skeleton in Perovskite Solar Cells



Qing-Lin Liu, Bao-Yi Ren*, Ya-Guang Sun*, Ling-Hai Xie, Wei Huang

Acta Chim. Sinica **2021**, 79(10), 1181-1196

In Situ/Operando Advances of Electrode Processes in Solid-state Lithium Batteries

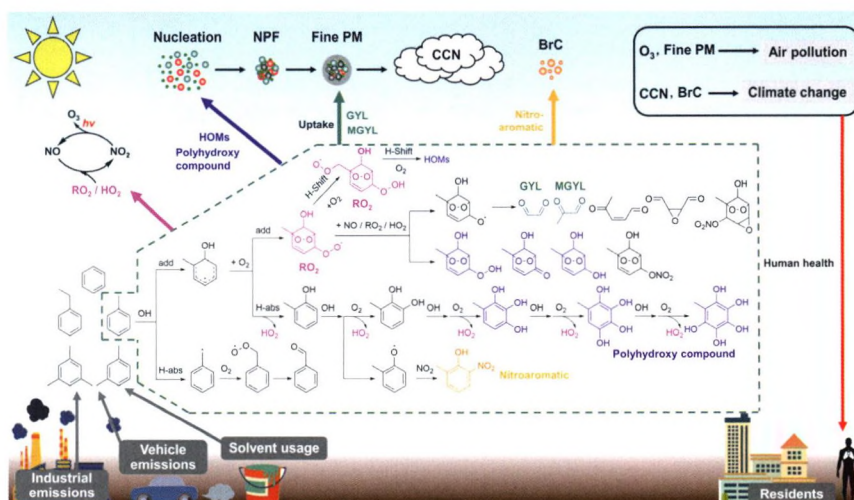


Herein, a comprehensive overview of the *in situ* research progress of atomic force microscope, electron microscope, X-ray microscope and other imaging characterization techniques, and component analysis techniques such as Raman spectroscopy, X-ray technology, and neutron depth analysis in solid-state lithium batteries (SSLBs) are presented. The focus is on the application research of various characterization techniques in the morphology and composition evolution processes of the SSLBs, including the phase transformation and deformation of the cathode materials, the deposition/dissolution of lithium metal, the formation of the solid electrolyte interphase and other aspects.

Jianxin Tian, Huijuan Guo, Jing Wan, Guixian Liu, Huijuan Yan, Rui Wen*, Lijun Wan

Acta Chim. Sinica **2021**, 79(10), 1197-1213

Advances on Atmospheric Oxidation Mechanism of Typical Aromatic Hydrocarbons



The sources of aromatic hydrocarbons mainly include vehicle emissions, industrial emissions and solvent usage emissions. When the aromatic hydrocarbons are emitted into the atmosphere, they will undergo a complicated atmospheric oxidation reaction. The oxidation intermediates and radicals produced during the atmospheric oxidation of aromatic hydrocarbons have important effects on air pollution, climate change and human health.

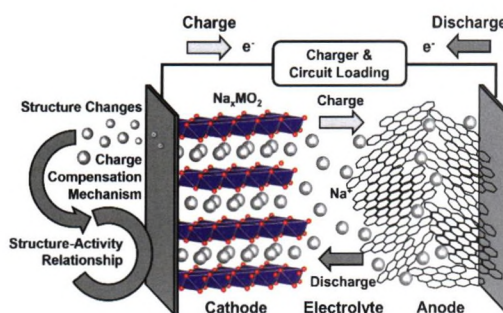
Mengdi Song, Ying Liu, Xin Li*, Sihua Lu

