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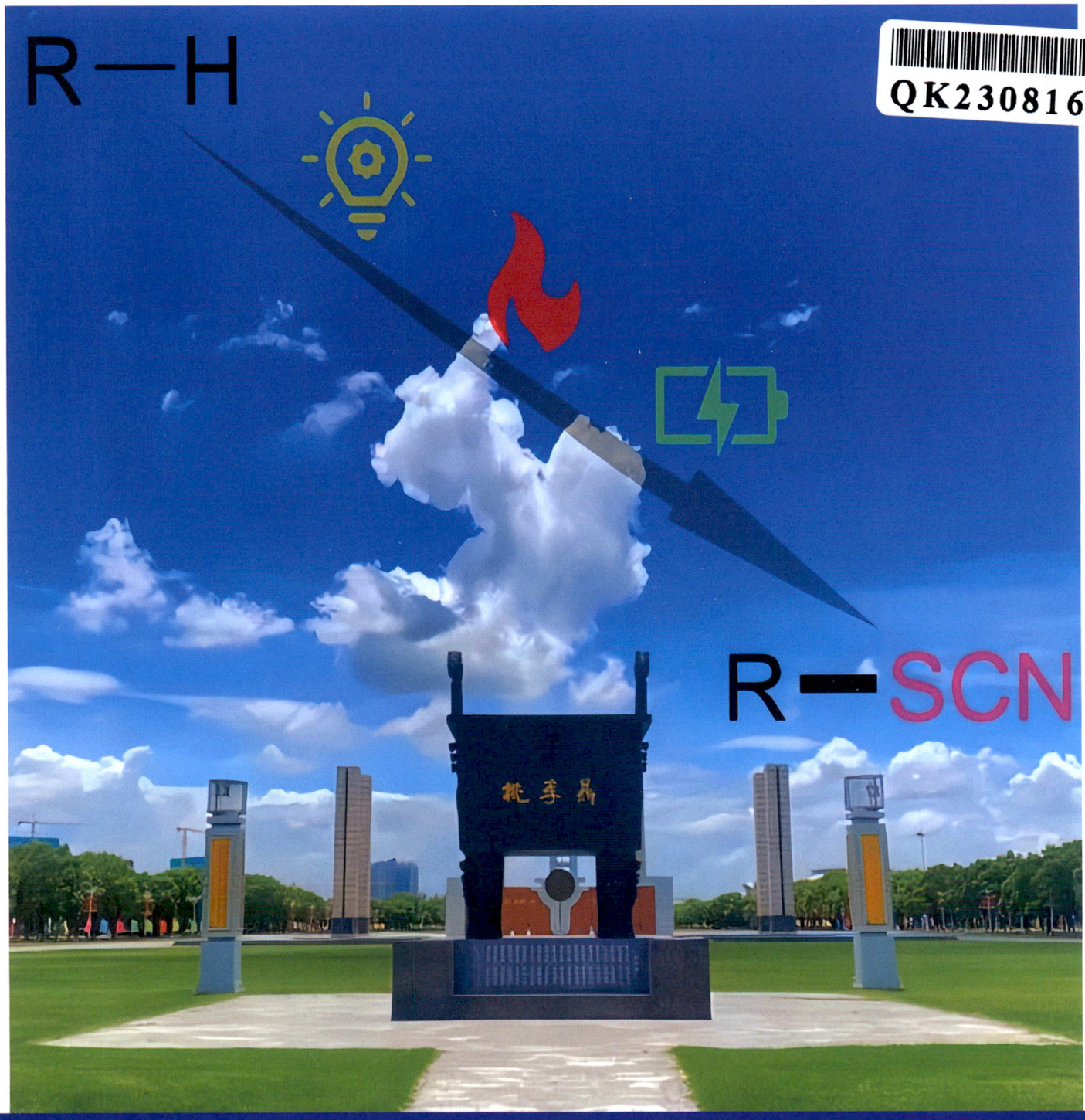
Chinese Journal of Organic Chemistry

Vol. 43 No. 7 July 2023



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目 次

综述与进展

研究论文

* 通讯联系人.

