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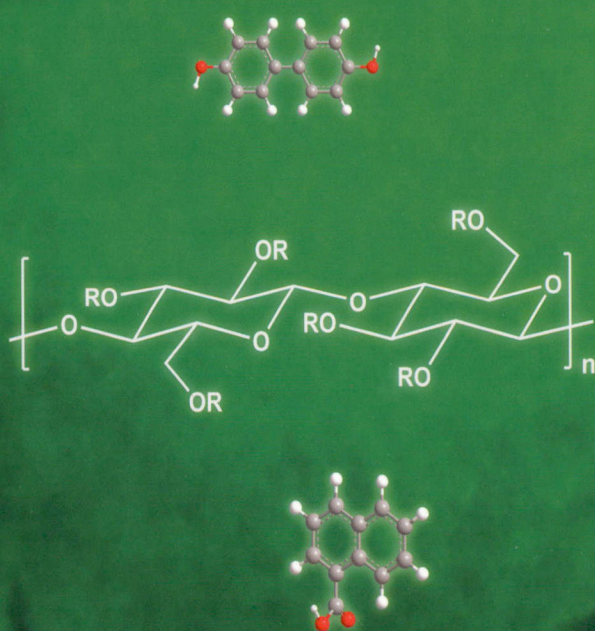
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研究论文

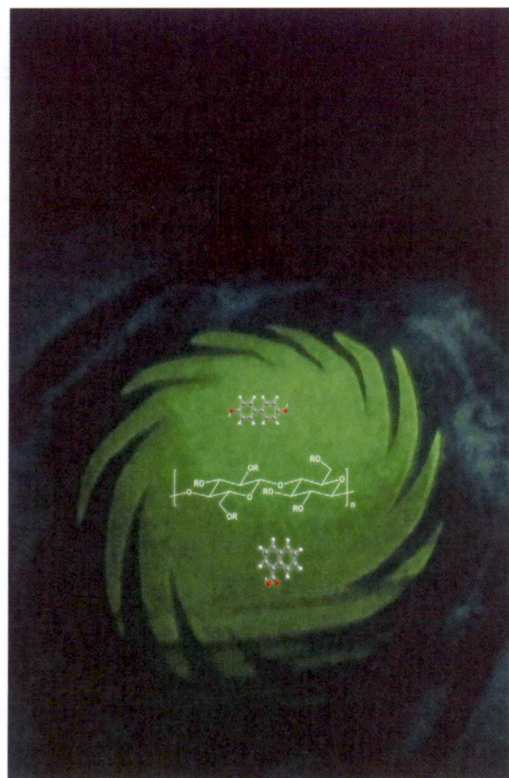
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综述

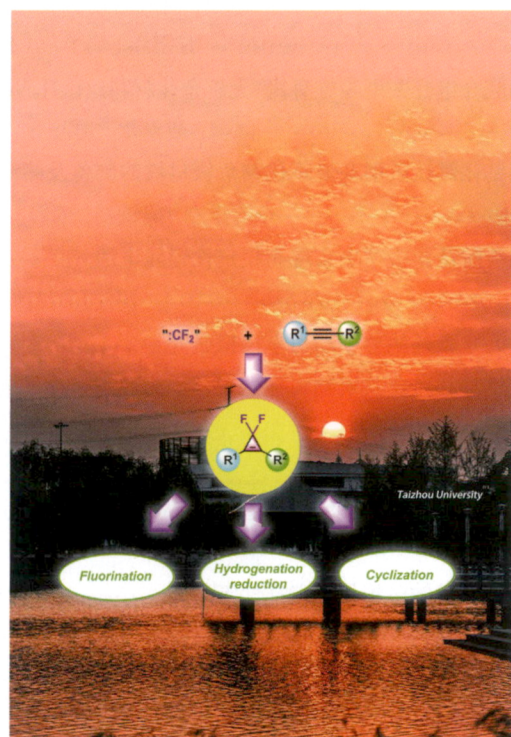
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* 通信联系人.

