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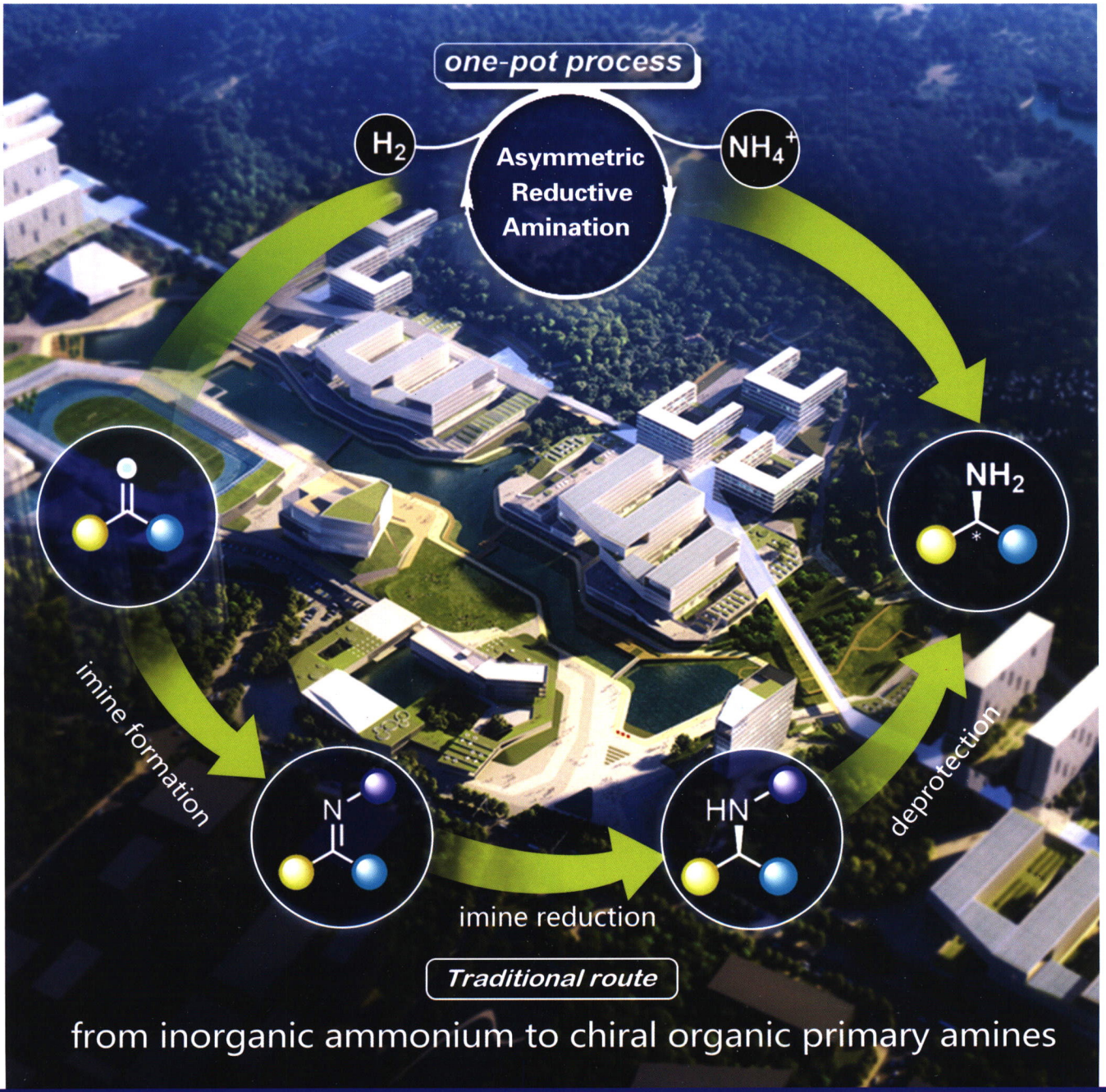
Chinese Journal of Organic Chemistry

Vol. 42 No. 8 August 2022



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Chinese Journal of Organic Chemistry

(YOUJI HUAXUE)

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目 次

* 通讯联系人.

