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化学学报

ACTA CHIMICA SINICA

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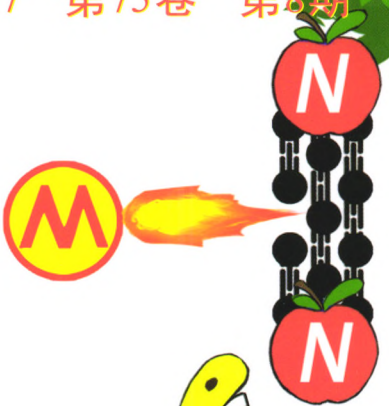

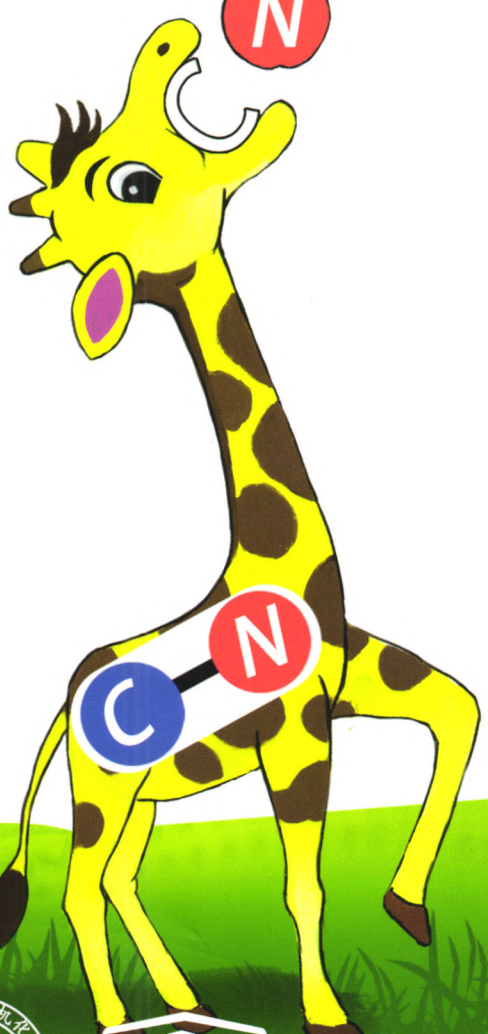

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中国化学会
中国科学院上海有机化学研究所 主办

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(Huaxue Xuebao)

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* 通信联系人.

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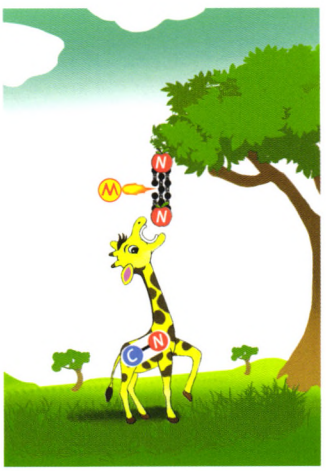
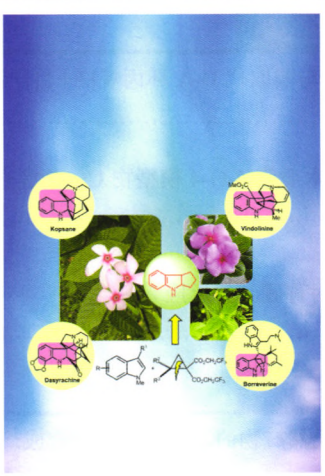


On the cover: This review mainly summarizes the progress in the field of direct transformation of molecular nitrogen to nitrogen-containing organic compounds by using transition metal complexes. The activation and transformation of dinitrogen (nitrogen fixation) under mild conditions has been a great challenge, which requires combined efforts of chemists from all over the world. [Xi, Zhenfeng *et al.* on page 733-743.]



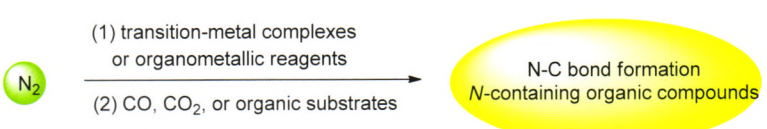
On the back cover: A bisoxazoline/$Cu(SbF_6)_2$ catalyzed stereoselective [3+2] annulation of indoles with 1,1,2,2-tetrasubstituted donor-acceptor cyclopropanes was presented. This annulation method furnished the C2, C3-fused indolines bearing three continuous quaternary stereocentres on the newly built cyclopentane ring, which are widely existed as a core motif in a plenty of natural products and biologically active compounds. [Tang, Yong *et al.* on page 783-787.]