Acta Chim. Sinica **2021**, 79(10), 1214-1231

Research Progresses of Sodium Cobalt Oxide as Cathode in Sodium Ion Batteries

Jisheng Xie, Zhumei Xiao, Wenhua Zuo, Yong Yang*

Acta Chim. Sinica **2021**, 79(10), 1232-1243

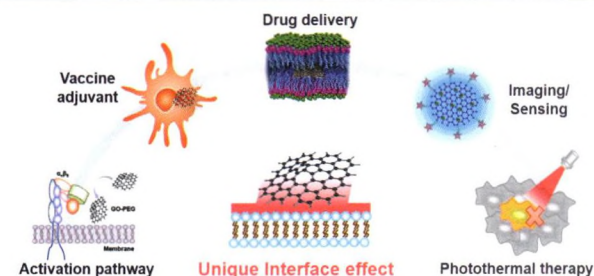


The research progresses of sodium cobalt oxide structure change and charge compensation mechanism and its influence on electrochemical performance during the charging and discharging processes are reviewed in this article, which provides support for in-depth research and establishment of the structure-activity relationship of related materials.

Advances in Functionalized Carriers Based on Graphene's Unique Biological Interface Effect

Hua Yue, Guanghui Ma*

Acta Chim. Sinica **2021**, 79(10), 1244-1256



Apart from the excellent electrical, thermal and optical properties, the flat structure endows the two-dimensional graphene stronger interactions with cell membranes and then induces obvious cellular response.

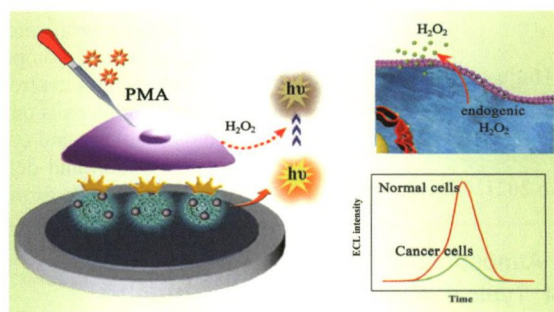
Based on the unique interfacial effects and theoretical simulation mechanisms, rational designs can meet the needs of drug delivery, vaccine carriers, imaging and sensing, and photothermal therapy.

Article

Metal-organic Frameworks (MOF)-based Novel Electrochemiluminescence Biosensing Platform for Quantification of H₂O₂ Releasing from Tumor Cells

Ni Liao, Xia Zhong, Wen-Bin Liang, Ruo Yuan, Ying Zhuo*

Acta Chim. Sinica **2021**, 79(10), 1257-1264

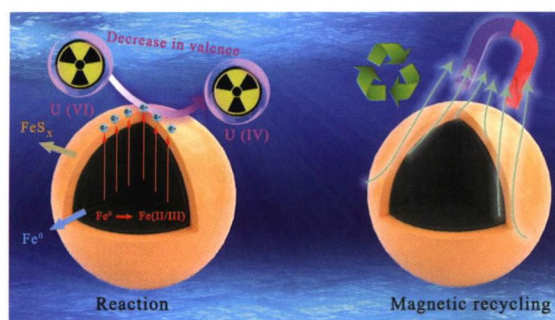


A kind of high-performance electrochemiluminescence (ECL) material (Zr-TCPE) was obtained with the assistant of metal-organic framework (MOF) structure, which realized the highly ordered assembly of ECL molecules in MOF structure, developing a new strategy named synergistically enhanced ECL of the pore confinement effect and the orderly assembly of ECL molecules in micro/nano space. Moreover, Zr-TCPE based novel ECL biosensing platform was achieved the *in situ* monitoring of H₂O₂ secreted from the tumor cells.

