



QK2019275

<http://sicc-journal.cn>

化学学报

ACTA CHIMICA SINICA

2020 第78卷 第4期 Vol. 78 No. 4



ISSN 0567-7351



04>

7705671735202

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 78 卷 第 4 期 2020 年 4 月 15 日

目 次

研究展望

非共价作用在过渡金属催化的选择性碳氢键活化中的应用
..... 廖港, 吴勇杰, 史炳锋*, 化学学报, 2020, 78(4), 289-298

综述

放氢交叉偶联反应
..... 董奎, 刘强*, 吴骊珠*, 化学学报, 2020, 78(4), 299-310

共价有机框架材料催化研究进展
..... 刘建国*, 张明月, 王楠, 王晨光, 马隆龙*, 化学学报, 2020, 78(4), 311-325

研究通讯

光镊技术研究硝酸铵在超粘气溶胶中的挥发性
..... 吕席卷, 张韫宏*, 化学学报, 2020, 78(4), 326-329

研究论文

动态氢气泡/牺牲铜模板法制备蜂窝 AuPt_{Cu} 电催化剂用于甲酸氧化
..... 陈莹莹, 刘欢, 程彦, 谢青季*, 化学学报, 2020, 78(4), 330-336

纳米 α -Fe₂O₃/(IPDI-HTPB) 复合粒子的制备及其催化性能研究
..... 武艳, 庞爱民, 胡磊, 何根升, 张莹莹, 张利雄, 李明海*, 马振叶*, 化学学报, 2020, 78(4), 337-343

Li 吸附对双层 α -硼烯功函调控作用的理论研究
..... 邓颖怡, 钱银银, 谢颖, 张磊, 郑冰*, 娄原青, 于海涛, 化学学报, 2020, 78(4), 344-354

界面增强的 CeO₂/FeNi MOF 高效析氧催化剂
..... 代迷迷, 王健, 李麟阁, 王琪, 刘美男*, 张跃钢*, 化学学报, 2020, 78(4), 355-362

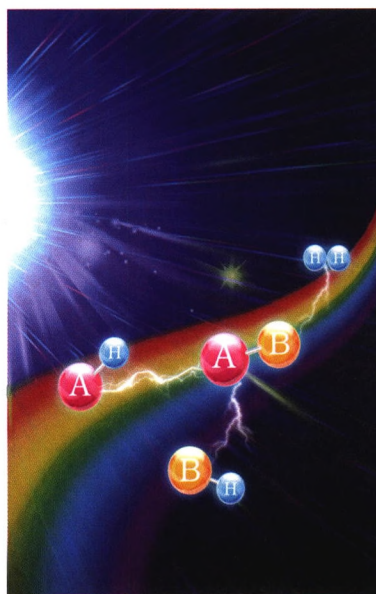
* 通信联系人.

ACTA CHIMICA SINICA

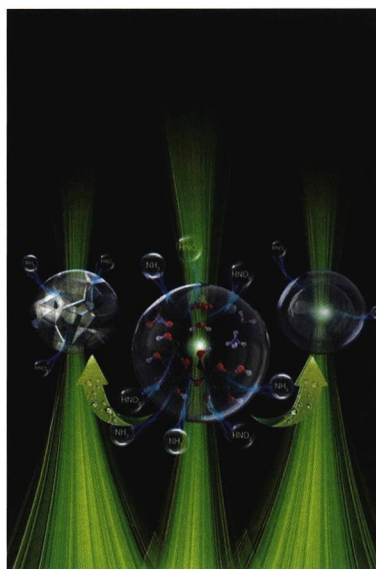
Vol. 78, No. 4 April 15, 2020

Contents

On the cover: Cross-coupling hydrogen evolution (CCHE) reactions exclude the use of external oxidants to activate R—H bond, thus offering a clean, energy-efficient and atom-economic protocol for cross-couplings. In this review, recent developments of photocatalytic and electrochemical CCHE reactions are discussed via the most prominent mechanistic pathways, the types of C—C bond, C—X (heteroatom) bond, or X—X bond formations and specific reaction classes. [Liu, Qiang *et al.* on page 299-310.]

