

90^{Year}
1933-2023

化学学报

ACTA CHIMICA SINICA

Volume 81 Number 1 January 2023

ISSN 0567-7351

0 1 >

9 770567 735233



中国化学会

中国科学院上海有机化学研究所

化学学报

Acta Chimica Sinica

(Huaxue Xuebao)

第 81 卷 第 1 期 2023 年 1 月 15 日

目 次

研究通讯

- 可见光催化的硅烷二氟烯丙基化反应 杨春晖, 陈景超*, 李新汉, 孟丽, 王凯民, 孙蔚青, 樊保敏*, 化学学报, **2023**, 81(1), 1-5

研究论文

- 基于 P 掺杂 TiO₂/C 纳米管负极的高性能锂离子电容器 张国强, 霍京浩*, 王鑫, 郭守武, 化学学报, **2023**, 81(1), 6-13
- Fe@Si/S-34 催化剂的制备及其合成气制烯烃性能 陈治平*, 孟永乐, 卢静, 周文武*, 杨志远, 周安宁, 化学学报, **2023**, 81(1), 14-19
- 手性单 Schiff 碱大环对青霉胺对映体识别研究 田小茂, 林悦群, 朱茵, 黄超*, 朱必学*, 化学学报, **2023**, 81(1), 20-28

综述

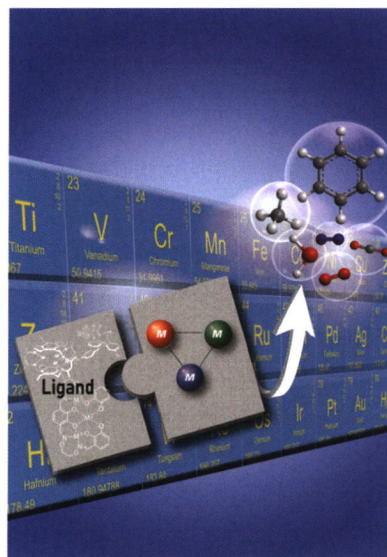
- 水系锌离子电池负极集流体关键问题及设计策略 姬慧敏, 谢春霖, 张旗, 李熠鑫, 李欢欢, 王海燕*, 化学学报, **2023**, 81(1), 29-41
- 捕捉环加成反应中的有机亚铜中间体构筑氮杂环化合物研究进展 邱孔茜, 李杰, 马浩文, 周伟*, 蔡倩*, 化学学报, **2023**, 81(1), 42-63
- 硫酯参与的有机催化不对称反应研究进展 王晓晨, 季泽尧, 刘健, 王炳福, 金辉*, 张立新*, 化学学报, **2023**, 81(1), 64-83
- 三核过渡金属配合物在催化反应中的研究进展 马雪璐*, 李蒙, 雷鸣*, 化学学报, **2023**, 81(1), 84-99
- 羟基自由基辅助沸石分子筛合成的研究进展 张红丹, 兰欣雨, 程鹏*, 化学学报, **2023**, 81(1), 100-110

* 通信联系人.

On the cover: Three Bai-girls are painting tie-dyes. The using of red, yellow, and blue colors on the fabric presented the difluoroallylation reaction formula. [Fan, Baomin *et al.* on page 1-5.]



On the inside front cover: The geometric and electronic structures, characteristics of the coordination environment and catalytic reactivities of the representative trinuclear transition metal complexes in recent years are summarized, and the polymetallic synergy in the catalytic mechanisms of specific chemical bonds activation is discussed in this review. [Ma, Xuelu *et al.* on page 84-99.]