Investigation on the Efficient Removal of U(VI) from Water by Sulfide Nanoscale Zero-valent Iron

Ziang Bai, Ruixing Chen, Hongwei Pang, Xiangxue Wang, Gang Song, Shujun Yu*

Acta Chim. Sinica **2021**, 79(10), 1265-1272

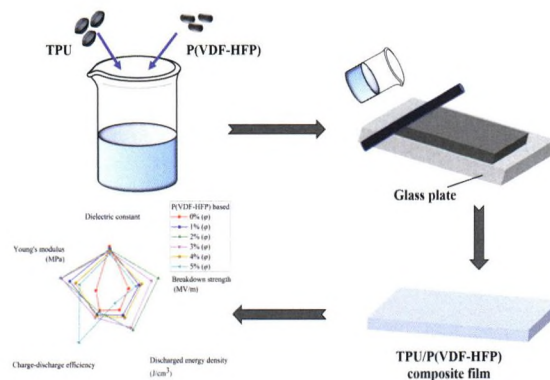


In this study, S-NZVI materials with simple, stable, efficient and recyclable characteristics for U(VI) removal were prepared. The removal mechanism of U(VI) by S-NZVI was the synergistic effect of adsorption and redox reaction.

Preparation and Characterization of All-organic TPU/P(VDF-HFP) Flexible Composite Films with High Energy Storage

Qi-kun Feng, Dong-li Zhang, Chang Liu, Yong-xin Zhang, Zhi-min Dang*

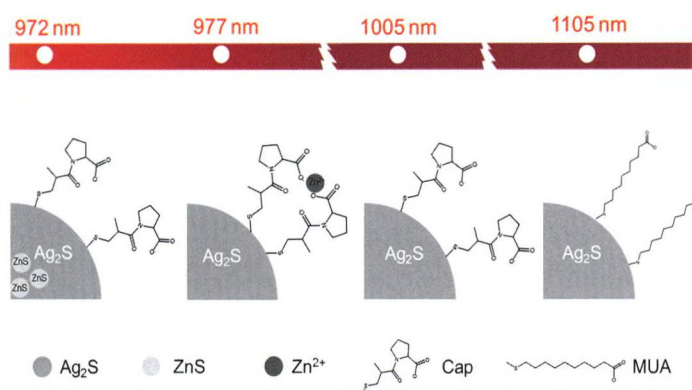
Acta Chim. Sinica 2021, 79(10), 1273-1280



Synthesis of Ag₂S Based Quantum Dots with Near-infrared-II Fluorescence Emission in Water

Meng Yu; Zijun Zhang; Guowei Zhu; Zhenhua Gu; Yulin Duan; Liangchong Yu; Guanbin Gao*; Taolei Sun*

Acta Chim. Sinica 2021, 79(10), 1281-1285

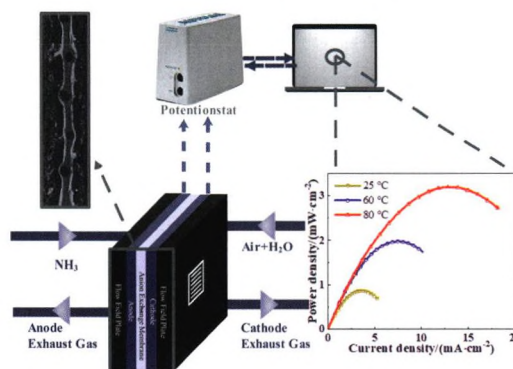


A series of Ag₂S-based quantum dots were prepared by core-doping ZnS, ligand cationic modification of Zn²⁺ and regulating surface ligands. It was found that both core doping and ligand cationic modification made the fluorescence of Ag₂S-based quantum dots dose-dependent blue shift. And by changing the surface ligand from a dendritic short chain (Captopril) to a long straight chain (11-mercaptoundecanoic acid, MUA), it was found that the emission peak of Ag₂S-based quantum dots red shifted to 1105 nm (near infrared II zone) and the half-width was narrower.