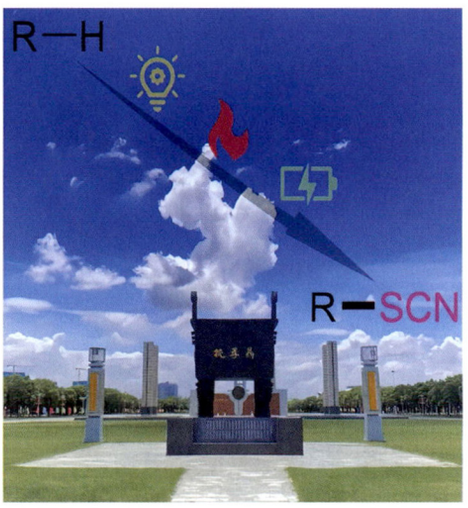
研究简报

亮点述评

Chinese Journal of Organic Chemistry

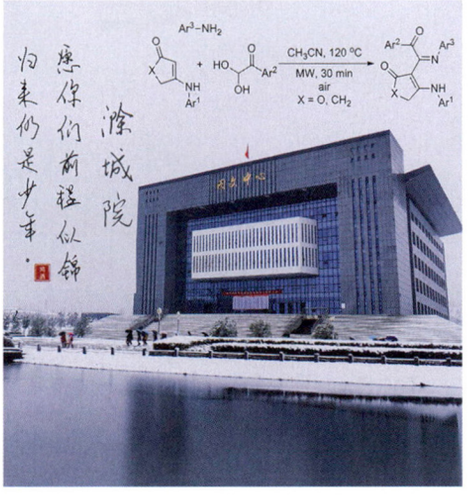
Vol. 43 No. 7 July 2023

Cover Picture: Transition Metal-Free C—H Thiocyanation and Selenocyanation Based on Thermochemical, Photocatalytic and Electrochemical Process



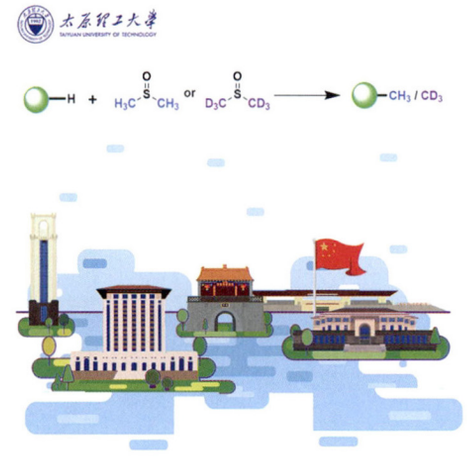
The recent research advances on transition metal-free C—H thiocyanation reaction is reviewed by Xu, Wan and Liu on page 2425. The review presents the state-of-the-art in sustainable synthesis of organo thiocyanates and related cyclic scaffolds without using transition metal reagent. The reactions with thermo-, photo- and electrochemical promotion are covered.

Inside Cover: O_2-Enabled C—H Imination of Five-Membered Cyclic Enamines



An O_2-enabled C—H imination of five-membered cyclic enamines is reported by Fan on page 2492. Metal-free catalytic three-component reactions of tetronic acid- or 1,3-cyclopentanedione-derived enaminones with arylglyoxals and arylamines worked well under microwave irradiation, furnishing a series of α-enamino-α-aroyl imines with good yields and complete stereoselectivity. In this reaction process, air serves as the green oxidant with water as the sole byproduct.