亮点述评

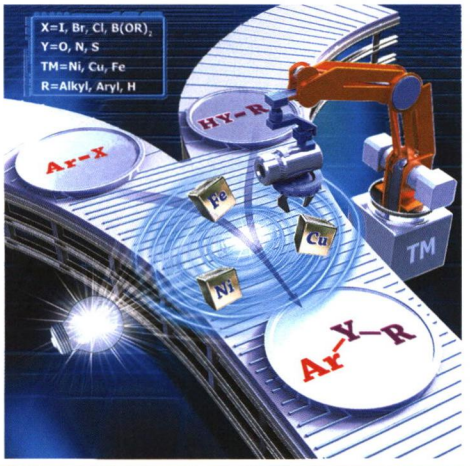
Chinese Journal of Organic Chemistry

Vol. 42 No. 8 August 2022

Cover Picture: Advances on Asymmetric Reductive Amination with Ammonium Salts as Amine Sources

α-Chiral primary amine subunits are widespread structural units in a large number of pharmaceutical molecules and are key intermediates toward the preparation of numerous amine-containing drugs. In this account, systematic studies on direct synthesis of chiral primary amines via met-al-catalyzed asymmetric reductive amination with cheap ammonium salts as amine sources from Xumu Zhang and Qin Yin's group are summarized on page 2261.

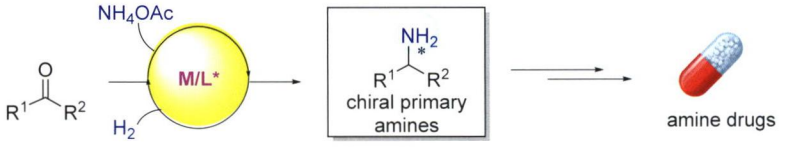
Inside Cover: Research Progress on Light-Promoted Transition Metal-Catalyzed C-Heteroatom Bond Coupling Reactions



The recent progress on light-promoted transition metal-catalyzed C-heteroatom coupling reactions is reviewed with emphasis on its development process and reaction mechanism by Song and Xue on page 2275. The current problems and future development prospects in this field are also summarized and prospected.

ACCOUNT

Advances on Asymmetric Reductive Amination with Ammonium Salts as Amine Sources

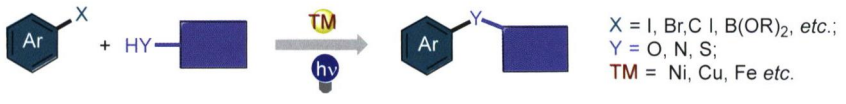


Dai, Zengjin; Zhang, Xumu*; Yin, Qin*
Chin. J. Org. Chem. **2022**, *42*(8), 2261

The recent progress in metal-catalyzed asymmetric reductive amination of ketones with cost-effective ammonium salts, a method that capable of directly producing synthetically versatile and valuable α-chiral primary amines, has been summarized.

REVIEWS

Research Progress on Light-Promoted Transition Metal-Catalyzed C-Heteroatom Bond Coupling Reactions

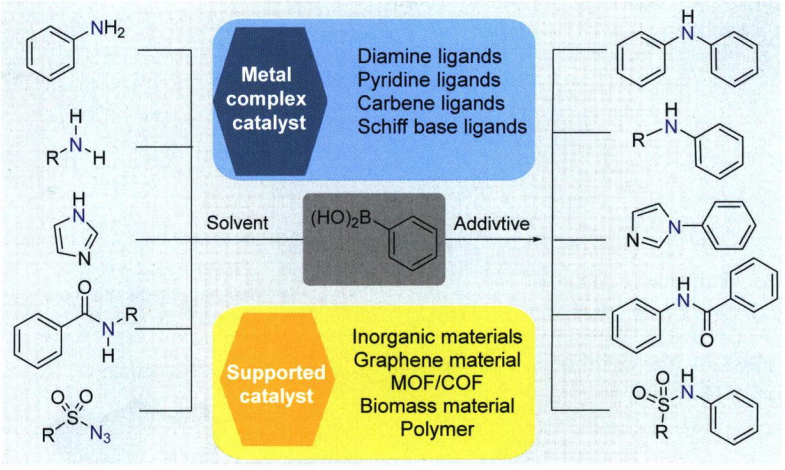


Song, Geyang; Xue, Dong*
Chin. J. Org. Chem. **2022**, *42*(8), 2275

The recent progress in the construction of light-promoted transition metal-catalyzed C-heteroatom bonds is summarized. The present issues and prospects of future development in this field are also summarized and forecasted in the end.