Performance Study of Direct Ammonia Fuel Cell Based on PtIr/C Anode Electrocatalyst

Riyi Chen, Songsheng Zheng*, Zhibin Lin, Yunquan Liu, Zhaolin Wang*

Acta Chim. Sinica 2021, 79(10), 1286-1292

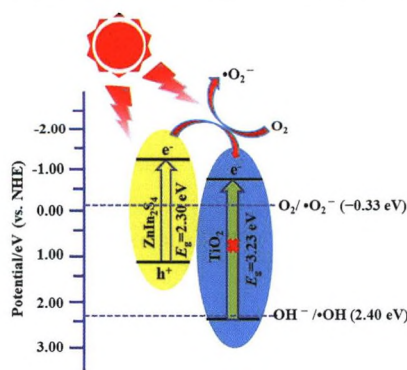


Employing self-built laboratory direct ammonia (gas) fuel cell (DAFC) test set, DAFC open circuit voltage (OCV) of 0.5 V and peak power density of 3.2 mW·cm⁻² were obtained.

In-situ Construction of 2D/3D ZnIn₂S₄/TiO₂ with Enhanced Photocatalytic Performance

Huan Liu, Jingzhe Li, Ping Li*, Guangzhi Zhang, Xun Xu, Hao Zhang, Lingfang Qiu, Hui Qi, Shuwang Duo*

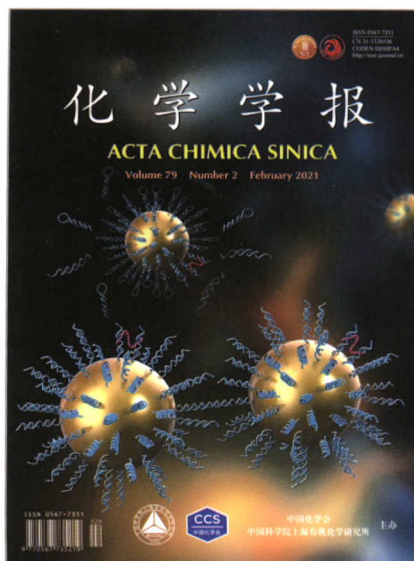
Acta Chim. Sinica 2021, 79(10), 1293-1301



Two dimensional/three dimensional (2D/3D) ZnIn₂S₄/TiO₂ heterojunction with enhanced visible light photoactivity for Rhodamine B (RhB) and tetracycline (TC) degradation was synthesized by high-temperature calcination followed by a facile oil bath method. The enhanced photocatalytic activity mainly contributed to the construction of heterojunction, and thus obtaining improved separation efficiency of photo-generated carrier pairs and wider visible-light response range.

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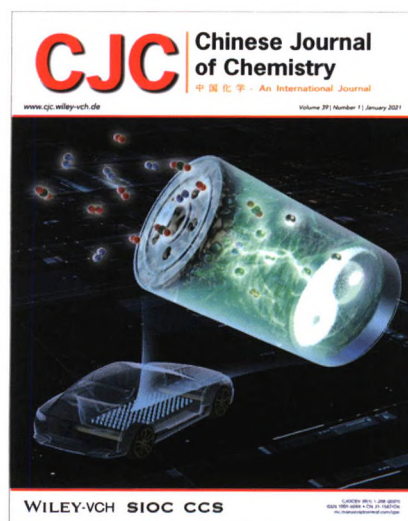
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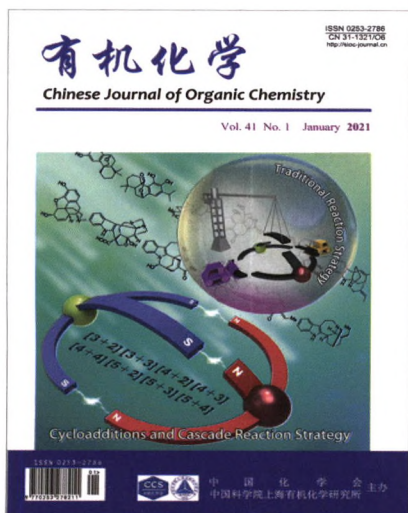
中国化学

主编：麻生明 院士

- SCI收录、入选卓越计划
- 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

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