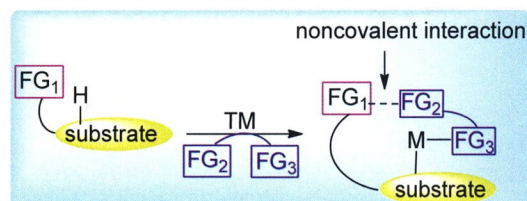


On the back cover: In order to understand the volatility of ammonium nitrate in ultra-viscous aerosol droplets, optical tweezers coupled with cavity-enhanced Raman spectroscopy were employed to observe the volatility of ammonium nitrate in the mixture of $\text{NH}_4\text{NO}_3/\text{MgSO}_4$ and $\text{NH}_4\text{NO}_3/\text{sucrose}$ droplets. The results showed that the volatilization of ammonium nitrate in droplets was inhibited at low relative humidity. [Zhang, Yunhong *et al.* on page 326-329.]



Perspective

Noncovalent Interaction in Transition Metal-Catalyzed Selective C—H Activation

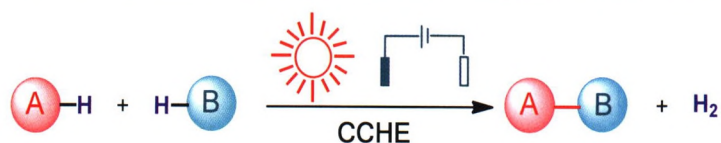


One of the fundamental challenges in C—H activation is to control the selectivity. Very recently, noncovalent interactions has emerged as a novel technology for controlling selectivity in transition metal-catalyzed C—H functionalization. In this perspective, recent advances in this cutting-edge area cataloged by the mode of noncovalent interactions are summarized.

Liao, Gang; Wu, Yong-Jie; Shi, Bing-Feng*
Acta Chim. Sinica **2020**, 78(4), 289-298

Review

Cross-Coupling Hydrogen Evolution Reactions

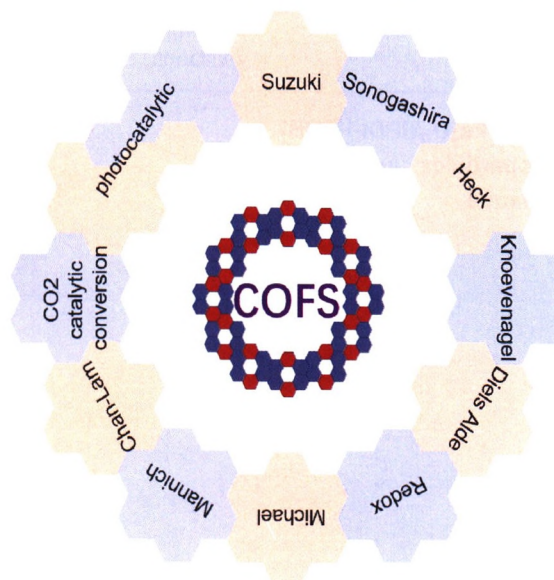


Cross-coupling hydrogen evolution (CCHE) reactions exclude the use of external oxidants to activate R—H bond, thus offering a clean, energy-efficient and atom-economic protocol for cross-couplings. In this review, recent developments of photocatalytic and electrochemical CCHE reactions are discussed via the most prominent mechanistic pathways, the types of C—C bond, C—X (heteroatom) bond, or X—X bond formations and specific reaction classes.