Inside Back Cover: Application of Dimethyl Sulfoxide as Methylating Reagent in Organic Synthesis

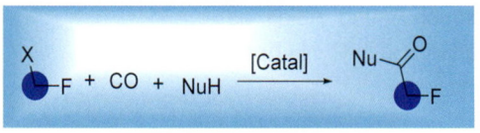


The introduction of methyl groups into drug molecules can change their pharmscokinetic and pharmacological properties. This "magic methyl effect" makes methylation a very important reaction in the field of organic synthesis and pharmaceutical chemistry. By focusing on the cross-coupling reaction and free radical reaction, the application of dimethyl sulfoxide (DMSO)/DMSO-d_6 as methylation/trideuterium methylating reagent in organic synthesis is systematically described, and the relevant reaction mechanism, development trend and challenges in the synthesis process are discussed by Tian, Zhang, Gao, and Chang on page 2391.

CONTENT

REVIEWS

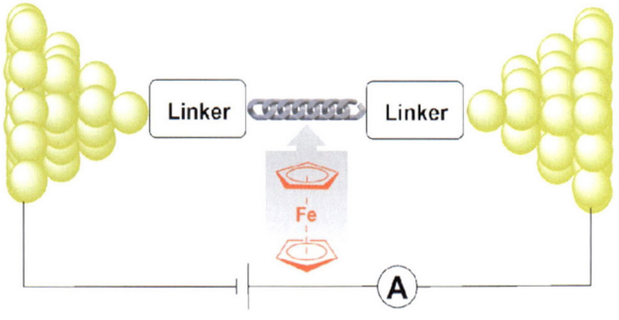
Progresses on Fluorocarbon-Containing Substrates Involved Carbonylation Reactions



The progresses on fluorocarbon-containing substrates carbonylation reactions based on transition metal palladium, nickel and copper catalysis have been summarized and discussed.

An, Da-Lie; Bao, Zhi-Peng; Wu, Xiao-Feng*
Chin. J. Org. Chem. **2023**, *43*(7), 2304

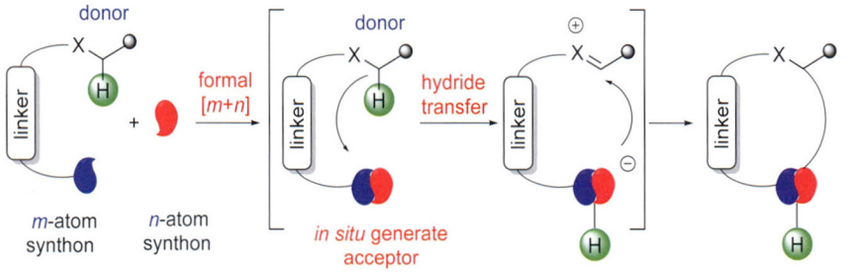
Research Progress of Electron Transport Properties in Ferrocene-Containing Single-Molecule Junctions



Based on the structural properties of the molecules, metallocene molecular wires are classified into two types: π-conjugated and non π-conjugated. The work on the electron transport properties of ferrocene-containing single-molecule junctions in the last decade is summarized in terms of the conformational relationships of the molecules, in the hope of providing a reference for future research on ferrocene molecular wires.

Zuo, Xin; Xu, Shinuo; Chen, Zhongyang; Yan, Jianfeng*; Yuan, Yaofeng*
Chin. J. Org. Chem. **2023**, *43*(7), 2313

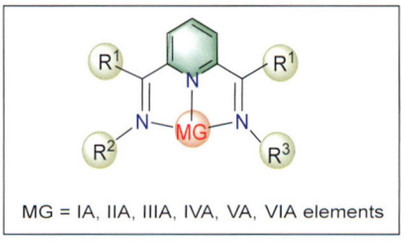
Research Progress on Construction of Heterocyclic Skeletons Based on α-Hydride Transfer Strategy



The [*m*+*n*] cyclization reactions based on hydride transfer strategy are selected as the research object. Starting from the framework of aza- and oxa-heterocycles constructed by this kind of reaction, this review is classified according to the size of the generated aza- and oxa-heterocycles. The recent progress of [*m*+*n*] cyclization based on hydride transfer strategy since 2018 is summarized, and the development of this field is also prospected.