Review

Direct Transformation of N_2 to *N*-Containing Organic Compounds

Li, Jiapeng; Yin, Jianhao; Yu, Chao; Zhang, Wenxiong; Xi, Zhenfeng*

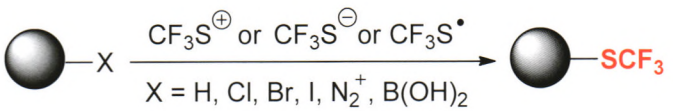
Acta Chim. Sinica **2017**, *75*(8), 733-743



Recent Progress on Direct Trifluoromethylthiolating Reagents and Methods

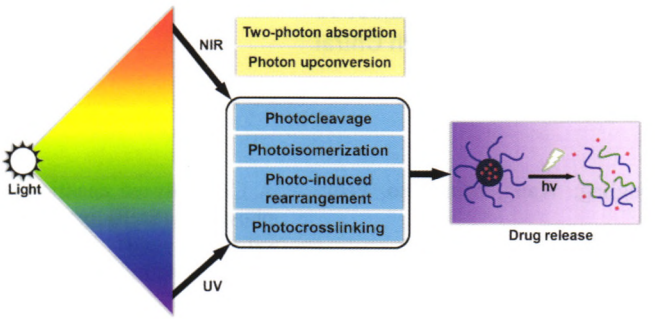
Zhang, Panpan; Lu, Long; Shen, Qilong*

Acta Chim. Sinica **2017**, *75*(8), 744-769



Recent progress on the development of trifluoromethylthiolating reagents and methods for the direct introduction of the trifluoromethylthio group was reviewed.

Progress in Research of Photo-controlled Drug Delivery Systems



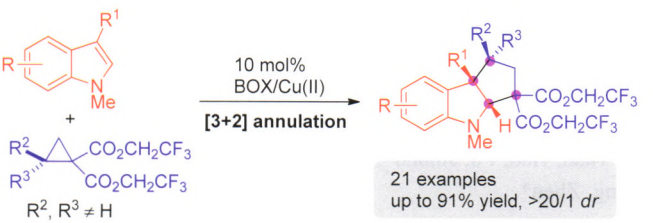
Zhang, Liuwei; Qian, Ming; Wang, Jingyun*

Acta Chim. Sinica **2017**, *75*(8), 770-782

Many photo-controlled drug delivery systems based on different photo-responsive groups for the precise release of drugs are summarized in this review. Photo-controlled drug delivery systems provide a new strategy for the precise treatment of tumors.

Communication

Copper Catalyzed [3+2] Annulation of Indoles with 1,1,2,2-Tetrasubstituted Donor-Acceptor Cyclopropanes

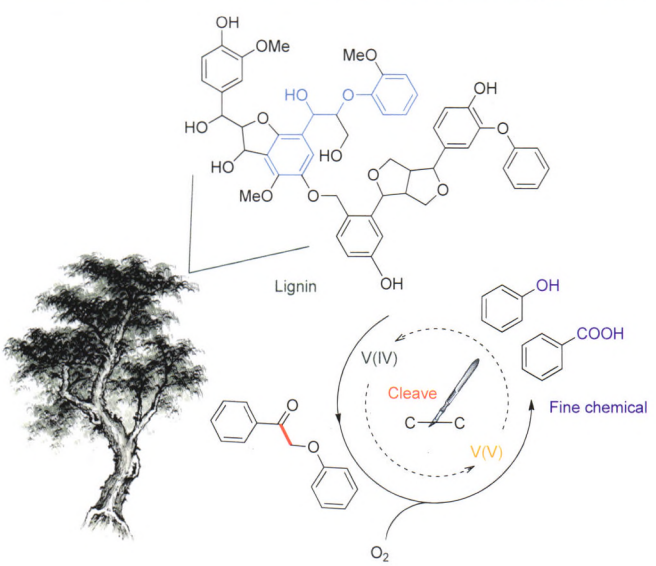


Yan, Weng-Guang; Wang, Pan; Wang, Lijia; Sun, Xiu-Li*; Tang, Yong*

Acta Chim. Sinica **2017**, *75*(8), 783-787

A first Lewis acid catalyzed [3+2] annulation of indoles with 1,1,2,2-tetrasubstituted D-A cyclopropanes was reported, providing an easy access to a variety of C2, C3-fused indolines, bearing three quaternary stereocentres on the newly built cyclopentane ring.