CONTENT

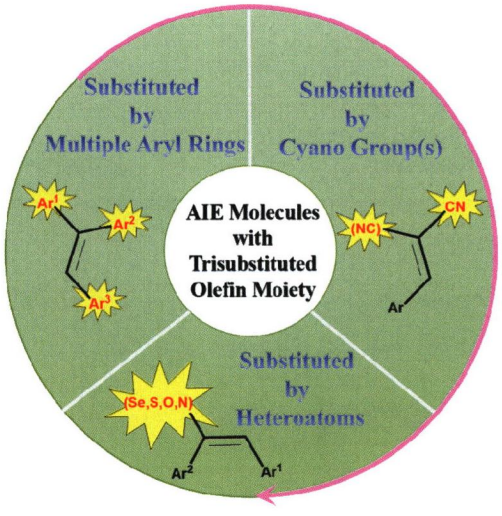
Research Progress of Chan-Lam Coupling Reaction in Heterogeneous Catalysis



Bai, Rui; Liu, Xujuan; Luo, Wenyu; Liu, Shanshan*; Jiao, Linyu*
Chin. J. Org. Chem. **2022**, *42*(8), 2342

The application of supported and coordinated heterogeneous catalysts in the Chan-Lam coupling reaction under mild and green conditions in recent years is summarized, including the design, synthesis and performance research of catalyst supporters and organic ligands to make readers a better understanding of this interesting field.

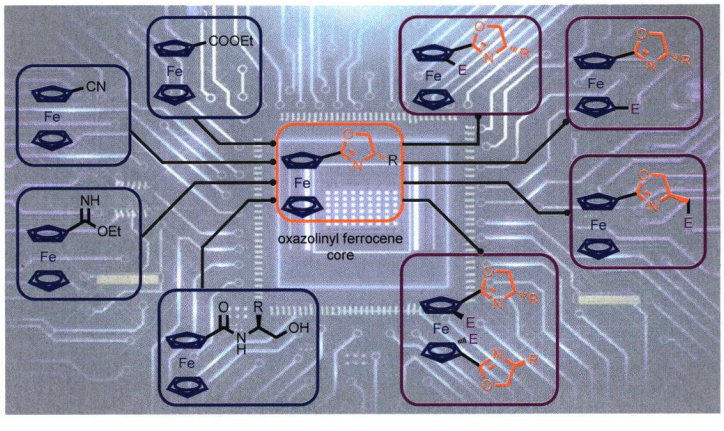
Design, Synthesis and Application of Trisubstituted Olefinic Aggregation-Induced Emission Molecules



Chen, Zhaohua; Cao, Xiying; Chen, Sihong; Yu, Shiwei; Lin, Yanlan; Lin, Shuting; Wang Zhaoyang*
Chin. J. Org. Chem. **2022**, *42*(8), 2355

According to the structural characteristics of the substituents attached to the carbon-carbon double bond, these trisubstituted olefinic aggregation-induced emission (AIE) molecules synthesized in recent years are divided into three categories: olefinic AIE molecules substituted (a) by multiple aryl rings, (b) by cyano group(s) and (c) by heteroatoms. As this classification, their molecular mechanisms and applications in the field of organic luminescence materials and fluorescent probes are reviewed, and the future design of the trisubstituted AIE molecules is also prospected.