Chen, Yuzhuo; Sun, Hongmei; Wang, Liang; Hu, Fangzhi*; Li, Shuaishuai*
Chin. J. Org. Chem. **2023**, *43*(7), 2323

Recent Progress in the Main Group Complexes with the 2,6-Pyridinediimine

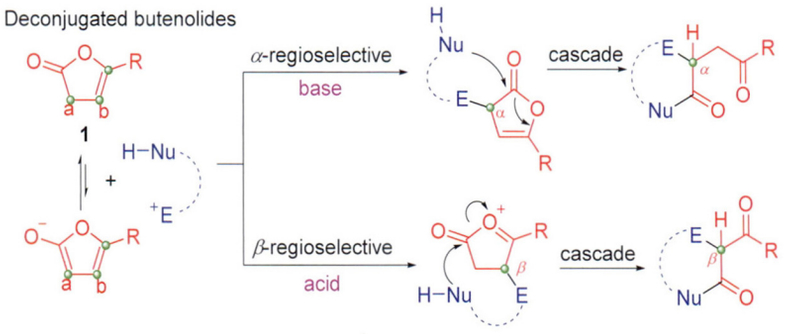


As a tridentate ligand with redox activity, 2,6-pyridinediimine (PDI) can coordinate with main group (MG) elements. Due to the inexpensive, readily available, and relatively low-toxic of main group elements, the development of PDI-MG complexes has grown rapidly in recent years. The PDI-MG complexes are summarized according to the group number of the MG. At the same time, the synthetic methodology together with the reactivities of these reported PDI-MG complexes is summarized and the oxidation states of their ligands are emphatically analyzed.

Yang, Xingxing; Fan, Yonghao; Cui, Jingjing*
Chin. J. Org. Chem. **2023**, *43*(7), 2338

CONTENT

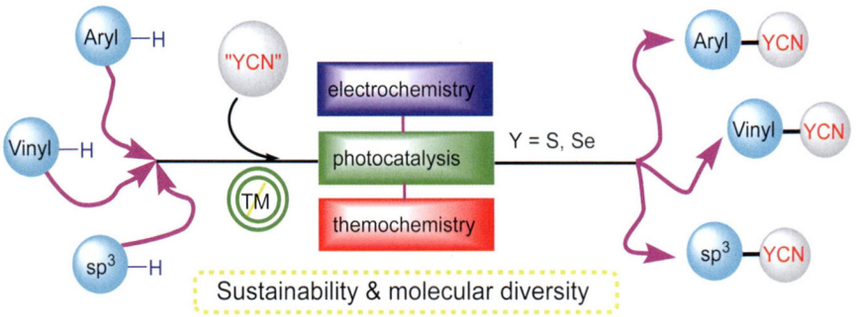
Advances on the α- and β-Reactions of Deconjugated Butenolides



Zhou, Lin*; Yang, Hong; Yang, Chuan; Zhao, Zhigang; Li, Qinghan
Chin. J. Org. Chem. **2023**, *43*(7), 2407

The α- and β-reactions of deconjugated butenolides are reviewed, in which the characteristics of various reaction systems and the mechanisms of some reactions are discussed. At the same time, the future development is prospected in this field.

Transition Metal-Free C—H Thiocyanation and Selenocyanation Based on Thermochemical, Photocatalytic and Electrochemical Process

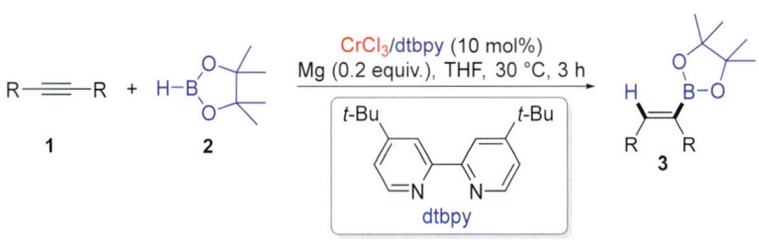


Xu, Zhongrong; Wan, Jieping*; Liu, Yunyun*
Chin. J. Org. Chem. **2023**, *43*(7), 2425

The recent progress in the transition metal-free thiocyanation, selenocyanation and related cascade reactions involving such functionalization process is reviewed. According to the status, the reactions performed with thermochemical, photocatalytic and electrochemical operations are covered.