On the front cover: Polysaccharide matrix-induced room temperature phosphorescence of organic molecules is achieved via hydrogen bonding, providing a sustainable way to develop phosphorescence materials. [Zeng, Yi *et al.* on page 450-455.]

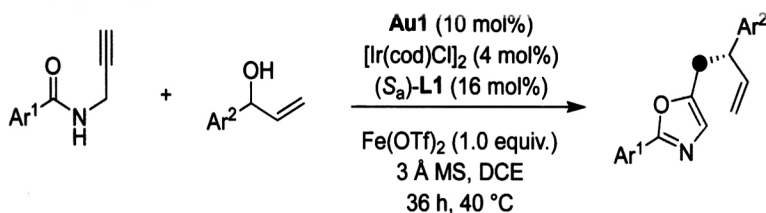


On the inside front cover: The aim of this review is to provide readers with a broad and encompassing overview of various conversions of difluorocyclopropenes. Additionally, cyclization reactions of difluorocyclopropenes to construct various fluorinated rings are emphasized. [Wu, Jie *et al.* on page 520-532.]



Communication

Gold/Iridium Catalyzed Alkynylamide Cyclization/Asymmetric Allylic Benzylation Cascade Reaction



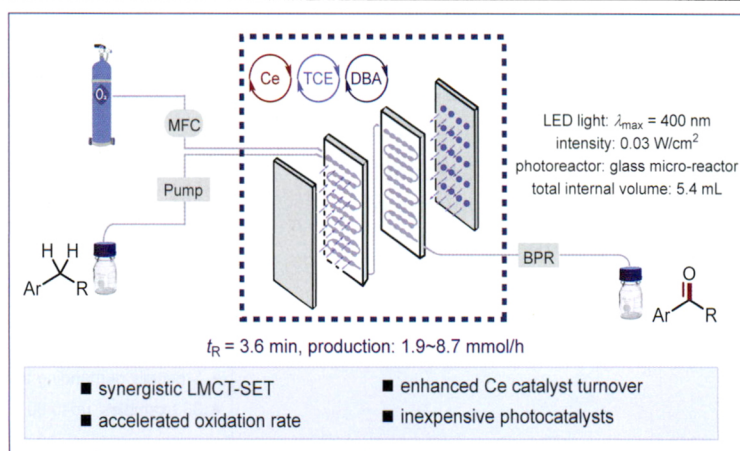
up to 87% yield, 98%~>99% ee

Wang, Rui-Xiang; Zhao, Qing-Ru; Gu, Qing*; You, Shu-Li*

Acta Chim. Sinica 2023, 81(5), 431-434

In the presence of gold-carbene complex (**Au1**) and the combination of $[\text{Ir}(\text{cod})\text{Cl}]_2$ and (*S_a*)-Carreira ligand (**L1**), a wide range of enantioenriched oxazole derivatives, bearing a benzylic stereogenic center, were obtained in 49%~87% yields with 98%~>99% ee.

Selectively Aerobic Oxidation of Benzylic C—H Bonds Enabled by Dual Anthracene and Cerium Catalysis under Continuous-Flow Conditions