Structures and Synthetic Strategies of Chiral Oxazolinyl Ferrocene Derivatives



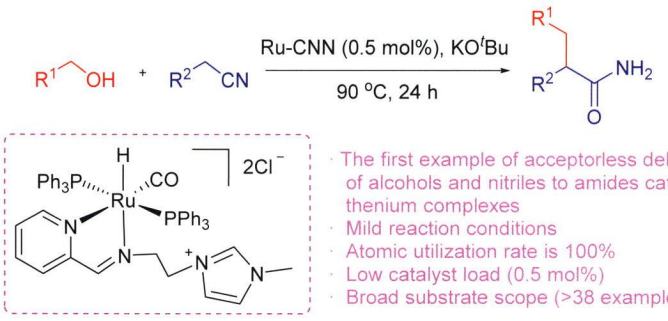
Dai, Li; Xu, Di*; Mao, Yifei; Zhu, Jiaqi; Yang, Mengjiao
Chin. J. Org. Chem. **2022**, *42*(8), 2364

The typical derivatives with oxazolinyl ferrocene skeleton are reviewed, and the practical preparation strategies of chiral oxazolinyl ferrocene in recent years are reviewed. The potential challenges and further applications in the field of oxazolinyl ferrocene derivatives are also proposed.

CONTENT

ARTICLES

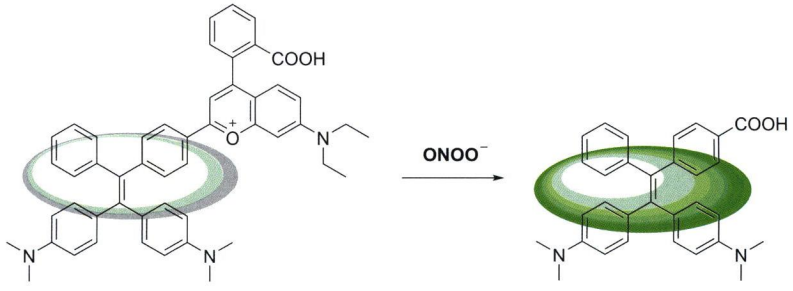
Ruthenium Complex-Catalyzed Tandem Reactions of Alcohols with Acetonitriles for Synthesis of α-Substituted Amides



Wang, Mei; Gong, Huihua; Fu, Haiyan; Zheng, Xueli; Chen, Hua; Li, Ruixiang*
Chin. J. Org. Chem. **2022**, *42*(8), 2418

A ruthenium complex-catalyzed tandem reaction of alcohols with nitriles in one pot has been developed, providing a green and atom-economic synthetic method of α-substituted amide.

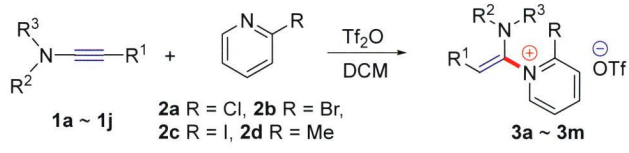
Construction and Cell Imaging Study of a Novel Fluorescent Probe for ONOO$^-$ Detection



A novel ONOO$^-$ fluorescent probe TPE-ONOO was successfully constructed using tetraphenylethylene as a fluorophore and a pyrylium group as the specific recognition site of ONOO$^-$. The probe showed high selectivity, strong anti-interference ability and high sensitivity to ONOO$^-$. Cell assays suggested that the probe has low cytotoxicity and was successfully used for imaging monitoring of exogenous and endogenous ONOO$^-$ in cells.

Li, Jiaxin; He, Ruyan; Duan, Senlin; Li, Jinhua; Han, Xiaojing; Ye, Yong*
Chin. J. Org. Chem. **2022**, *42*(8), 2428

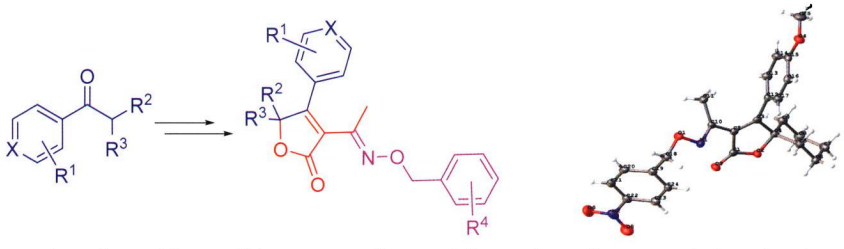
Trifluoromethyl Sulfonic Anhydride Mediated Addition of Pyridine with Ynamides



A convenient approach to pyridine quaternary ammonium salts containing enamine fragment has been developed, which features a trifluoromethyl sulfonic anhydride mediated regioselective addition process of pyridine with ynamides. Using this method, a variety of substituted pyridine quaternary ammonium salts containing enamine fragment **3a**~**3m** were prepared in moderate to excellent yields with high regioselectivities (*Z* : *E* up to 20 : 1).