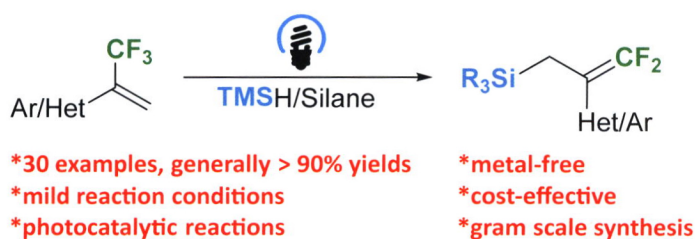


Communication

Difluoroallylation of Silanes under Photoirradiation

Yang, Chunhui; Chen, Jingchao*; Li, Xinhuan; Meng, Li; Wang, Kaimin; Sun, Weiqing; Fan, Baomin*

Acta Chim. Sinica **2023**, 81(1), 1-5

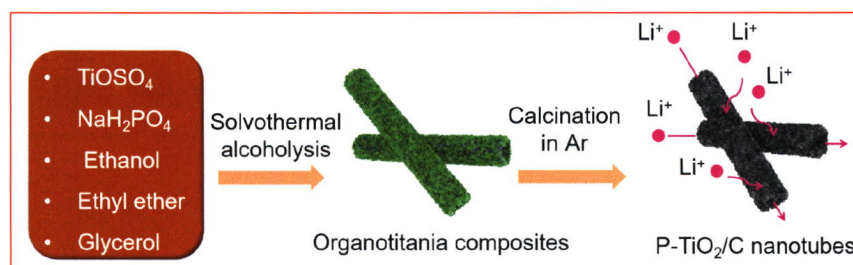


Article

P-doped TiO₂/C Nanotubes as Anodes for High-performance Li-ion Capacitors

Zhang, Guoqiang; Huo, Jinghao*; Wang, Xin; Guo, Shouwu

Acta Chim. Sinica **2023**, *81*(1), 6-13

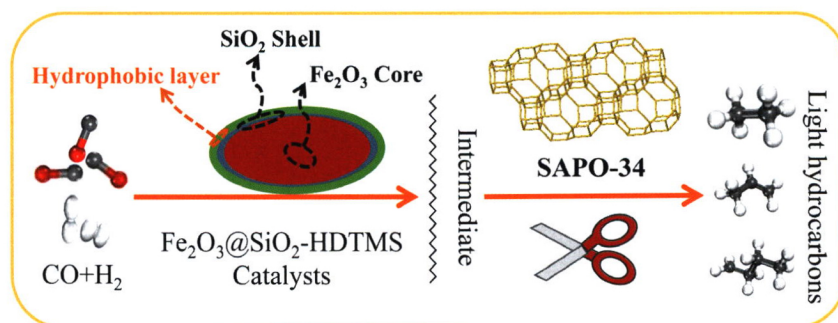


P-TiO₂/C nanotubes are prepared by a simple solvothermal method with superior lithium diffusion kinetics.

Preparation of Fe@Si/S-34 Catalysts and Its Catalytic Performance for Syngas to Olefins

Chen, Zhiping*; Meng, Yongle; Lu, Jing; Zhou, Wenwu*; Yang, Zhiyuan; Zhou, Anning