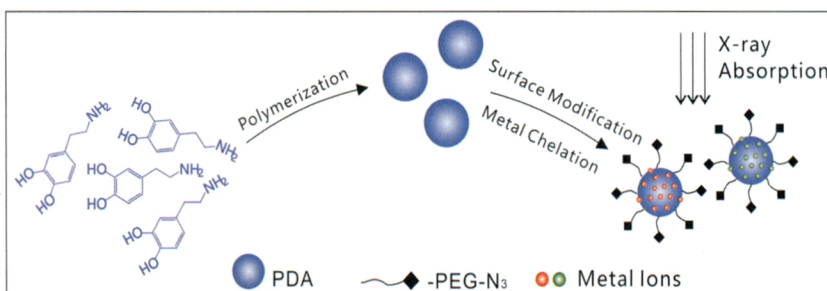


A benzyl-selective aerobic oxidation reaction enabled by dual anthracene and cerium catalysis was achieved under continuous-flow conditions. 9,10-Dibromoanthracene (DBA) and cerium-alcohol complex were utilized as photocatalysts, oxygen was used as a green oxidant, and various aromatic ketones were synthesized efficiently at room temperature. The system was capable of achieving complete conversion within a few minutes, and it offered advantages such as easy operation, mild reaction conditions, high selectivity, minimal waste, and broad applicability. Additionally, it is simple to scale up and achieve continuous production.

Xu, Yuanli; Pan, Hui*; Yang, Yi*; Zuo, Zhiwei*

Acta Chim. Sinica 2023, 81(5), 435-440

Click Chemistry-based Synchrotron X-ray Imaging Tags



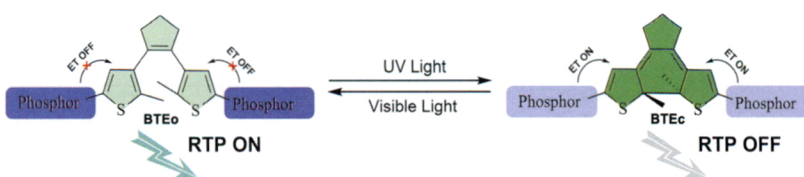
A click chemistry-based synchrotron X-ray imaging tag is developed, which lays a foundation for the further preparation of click chemistry-based X-ray probe to achieve the specific recognition and imaging of multiple biomolecules in cells at the same time.

Tang, Qiaowei; Cai, Xiaoqing; Yin, Dapeng; Kong, Huating; Zhang, Xiangzhi; Zhang, Jichao; Yan, Qinglong; Zhu, Ying*; Fan, Chunhai*

Acta Chim. Sinica 2023, 81(5), 441-444

Article

Light-Responsible Room-Temperature Phosphorescence Materials Based on Diarylethene

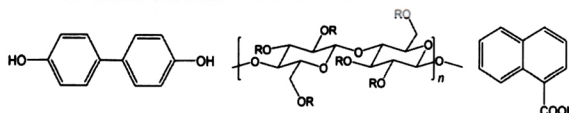
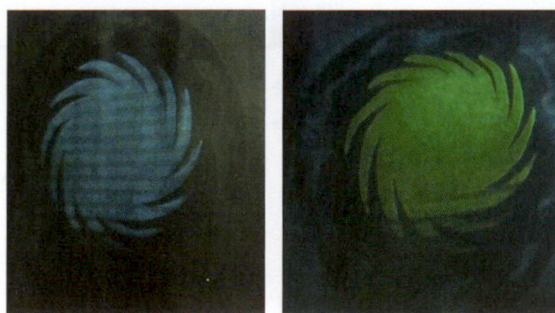


Liu, Yiwei; Ma, Liangwei; Wang, Qiaochun; Ma, Xiang*

Acta Chim. Sinica 2023, 81(5), 445-449

Light-responsible room-temperature phosphorescence materials in doped polymers were successfully constructed from dyes including both photochromic diarylethene and thiochroman-4-one phosphor.

Polysaccharide Matrix-Induced Room-Temperature Phosphorescence of Organic Small Molecules

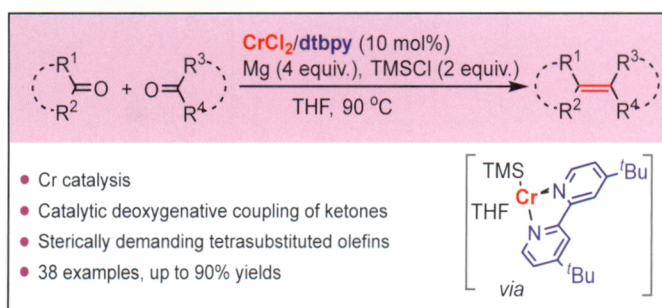


Chen, Yeqin; Chen, Jinping; Yu, Tianjun;
Zeng, Yi*; Li, Yi*

Acta Chim. Sinica **2023**, *81*(5), 450-455

Polysaccharide matrix-induced room-temperature phosphorescence of organic small molecules is achieved via hydrogen bonding, providing a sustainable way to develop phosphorescence materials.