Song, Haoru; Sun, Jianting; Lü, Min; Liu, Yiwen*; Wei, Bangguo*
Chin. J. Org. Chem. **2022**, *42*(8), 2433

Synthesis and Fungicidal Activity of Novel Butenolide Compounds Containing Oxime Ether Moiety

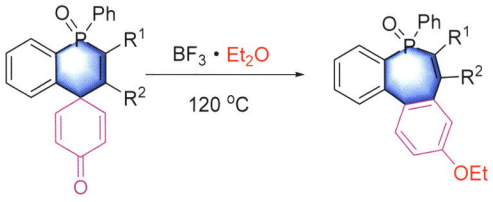


A series of novel butenolide compounds containing oxime ether were designed and synthesized through diversity modification of the benzene ring at 4-phenyl and the 3-oxime ether group of 3-acetyl-4-phenyl-1-oxaspiro[4,5]dec-3-en-2-one oxime ether. Their fungicidal activities were evaluated.

Zhang, Qian; Li, Yihao; Xu, Leichuan; Ma, Haoyun; Li, Xiangdong*; Wang, Ming'an*
Chin. J. Org. Chem. **2022**, *42*(8), 2438

CONTENT

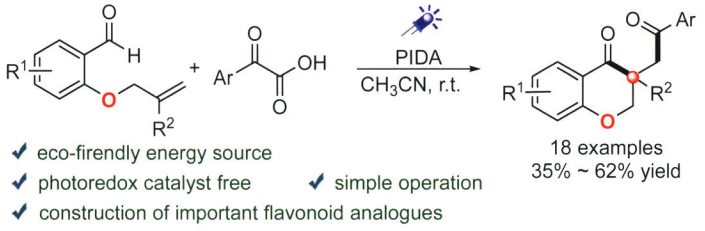
BF_3•Et_2O Promoted Dienone-Phenol Type Rearrangement to Synthesize Phosphepine with Aggregation Induced Luminescence (AIE) Effect



A novel synthetic route for phosphepines from spiro six-membered phosphacycles in the presence of BF_3•Et_2O was developed. The obtained phosphepines show aggregation-induced luminescence (AIE) effects and their photophysical properties were investigated.

Guo, Ze; Wu, Di; Wang, Lili*; Duan, Zheng*
Chin. J. Org. Chem. **2022**, *42*(8), 2481

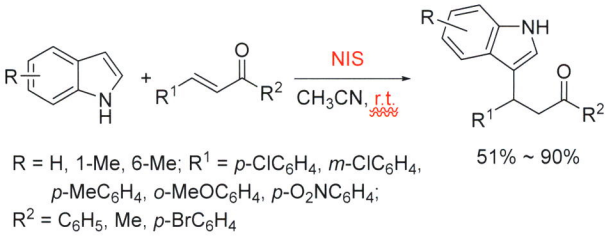
Visible Light-Induced 4-Chromanones Synthesis: Radical Cascade Cyclization of α-Oxocarboxylic Acids with *o*-(Allyloxy)arylaldehydes Promoted by Phenyliodine(III) Diacetate



An efficient catalyst free, visible light-promoted cascade radical cyclization of α-oxocarboxylic acids with *o*-(allyloxy)arylaldehydes towards the construction of 1,4-diketone containing chromanone derivatives was reported.