Acta Chim. Sinica **2023**, *81*(1), 14-19

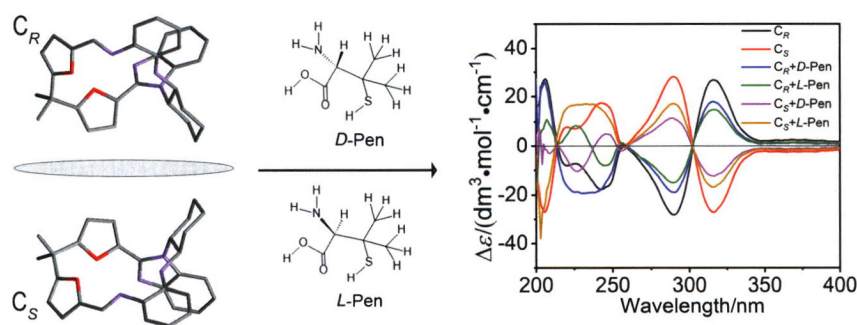


The inhibition of WGS (water-gas shift) reaction by hydrophobic Fe-based Fischer-Tropsch catalyst and the promotion of C₅+ hydrocarbon cracking in Fischer-Tropsch products by SAPO-34 molecular sieve were coupled. The new catalyst can not only reduce the selectivity of CO₂ in Fischer-Tropsch synthesis products, but also improve the selectivity of C₂~C₄ olefins. Under the conditions of $p=2$ MPa, GHSV (gas hourly space velocity)=2400 h⁻¹, $n(\text{H}_2)/n(\text{CO})=2$, $T=320$ °C, the conversion of CO was 80.0%, the selectivity of CO₂ in the product was only 8.9%, and the selectivity of C₂~C₄ olefins was 31.1%. This method provides a new strategy for the direct synthesis of light olefins by Fe-based Fischer-Tropsch synthesis catalyst.

Enantiomers Identification of Penicillamine by Chiral Mono-Schiff Base Macrocycles

Tian, Xiaomao; Lin, Yuequn; Zhu, Han; Huang, Chao*; Zhu, Bixue*

Acta Chim. Sinica **2023**, *81*(1), 20-28



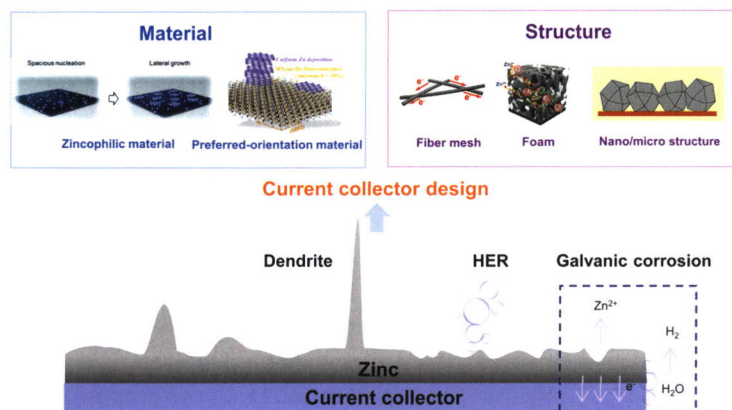
Two enantiomers of the mono-Schiff base macrocycle containing chiral NH moiety in the cyclic structure (C_R and C_S) were synthesized. The binding affinity and enantioselectivity of the cyclic enantiomers toward small molecules penicillamine (D-Pen and L-Pen) were investigated. Further, investigation of ultraviolet visible (UV-Vis), hydrogen nuclear magnetic resonance (¹H NMR) and circular dichroism (CD) spectroscopic titration indicate that the penicillamine with the same chirality as the host macrocycle binds stronger with the host than its enantiomer with the host.

Review

Anode Current Collector for Aqueous Zinc-ion Batteries: Issues and Design Strategies

Ji, Huimin; Xie, Chunlin; Zhang, Qi; Li, Yixin; Li, Huanhuan; Wang, Haiyan*

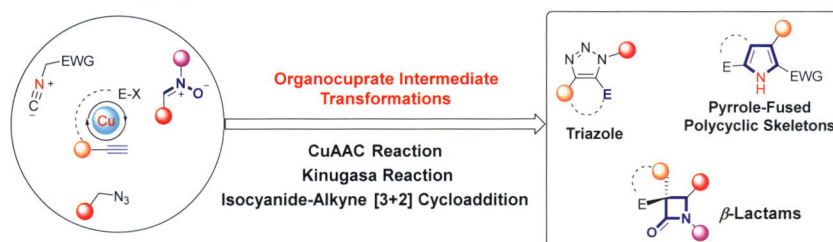
Acta Chim. Sinica **2023**, 81(1), 29-41



Recent Advances in the Construction of Nitrogen-Containing Heterocycles via Trapping Organocopper(I) Intermediates