Dong, Kui; Liu, Qiang*; Wu, Li-Zhu*

Acta Chim. Sinica **2020**, 78(4), 299-310

Research Progress of Covalent Organic Framework Materials in Catalysis



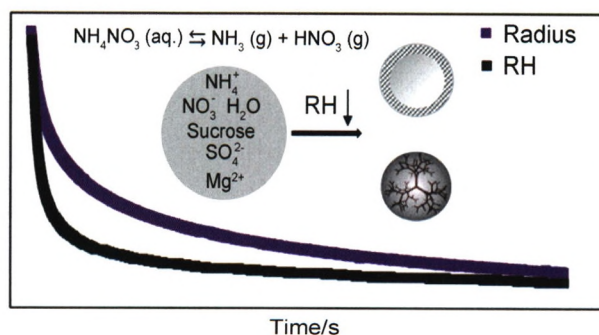
The synthetic strategy and application of COF in different types of catalytic reactions are reviewed in this paper. The catalytic reactions involved in this review are Suzuki reaction, Sonogashira reaction, Heck reaction, Knoevenagel condensation reaction, Diels Alder reaction, redox reaction, Michael addition reaction, Mannich reaction, Chan-Lam coupling reaction, CO₂ catalytic conversion reaction, photocatalytic reaction and so on. Moreover, the current research situation of COF catalyst is summarized and prospected. Finally, the remaining challenges in this field are also indicated.

Liu, Jianguo*; Zhang, Mingyue; Wang, Nan; Wang, Chenguang; Ma, Longlong*

Acta Chim. Sinica **2020**, 78(4), 311-325

Communication

Volatility of Ammonium Nitrate in Ultra-viscous Aerosol Droplets by Optical Tweezers



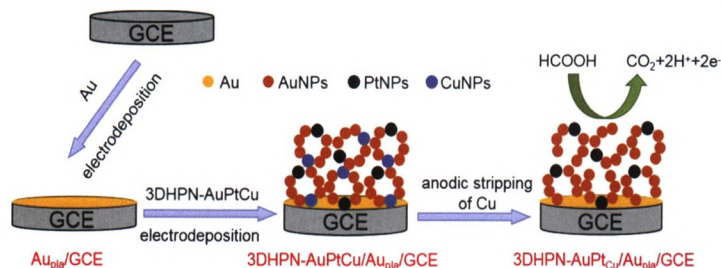
The volatility of ammonium nitrate in ultra-viscous aerosol droplets was explored by optical tweezers coupled with cavity-enhanced Raman spectroscopy, and the effective vapor pressures of ammonium nitrate at different relative humidity (RH) were obtained. Finally, the dependence between the vapor pressures and the RH as well as the components of droplets were discussed.

Lü, Xijuan; Zhang, Yunhong*

Acta Chim. Sinica **2020**, 78(4), 326-329

Article

Preparation of Honeycomb-structured AuPt_{Cu} Electrocatalyst by Dynamic Hydrogen Bubble and Sacrificial Cu Templates for Oxidation of Formic Acid

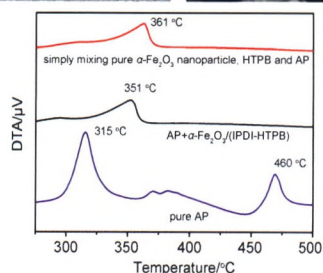


Chen, Yingying; Liu, Huan; Cheng, Yan; Xie, Qingji*

Acta Chim. Sinica 2020, 78(4), 330-336

A 3DHPN-AuPt_{Cu}/Au_{pl}/GCE was prepared by the dynamic hydrogen bubble template electrodeposition of a three-dimensional honeycomb-like porous nano-AuPtCu (3DHPN-AuPtCu) on a gold-plated glassy carbon electrode (Au_{pl}/GCE) and then anodic stripping of Cu, which exhibited high electrocatalytic performance for formic acid oxidation.