Chromium-Catalyzed Carbonyl-Carbonyl Deoxygenative Couplings of Ketones to Tetrasubstituted Olefins

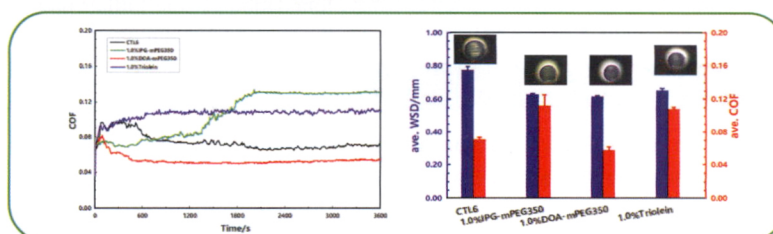
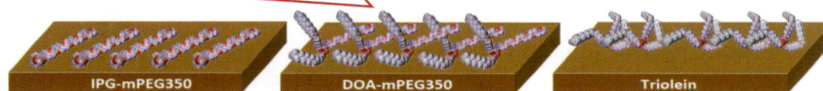
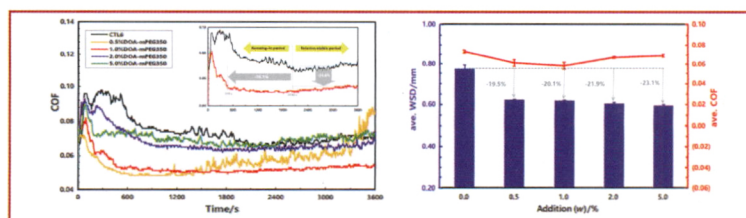


Yuan, Fangyan; Li, Chao; Luo, Meiming*;
Zeng, Xiaoming*

Acta Chim. Sinica **2023**, *81*(5), 456-460

The deoxygenative couplings of ketones enabled by cost-effective chromium catalysis are reported here. The reactions occur by using inexpensive CrCl_2 salt as precatalyst combined with 4,4'-di-*tert*-butyl-2,2'-bipyridine as ligand, magnesium as reductant, and trimethylchlorosilane as additive, achieving the homo- and cross-couplings of ketones by forming $\text{C}=\text{C}$ bonds in giving sterically demanding tetrasubstituted olefins. Mechanistic studies indicate that reactive silachromate(I) might be formed as reactive species by reaction with ketone in giving silyloxy-bearing (alkyl)Cr intermediate, which adds to another molecule of ketone by deoxygenation in giving tetrasubstituted olefins.

Synthesis of New Sulfur-free and Phosphorus-free Ether-ester and Study on Its Properties As Ashless Friction Modifier



Wang, Jun; Xu, Xiaomei; Zhou, Jiaolong;
Zhao, Yanan; Sun, Xiuli; Tang, Yong; He,
Sufang*; Yang, Hongmei*