ARTICLES

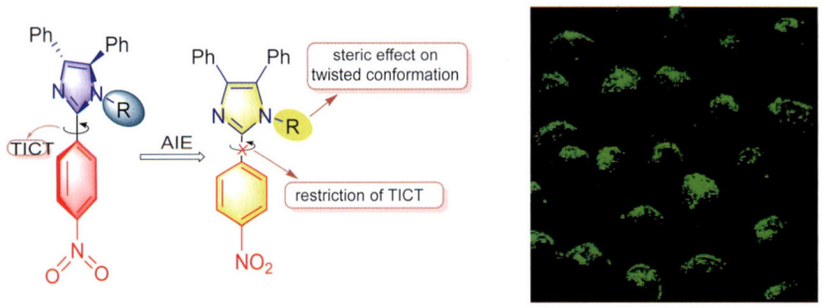
Bipyridine Ligand-Promoted *cis*-Selective Hydroboration of Alkynes with Chromium Catalysis



Wang, Sha; Chen, Changpeng; Zeng, Xiaoming*
Chin. J. Org. Chem. **2023**, *43*(7), 2447

The chromium-catalyzed hydroboration of alkynes under mild conditions was reported. Low-cost chromium(III) chloride combined with 4,4'-di-*tert*-butyl 2,2'-bipyridine as the ligand and magnesium as the reductant shows high reactivity.

Aggregation-Induced Emission and Cell Imaging of Triphenylimidazole Derivatives

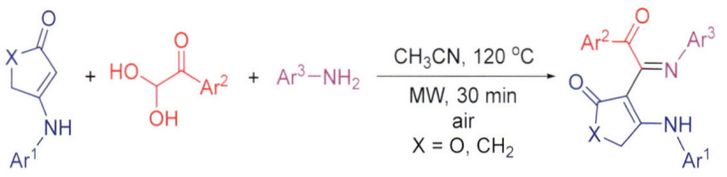


Zhao, Yang; Chen, Panpan; Han, Lizhi*; Wang, Enju*
Chin. J. Org. Chem. **2023**, *43*(7), 2454

Two butylidene-bridged bisimidazole derivatives and two butyl-substituted monoimidazole derivatives were easily synthesized. All of them showed excellent aggregation-induced emission (AIE) properties based on the restriction of twisted intramolecular charge transfer (TICT) mechanism.

CONTENT

O_2-Enabled C—H Imination of Five-Membered Cyclic Enamines

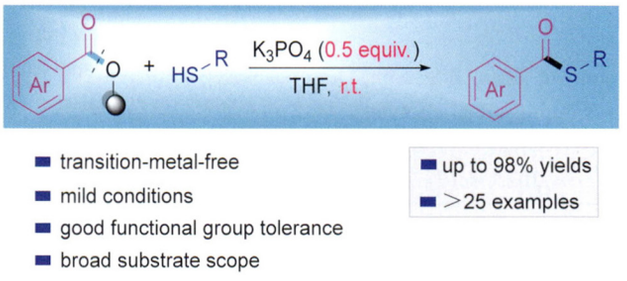


An O_2-enabled C—H imination of five-membered cyclic enamines is reported. Metal-free catalytic three-component reactions of tetronic acid- or 1,3-cyclopentanedione-derived enaminones with arylglyoxals and arylamines worked well under microwave irradiation, furnishing a series of α-enamino-α-aroyl imines with good yields and complete stereoselectivity. In this reaction process, air serves as the green oxidant with water as the sole byproduct.