Preparation of α -Fe₂O₃/(IPDI-HTPB) Composite Nanoparticles and Their Catalytic Performance

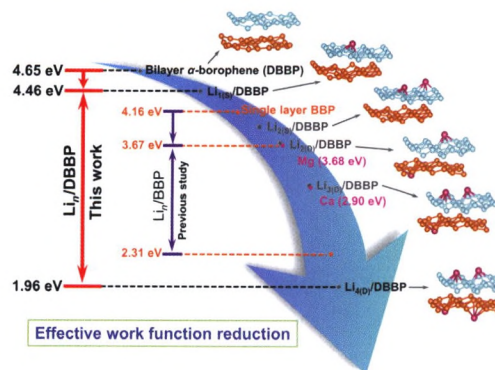


Wu, Yan; Pang, Aimin; Hu, Lei; He, Gen-sheng; Zhang, Yingying; Zhang, Lixiong; Li, Minghai*; Ma, Zhenye*

Acta Chim. Sinica 2020, 78(4), 337-343

The α -Fe₂O₃/(IPDI-HTPB) composite nanoparticles were prepared by choosing isophorone diisocyanate (IPDI) as grafting bridge. In α -Fe₂O₃/(IPDI-HTPB) composite nanoparticles, HTPB were successfully grafting on the surface of α -Fe₂O₃ nanoparticles by the grafting activity of IPDI. The depth of the HTPB was nearly 5 nm. After the composite process for hydrophilic α -Fe₂O₃, the composite nanoparticles showed hydrophobicity. Compare with the pure α -Fe₂O₃ nanoparticles, α -Fe₂O₃ nanoparticles in α -Fe₂O₃/IPDI-HTPB composite nanoparticles showed better catalytic activity on the thermal decomposition of AP.

Effect of Li Adsorption on Work Function Modulation of Bilayer α -Borophene: A Theoretical Study

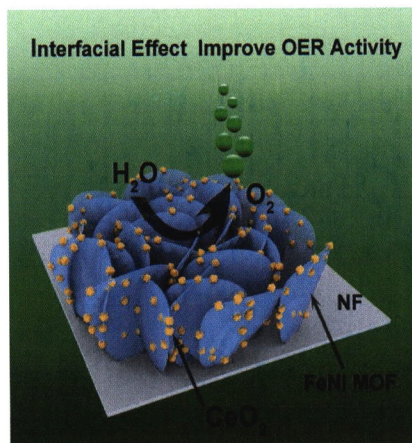


Deng, Yingyi; Qian, Yinyin; Xie, Ying; Zhang, Lei; Zheng, Bing*; Lou, Yuanqing; Yu, Haitao

Acta Chim. Sinica 2020, 78(4), 344-354

Borophene-based nanocomposite is an electrode material with strong potential, and thus, the work function modulation of borophene is highly important to maximize the energy conversion efficiency and performance of the device. The effects of Li adsorption on the structure, electronic properties and work function of double-layer α -borophene (DBBP), particularly the factors that affect the work function reduction of Li_{*n*}/DBBP relative to DBBP are theoretically studied. Due to its metallic character and extremely low work function, Li-adsorbed DBBP nanomaterials can be utilized as nanoscale cathode materials in electronic devices.

High-performance Oxygen Evolution Catalyst Enabled by Interfacial Effect between CeO₂ and FeNi Metal-organic Framework



Dai, Mimi; Wang, Jian; Li, Linge; Wang, Qi; Liu, Meinan*; Zhang, Yuegang*

Acta Chim. Sinica **2020**, 78(4), 355-362

The introduction of CeO₂ nanoclusters significantly enhances the OER (oxygen evolution reaction) performance of FeNi metal-organic framework nanosheets through the formation of Fe/Ni—O—Ce bonds on the interface.