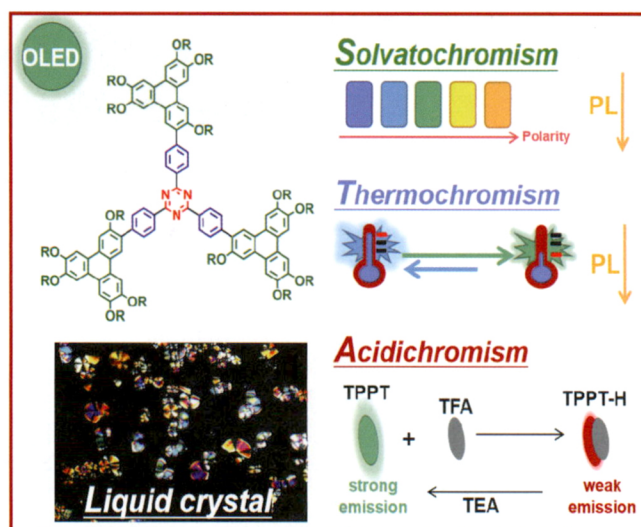
Acta Chim. Sinica **2023**, *81*(5), 461-468

Ether-ester DOA-mPEG30 can effectively shorten the running-in period and play the role of friction reducing and anti-wear when used as ashless friction modifier in synthetic hydrocarbons. Ether-ester can combine the “line contact” of ether and the “point contact” of ester to form a thick and dense protective film on the metal surface, so it shows a better tribological performance than that only contains ether chain or ester group.

Star-shaped Triphenylene-triazine Multi-stimuli Responsive Discotic Liquid Crystals: Synthesis, Properties and Applications

Zeng, Chongyang; Hu, Ping; Wang, Biqin; Fang, Wenyan; Zhao, Keqing*; Donnio, Bertrand

Acta Chim. Sinica **2023**, 81(5), 469-479

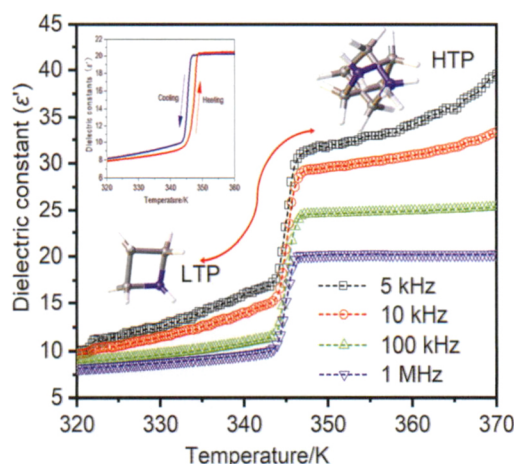


Star-shaped triphenylene-triazine **TPPT_n** display columnar rectangular mesophase, solvatochromism, aggregation-induced emission (AIE) and acid-base stimuli-responsive fluorescence and organic light-emitting diode (OLED) behavior.

A Thermally Responsive Dielectric Switchable Zero-Dimensional Organic-Inorganic Hybrid Material: (C₃H₆NH₂)₂CoCl₄

Chen, Jian; Cai, Zhuoer; Jiao, Shulin; Zhang, Xiang; Hu, Jinzhong; Liu, Min; Sun, Baiwang*; Hua, Xiuni*

Acta Chim. Sinica **2023**, 81(5), 480-485

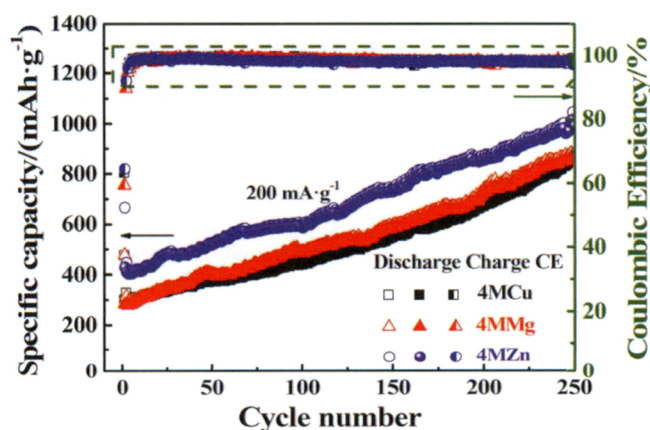


(C₃H₆NH₂)₂CoCl₄ exhibits a distinct step-like dielectric anomaly caused by ordered-disordered movements of the (C₃H₆NH₂)⁺ cation, suggesting its potential use as a dielectric switching material.