Qiu, Kongxi; Li, Jie; Ma, Haowen; Zhou, Wei*; Cai, Qian*

Acta Chim. Sinica **2023**, 81(1), 42-63

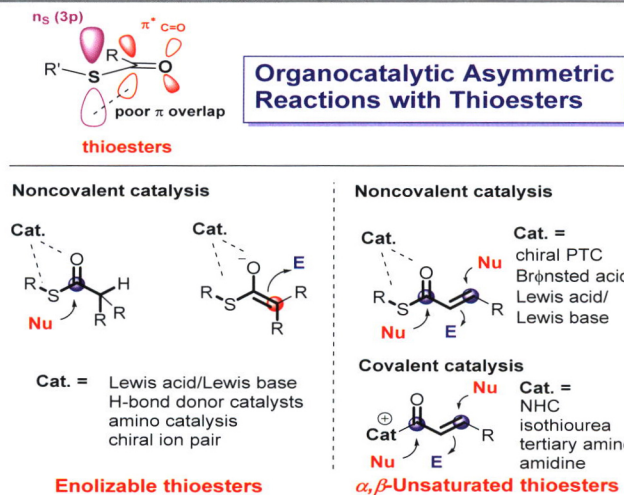


In this review, the advances in the construction of nitrogen-containing heterocycles via trapping organocopper(I) intermediates are summarized from three types of copper(I)-mediated cycloaddition reactions, which including azides-alkynes [3+2] cycloaddition, isocyanides-alkynes [3+2] cycloaddition, and nitrones-alkynes cycloaddition (Kinugasa reaction).

Advances in Organocatalytic Asymmetric Reactions Involving Thioesters

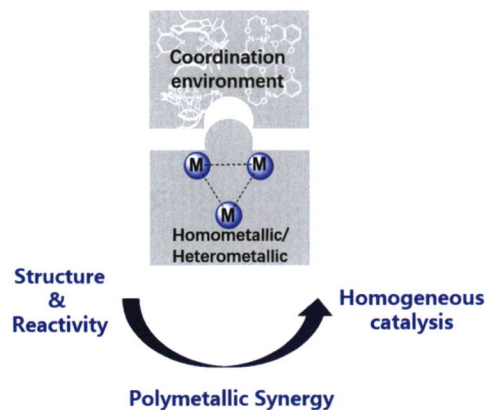
Wang, Xiaochen; Ji, Zeyao; Liu, Jian; Wang, Bingfu; Jin, Hui*; Zhang, Lixin*

Acta Chim. Sinica **2023**, 81(1), 64-83



The advances in organocatalytic asymmetric reactions involving thioesters are summarized in this review. According to the types of thioester substrates, these advances are classified to two types. One type is the organocatalytic asymmetric reactions with enolizable thioesters such as trifluoroethyl thioesters, malonic acid half-thioesters (MAHTs), monothiomalonates (MTMs) and dithiomalonates (DTMs). For these reactions, noncovalent interactions between catalysts and thioesters, including hydrogen bonding and ion pair interaction, have been used to promote the reaction and to achieve the high enantioselectivity. Another type is the catalytic asymmetric reactions with α,β -unsaturated thioesters. For the reaction of this type, various chiral organocatalysts, including chiral amines, ureas, NHC (*N*-heterocyclic carbene), isothiourea, amidine and others, not only activate the thioester substrates, but also control the enantioselectivity well through covalent and non-covalent bonds. Meanwhile, the mechanism of representative transformations will be briefly introduced and at last, the perspective in this area will be given.

Trinuclear Transition Metal Complexes in Catalytic Reactions

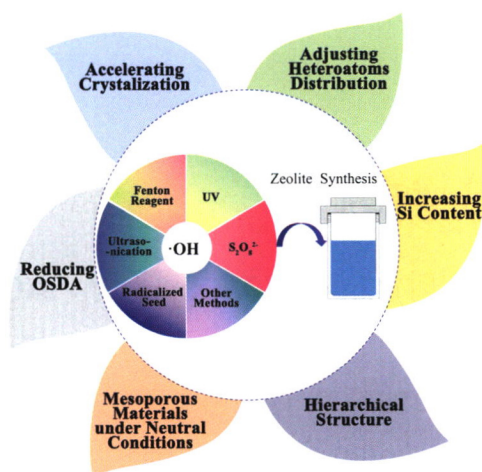


Ma, Xuelu*; Li, Meng; Lei, Ming*

Acta Chim. Sinica **2023**, 81(1), 84-99

The geometric and electronic structures, characteristics of the coordination environment and catalytic reactivities of the representative trinuclear transition metal complexes in recent years are summarized, and the polymetallic synergy in the catalytic mechanisms of specific chemical bonds activation is discussed in this review.