Fan, Wei*

Chin. J. Org. Chem. **2023**, *43*(7), 2492

Thioesterification of Esters with Primary Aliphatic Thiols at Room Temperature

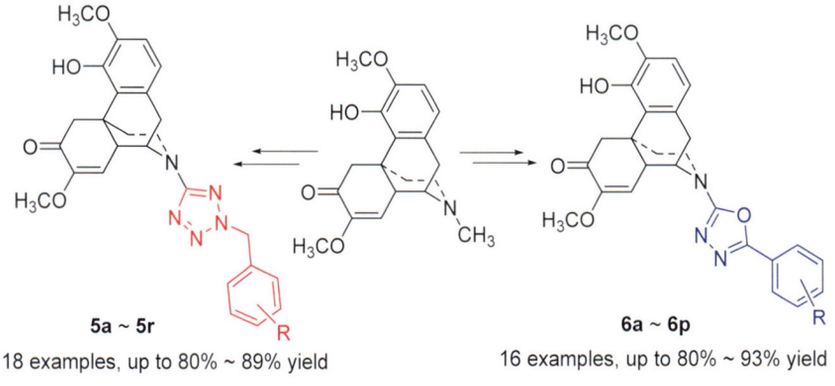


The thioesterification of esters with primary aliphatic thiols at room temperature was reported. This method was successfully applied to the synthesis of probenecid thioester and sequential bond activation.

Shi, Yijun*; Sun, Xinyue; Cao, Han; Bie, Fusheng; Ma, Jie; Liu, Zhe; Cong, Xingshun*

Chin. J. Org. Chem. **2023**, *43*(7), 2499

Design and Synthesis of *N*-Tetrazole and *N*-Oxadiazole Heterocyclic Derivatives of Sinomenine

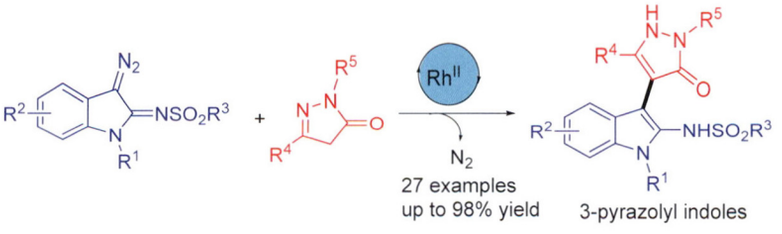


The sinomenine was modified with tetrazole and 1,3,4-oxadiazole heterocyclic structures via 1,3-dipolar cycloaddition reaction and Huisigen rearrangement reaction. 34 new compounds were synthesized, which expanded the library of sinomenine derivatives and provided experimental basis for potential drugs activity study.

Wu, Xuedan; Xu, Ruixiang; Fang, Xiaolong; Zhang, Kehua; Jin, Jie*

Chin. J. Org. Chem. **2023**, *43*(7), 2506

Rh-Catalyzed C—H Functionalization Reaction between 3-Diazoindolin-2-imines and Pyrazolones for the Construction of 3-Pyrazolyl Indoles



A highly efficient C—H functionalization reaction of α-imino carbenes and nonaromatic pyrazolones in the presence of $Rh_2(OAc)_4$ has been demonstrated. This methodology provides a rapid and straightforward approach toward a variety of structurally diverse 3-pyrazolyl indoles by C—C bond formation in moderate to excellent yields with good functional group tolerance.