Preparation and High-performance Lithium-ion Storage of Cobalt-free Perovskite High-entropy Oxide Anode Materials

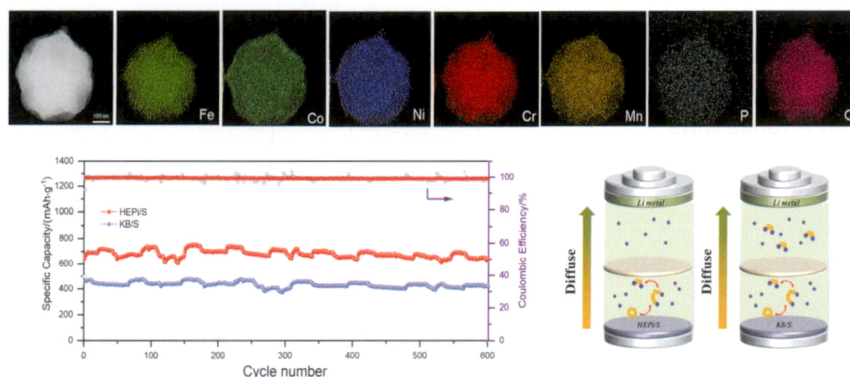
Jia, Yanggang; Chen, Shijie; Shao, Xia; Cheng, Jie; Lin, Na; Fang, Daolai; Mao, Aiqin*; Li, Canhua*

Acta Chim. Sinica **2023**, 81(5), 486-495



In this study, a series of cobalt-free perovskite high-entropy oxides (HEOs) La(Cr_{0.2}Fe_{0.2}Mn_{0.2}Ni_{0.2}M_{0.2})O₃ (M=Cu, Mg, Zn) lithium ion battery anode materials were successfully synthesized by solution combustion method. The as-prepared HEOs introducing inactive element Mg or active element Cu possess similar electrochemical performance; while the La(Cr_{0.2}Fe_{0.2}Mn_{0.2}Ni_{0.2}Zn_{0.2})O₃ electrode exhibits the highest reversible capacity, excellent cycling stability and outstanding rate performance.

A High-entropy Phosphate Cathode Host towards High-stability Lithium-sulfur Batteries

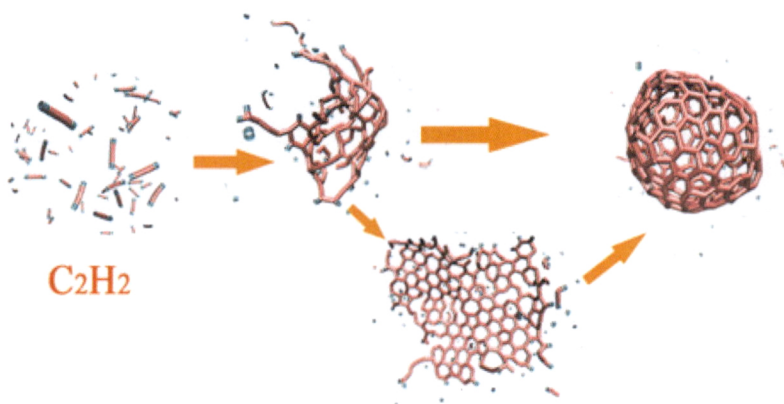


Zhao, Zhenxin; Yao, Yikun; Chen, Jiajun;
Niu, Rong; Wang, Xiaomin*

Acta Chim. Sinica **2023**, 81(5), 496-501

The high-entropy metal phosphate catalyst can enhance the chemisorption of polysulfides and accelerate the rapid conversion of polysulfides, thus suppressing the shuttle effect of polysulfides and improving the cycling performance.