Advances in Hydroxyl Free Radical Assisted Synthesis of Zeolite



Zhang, Hongdan; Lan, Xinyu; Cheng, Peng*

Acta Chim. Sinica **2023**, 81(1), 100-110

“《化学学报》2021 年度最有影响力论文奖”揭晓

为推动促进国内外化学期刊发展、加强化学工作者交流,根据《化学学报》编委会决议,设立“《化学学报》XX 年度最有影响力论文奖”。该奖对获奖人的国籍、居住地、单位、年龄等没有任何限制,由《化学学报》编委会根据文章年度 SCI 引用情况评出(参考影响因子计算规则,兼顾当年发表当年引用情况,按第 $n-2$ 年至第 n 年发表的文章在第 n 年引用情况排序),奖励通信作者荣誉证书、文章第一作者荣誉证书和奖金 1000 元。奖励 10 篇左右。已获奖的论文次年不再重复奖励。

“《化学学报》2021 年度最有影响力论文奖”获奖列表:

14 次:

廖港, 吴勇杰, 史炳锋

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

化学学报 2020, 78 (4), 289-298

DOI: 10.6023/A20020027

13 次:

王强, 顾庆, 游书力

过渡金属催化不对称 C—H 键官能团化反应构建轴手性联芳基化合物研究进展

化学学报 2019, 77 (8), 690-704

DOI: 10.6023/A19060222

11 次:

张洪浩, 俞寿云

过渡金属与光氧化还原协同催化的烯丙基取代反应的研究进展

化学学报 2019, 77 (9), 832-840

DOI: 10.6023/A19050177

10 次:

郝淑燕, 郝莹, 刘宗建, 王锦, 席家宁

环糊精聚合物及其生物医学应用的研究进展

化学学报 2020, 78 (3), 232-244

DOI: 10.6023/A20010006

江金辉, 朱云卿, 杜建忠

开环聚合诱导自组装的挑战与展望

化学学报 2020, 78 (8), 719-724

DOI: 10.6023/A20050162

9 次:

杨启亮, 王向阳, 翁信军, 杨祥, 徐学涛, 童晓峰, 方萍, 伍新燕, 梅天胜

电氧化促进的钨催化的芳烃 C(sp³)—H 键氯代反应

化学学报 2019, 77 (9), 866-873

DOI: 10.6023/A19040135

吴浅耶, 张晨曦, 孙康, 江海龙

一种可溶性卟啉 MOF 的微波辅助合成及其光催化性能

化学学报 2020, 78 (7), 688-694

DOI: 10.6023/A20050141

田海权, 郑丽敏

环形铜系分子簇合物的组装与单分子磁性性质

化学学报 2020, 78 (1), 34-55

DOI: 10.6023/A19090330

朱仁义, 廖奎, 余金生, 周剑

P-手性膦氧化物的不对称催化合成研究进展

化学学报 2020, 78 (3), 193-216

DOI: 10.6023/A20010002

董奎, 刘强, 吴骊珠

放氢交叉偶联反应

化学学报 2020, 78 (4), 299-310

DOI: 10.6023/A19110412

杨英, 林飞宇, 朱从潭, 陈甜, 马书鹏, 罗媛, 朱刘, 郭学益

无机钙钛矿太阳能电池稳定性研究进展

化学学报 2020, 78 (3), 217-231

DOI: 10.6023/A19110411