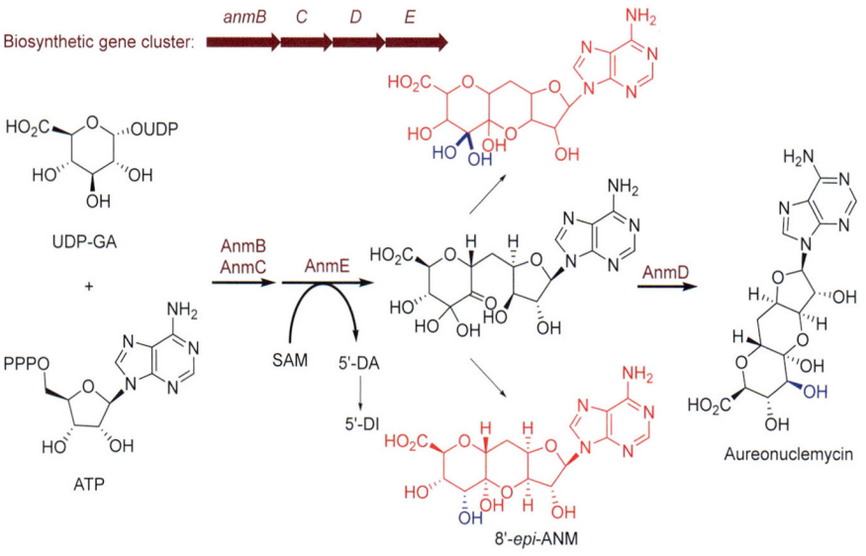
Xu, Xiaoping; Zhang, Yifei; Mo, Xiaoyu; Jiang, Jun*

Chin. J. Org. Chem. **2023**, *43*(7), 2519

CONTENT

NOTES

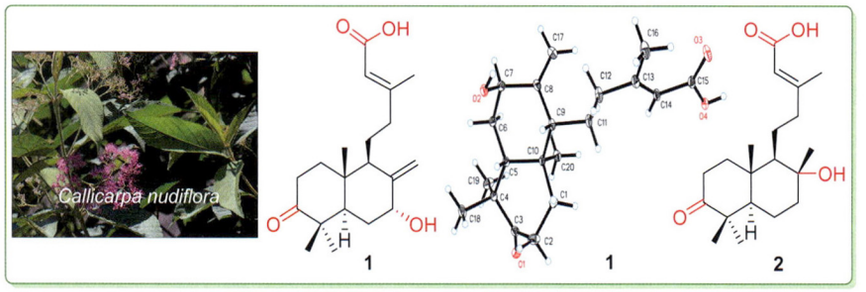
In vivo Studies on the Biosynthetic Pathway of Aureonuclemycin and Identification of Key Metabolites



Wang, Fei; Jin, Wenbing; Hou, Xianfeng; Tang, Gongli*; Pan, Haixue*
Chin. J. Org. Chem. **2023**, *43*(7), 2561

In-frame deletion of key genes that play a role in aureonuclemycin biosynthesis yielded several compounds, two of which were isolated and identified. Accordingly, a possible biosynthetic pathway of aureonuclemycin is proposed.

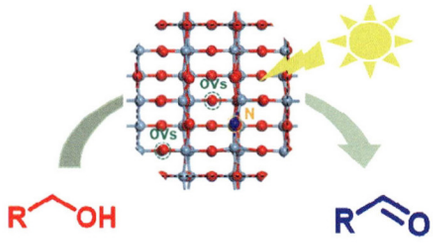
Two New Labdane Diterpenoids from the Leaves of *Callicarpa nudiflora*



Yu, Zhangxin; Meng, Yuqin; Xue, Menglin; Li, Xiaobao; Chen, Guangying*; Han, Changri*
Chin. J. Org. Chem. **2023**, *43*(7), 2567

Two undescribed labdane diterpenoids were isolated from the leaves of *Callicarpa nudiflora*, and some of them showed anti-inflammatory activity.

Visible-Light-Induced Aerobic Oxidation of Alcohols over Surface Oxygen Vacancies-Enriched Nb_2O_5



Gao, Yanhua; Zhang, Yinpan; Zhang, Yan*; Song, Tao*; Yang, Yong*
Chin. J. Org. Chem. **2023**, *43*(7), 2572

The surface oxygen vacancies-enriched Nb_2O_5 semiconductor photocatalyst was developed for highly efficient oxidation of alcohols to aldehydes under visible-light illumination and mild conditions.