Molecular Dynamics Simulation of Acetylene Pyrolysis into Fullerenes

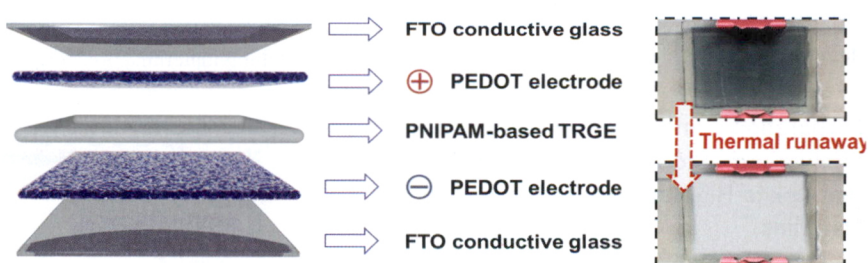


Liu, Zhenyu; Gan, Li-Hua*

Acta Chim. Sinica **2023**, 81(5), 502-510

The possible conditions for the preparation of fullerenes by acetylene pyrolysis were studied via molecular dynamics (MD) simulation. The hydrogen produced can make the carbon clusters rounder and there are two pathways to form fullerenes dependent on the density of acetylene.

Self-partition Supercapacitor Based on Temperature-induced Phase Transition Copolymer and Conductive Polymer



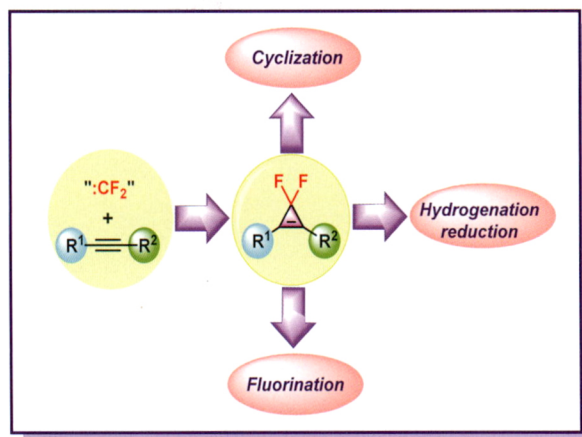
Li, Xian*; Li, Xiaokun

Acta Chim. Sinica **2023**, 81(5), 511-519

In order to improve the safety of energy storage devices, a self-partition supercapacitor based on temperature-induced phase transition copolymer and conductive polymer was successfully fabricated. Benefiting from the temperature-induced phase transition characteristics, the supercapacitors can not only automatically cut off the ion transfer to prevent the further deterioration of the device after the thermal runaway but also can show milky white with low transmittance, making it possible to troubleshoot the faulty devices with thermal runaway through color change.

Review

Recent Advances in the Transformation of Difluorocyclopropenes

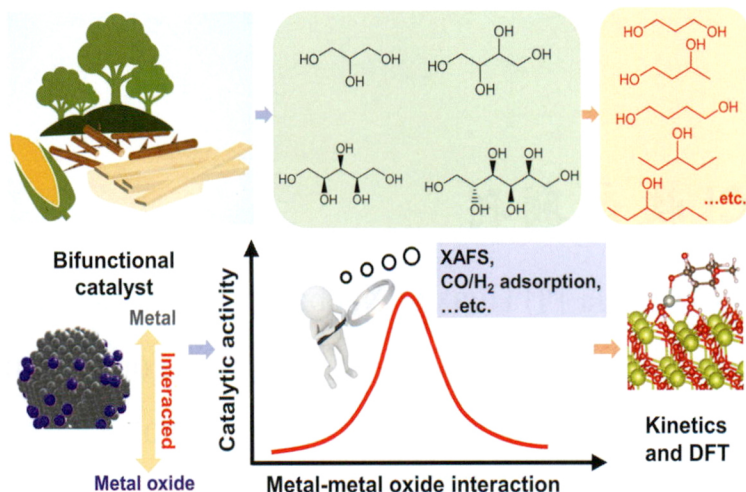


Huang, Jiapian; Liu, Fei; Wu, Jie*

Acta Chim. Sinica **2023**, 81(5), 520-532

The aim of this review is to provide readers with a broad and encompassing overview of various conversions of difluorocyclopropenes. Additionally, cyclization reactions of difluorocyclopropenes to construct various fluorinated rings are emphasized.