Zhou, Xuyu; Zhang, Aijun; Zhang, Qingqing; Liu, Qing'an*; Xuan, Ju*
Chin. J. Org. Chem. **2022**, *42*(8), 2488

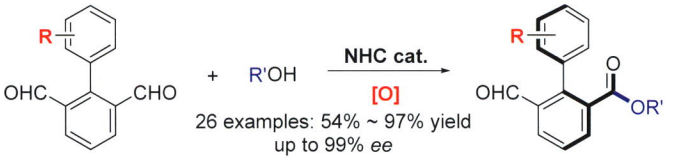
N-Iodosuccinimide (NIS) Promoted Synthesis of 3-Substituted Indole Derivatives



A catalytic procedure for Michael addition reaction of indole or its derivatives with α,β-unsaturated ketones catalyzed by *N*-halosuccinimide has been successfully developed. The optimal condition of this reaction employs 10 mol% *N*-iodosuccinimide (NIS) as catalyst, CH_3CN as solvent, room temperature as reaction temperature and 18 h as reaction time.

Qian, Cunwei*; Han, Rong; Shen, Zhixing; Li, Qian; Chen, Xuanrong*
Chin. J. Org. Chem. **2022**, *42*(8), 2496

N-Heterocyclic Carbene (NHC)-Catalyzed Desymmetrization of Biaryldialdehydes to Construct Axially Chiral Aldehydes



An N-heterocyclic carbene (NHC)-catalyzed oxidative esterification of biaryldialdehydes through desymmetrization strategy was disclosed. A range of axially chiral aldehydes were produced in generally good yields and high enantioselectivity under mild conditions.

Zhao, Wei; Liu, Jing; He, Xiangkui; Jiang, Hao; Lu, Liangqiu*; Xiao, Wenjing*
Chin. J. Org. Chem. **2022**, *42*(8), 2504

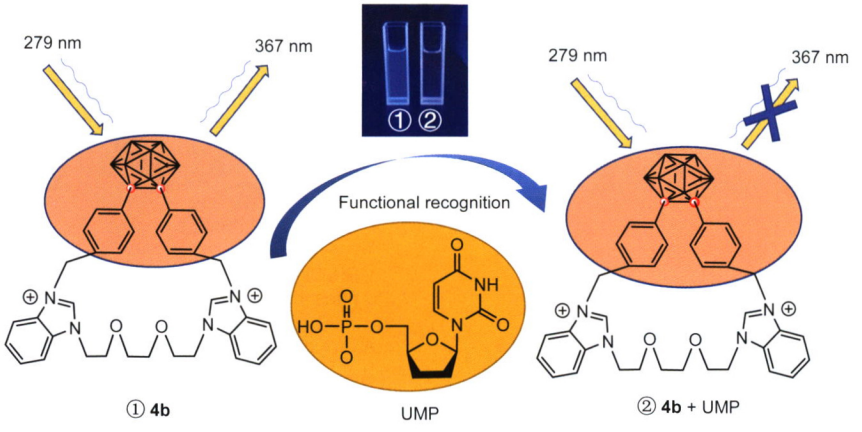
Nickel-Catalyzed Stereoselective Aryl-Difluoroalkylation of Alkynes

Nickel-catalyzed aryl-difluoroalkylation of alkynes was presented, and a series of trisubstituted fluorine-containing alkenes can be obtained in a highly stereoselective manner.

Sun, Qi; Sun, Zeying; Yu, Ze; Wang, Guangwei*
Chin. J. Org. Chem. **2022**, *42*(8), 2515

CONTENT

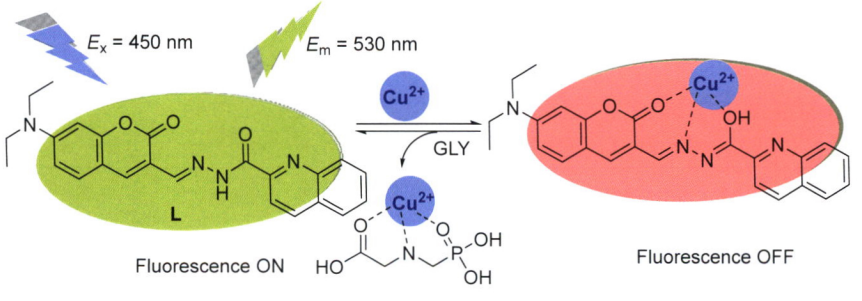
Synthesis and Nucleotide Recognition Properties of Carborane-Based Benzoimidazolium Cyclophane



Two novel carborane-based benzimidazoliums **4a** and **4b** have been designed and synthesized. The interactions of these probes with UMP by fluorescence absorption, UV/Vis, and ^{1}H NMR spectroscopy were studied. The fluorescence titration results showed that the probes **4a** and **4b** could significantly quench the fluorescence of UMP. Anti-interference experiments confirmed the potential of probe **4b** to selectively recognize UMP.