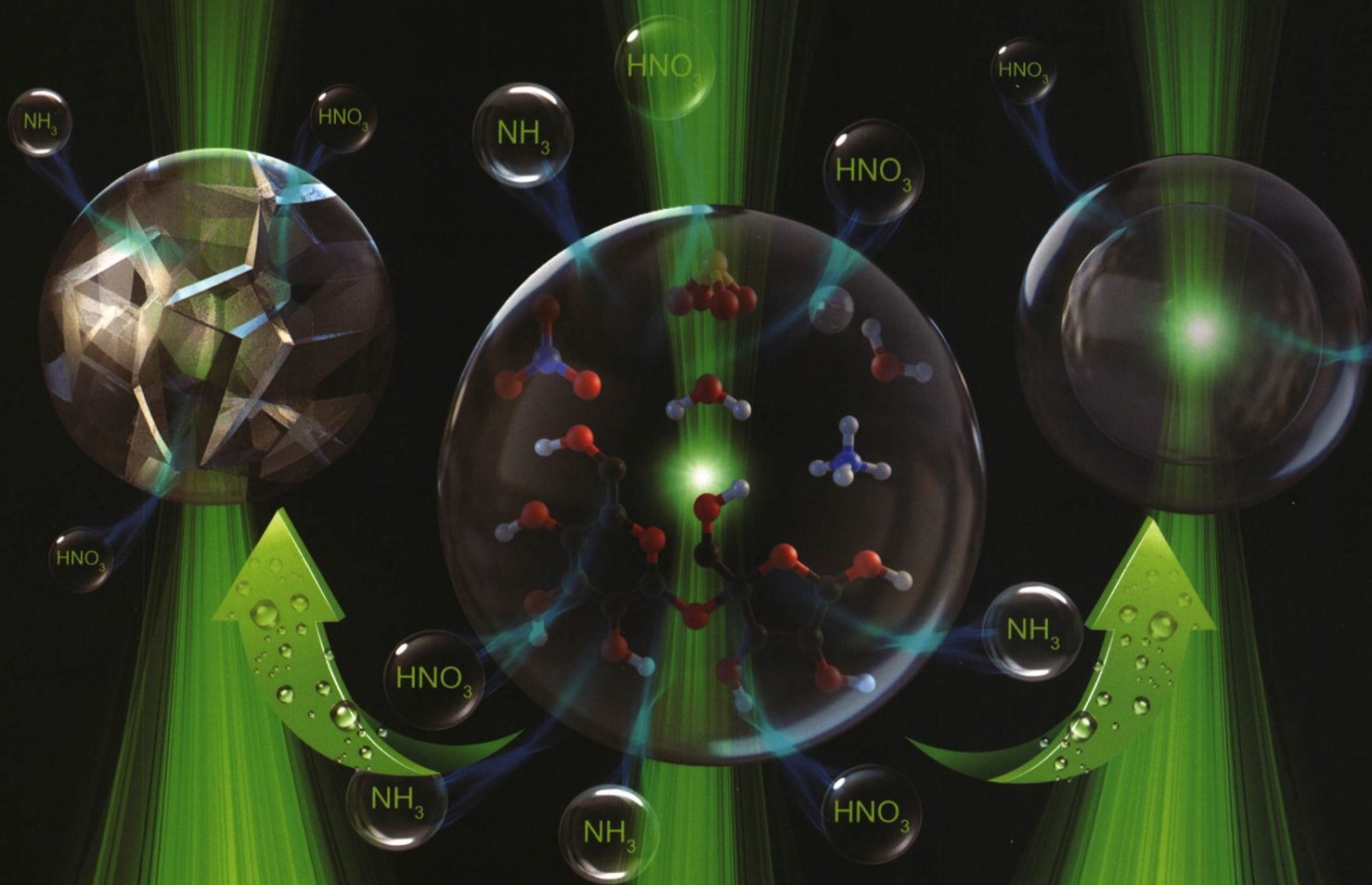


ISSN 0567-7351
CN 31-1320/O6
CODEN HHHPA4
<http://sioc-journal.c>

化学学报

ACTA CHIMICA SINICA

2020 第78卷 第4期 Vol. 78 No. 4



中国化学会
中国科学院上海有机化学研究所

主办

万方数据

国际刊号: ISSN 0567-7351 国内刊号: CN31-1320/O6 国内邮发代号: 4-209 国外发行代号: M56