Heterogeneous Catalysts for Selective Hydrogenolysis of Biomass-derived Polyols

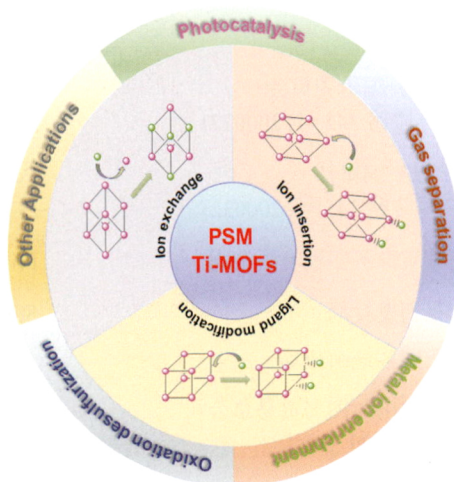


Liu, Lujie; Zhang, Jian; Wang, Liang; Xiao, Fengshou*

Acta Chim. Sinica **2023**, 81(5), 533-547

The routes for the selective conversion of sugar alcohols into diols and/or monoalcohols are summarized, where the metal-metal oxide interaction for catalyst design, relationship between catalyst structure and performance, and the reaction mechanism for C—O hydrogenolysis are discussed.

A Post-Synthetic Method for the Construction of Titanium-Based Metal Organic Frameworks and Their Applications



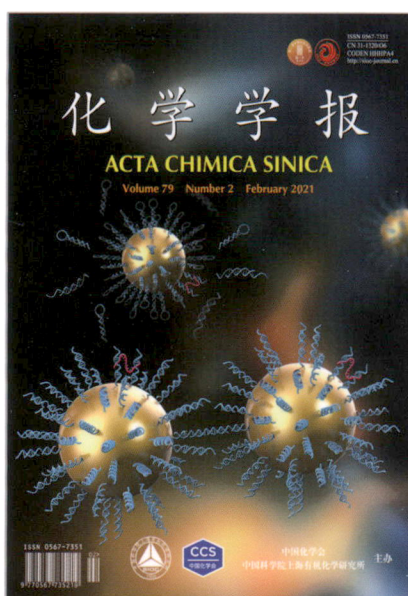
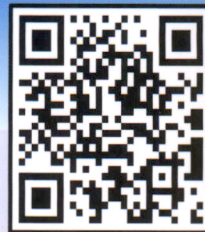
Qi, Xueping; Wang, Fei*; Zhang, Jian

Acta Chim. Sinica **2023**, 81(5), 548-558

The examples and applications of post-synthetic method (PSM) for the construction of titanium-based metal organic frameworks (Ti-MOFs) are reviewed.

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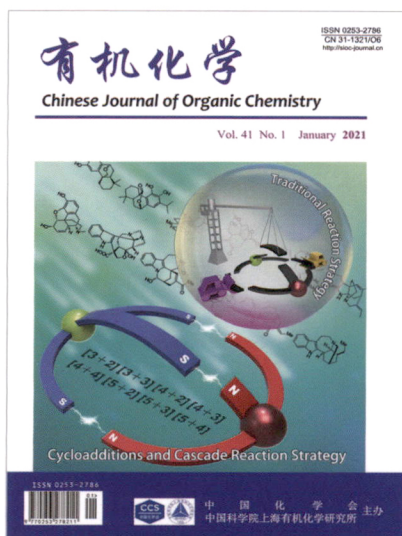
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