Lin, Binghan; Zhuo, Jibin; Lin, Caixia; Gao, Yong*; Yuan, Yaofeng*
Chin. J. Org. Chem. **2022**, *42*(8), 2551

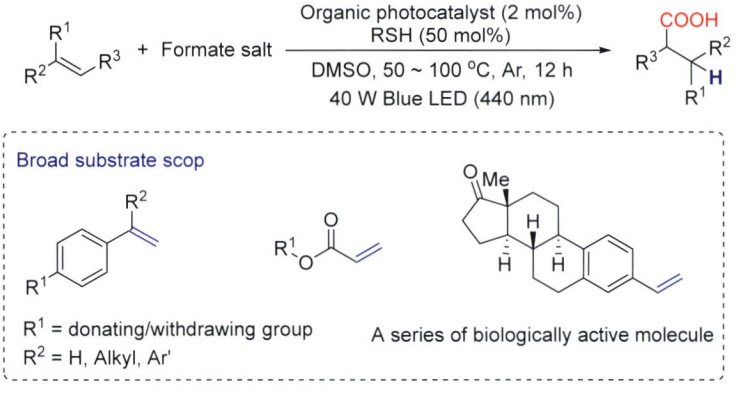
A Novle Quinoline Hydrazone-Based Fluorescent Probe for Sequential Determination of Cu^{2+}/Glyphosate and Its Applications



A novel fluorescent probe **L** based on quinoline hydrazone have been designed and synthesized. The probe **L** could relay recognition of Cu^{2+} and glyphosate. Moreover, complex **L**-Cu^{2+} was used for the visual detection of glyphosate based on color change and applied to the detection of glyphosate in the actual water samples.

Wu, Mianyuan; You, Jun*; Yu, Yanchao*; Wu, Wenju
Chin. J. Org. Chem. **2022**, *42*(8), 2559

Hydrocarboxylation of Alkenes with Formate Salts via Photocatalysis



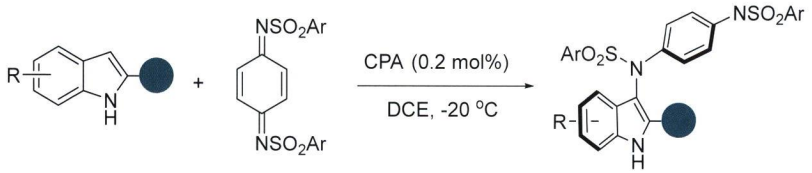
A transition-metal-free β-selective hydrocarboxylation of alkenes under mild conditions has been developed using a formate salt as the reductant, carbonyl source. A broad range of alkenes were compatible with this method and can be efficiently converted into value-added carboxylic acid products. This method also features low catalyst loading, good functional group tolerance, and easy scalability.

Huang, Yan; Zhang, Qian; Zhan, Lewu; Hou, Jing*; Li, Bindong*
Chin. J. Org. Chem. **2022**, *42*(8), 2568

CONTENT

HIGHLIGHTS

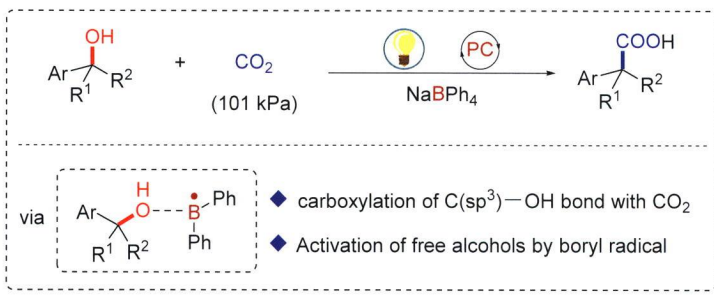
Asymmetric Synthesis of Indolyl C—N Atropoisomers through Enantioselective Electrophilic Amination