HIGHLIGHTS

Electroreductive Dicarboxylation of Unactivated Skipped Dienes with CO_2 to Synthesize Cyclic Dicarboxylic Acid

Huang, Jian; Zhang, Wenzhen*
Chin. J. Org. Chem. **2023**, *43*(7), 2580

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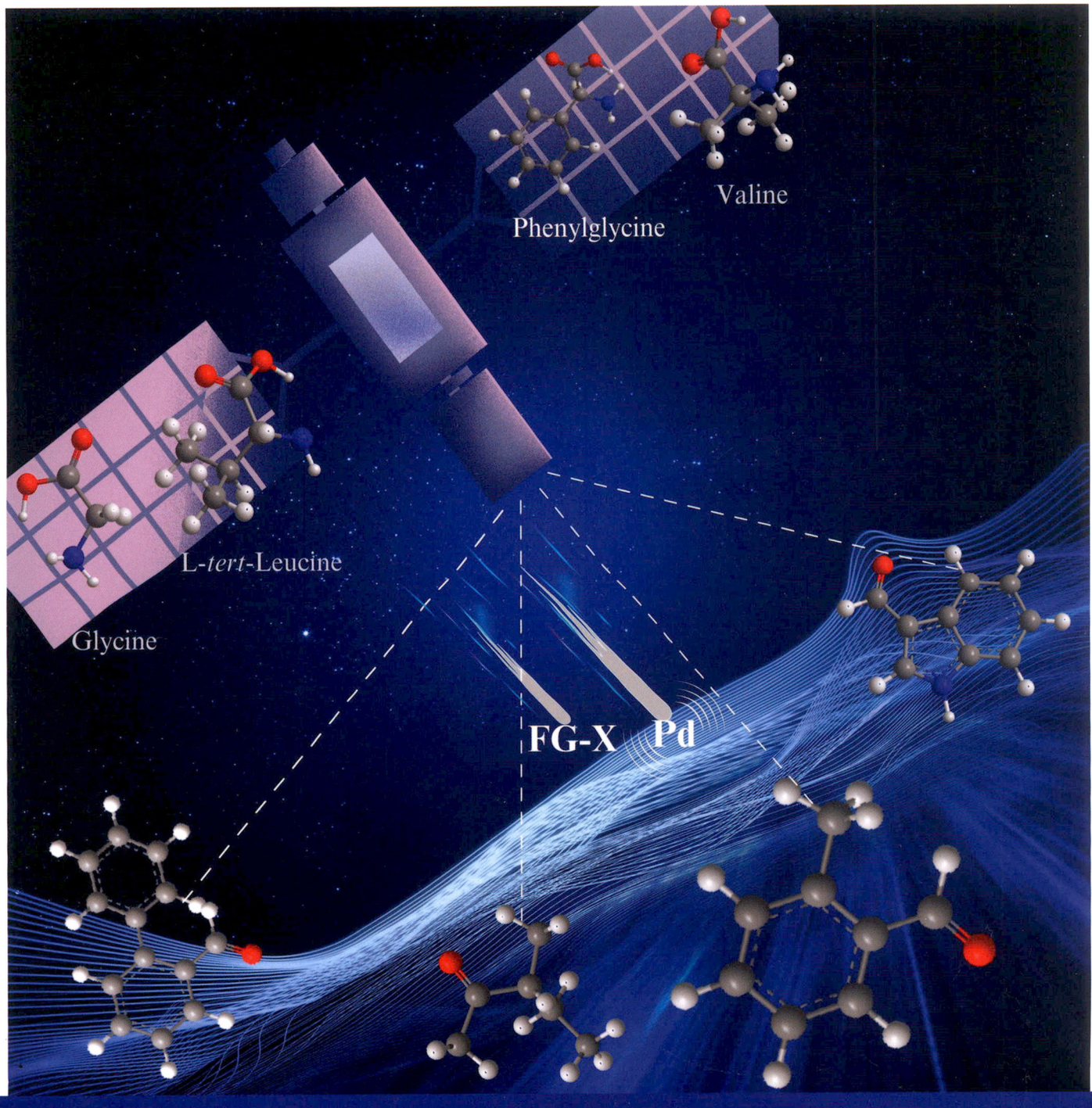

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