Liu, Wei; Yang, Xiaoyu*

Chin. J. Org. Chem. **2022**, *42*(8), 2596

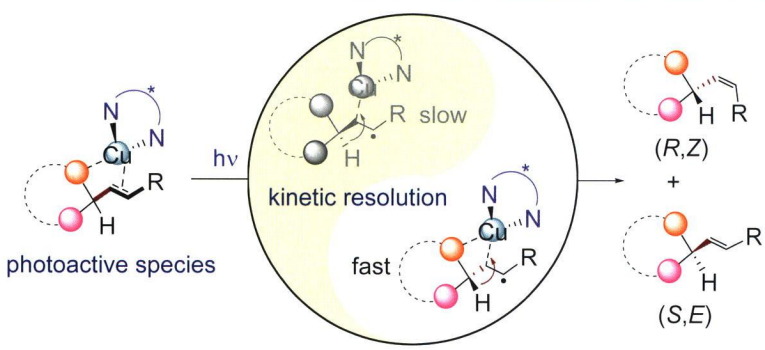
Boryl Radical-Promoted Carboxylation of Benzylic C—OH Bonds



Zhou, Wenjun; Ran, Chuankun; Yu, Dagang*

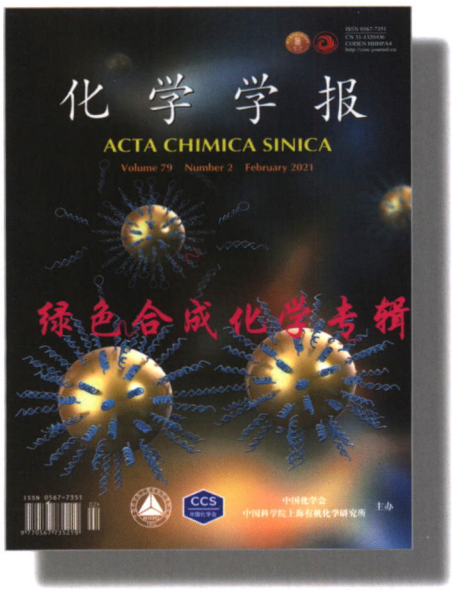
Chin. J. Org. Chem. **2022**, *42*(8), 2599

Kinetic Resolution through Olefin *E*→*Z* Isomerization Mediated by Excited Chiral Copper Complexes



Ye, Ziqi; Gong, Lei*

Chin. J. Org. Chem. **2022**, *42*(8), 2602



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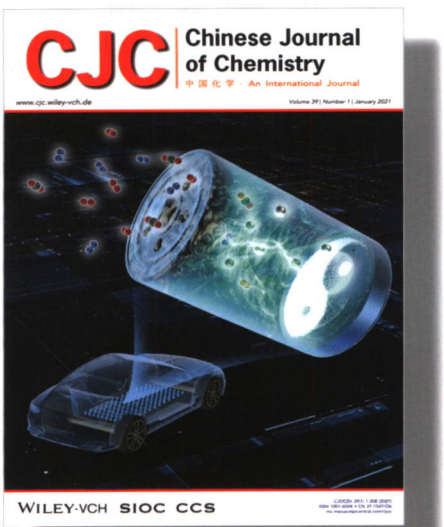

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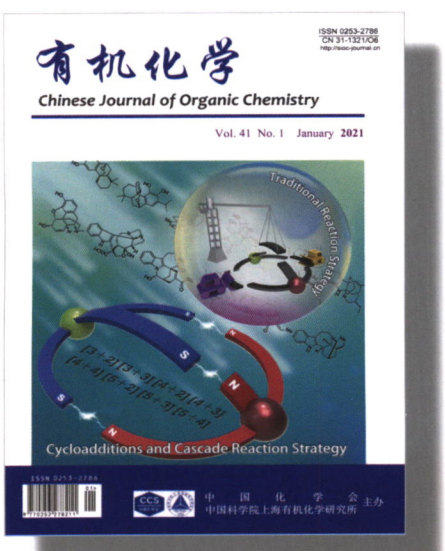

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