Lignin C—C Bond's Cleavage by Vanadium Catalyzed with High Selectivity in Acid Environment

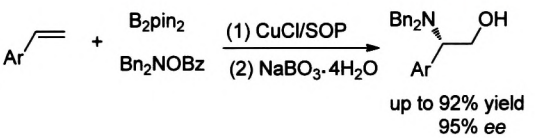


Liu, Xinxin; Yan, Long; Fu, Yao*

Acta Chim. Sinica **2017**, *75*(8), 788-793

The process of pre-oxidized lignin β-O-4 model compound converted to benzoic acid and phenol has been studied. The β-O-4 structure would be degraded through C—C bonds' cleavage efficiently over the catalyst of NH_4VO_3. It has been proved that oxo-vanadium(V) cations in the system were the core for the catalyzed process and recycle via oxovanadium(IV) cations.

Copper-Catalyzed Enantioselective Aminoboration of Styrenes with Chiral Sulfoxide Phosphine Ligand



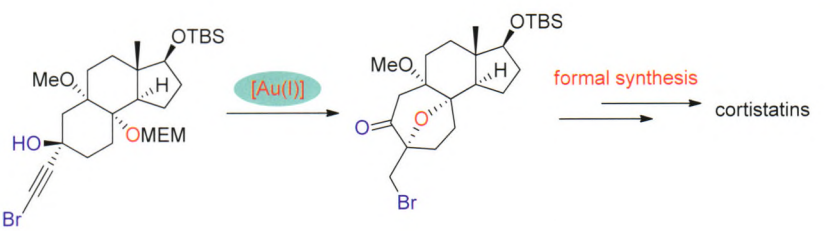
Zhang, Yongling; Wang, Min; Cao, Peng; Liao, Jian*

Acta Chim. Sinica **2017**, *75*(8), 794-797

A Cu-catalyzed enantioselective aminoboration of styrenes by using chiral sulfoxide-phosphine (SOP) ligands was developed, chiral *β*-aminoalkylboranes were obtained with satisfied yields and *ee* values, which can be readily transferred to valuable *β*-hydroxylalkylamines.

Article

Asymmetric Formal Synthesis of Cortistatins via a Gold-Catalyzed Semi-Pinacol Rearrangement Strategy

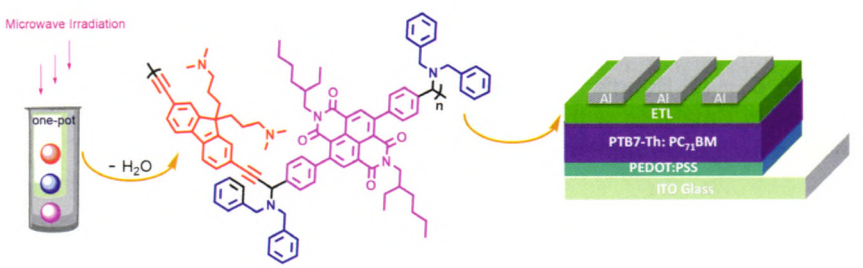


Gu, Yueqing; Yuan, Hao; Fu, Junkai*; Gong, Jianxian*; Yang, Zhen*

Acta Chim. Sinica **2017**, *75*(8), 798-807

Full details about our efforts towards the formal synthesis of cortistatins were described herein. This route is featured with a novel gold-catalyzed cascade reaction involving intramolecular nucleophilic addition of hydroxyl group to the carbon-carbon triple bond, followed by an oxonium ions initiated semi-pinacol-type 1,2-migration to construct the key oxabicyclo[3.2.1]octane skeleton.

Naphthalene Diimide-Based Polymers Consisting of Amino Alkyl Side Groups: Three-Component One-Pot Polymerization and Their Application in Polymer Solar Cells

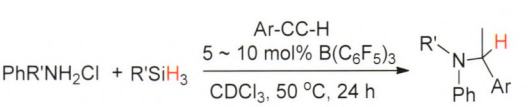


Jia, Tao; Zheng, Nannan; Cai, Wanqing; Ying, Lei; Huang, Fei*

Acta Chim. Sinica **2017**, *75*(8), 808-818

A series of naphthalene diimide-based amino-functionalized polymers **P1**～**P4** were developed via three-component polymerization (TCP) of diynes, dialdehydes and dibenzylamine. The influence of chemical environment of amine groups on the electrode modification capability and self-doping behavior of the resulting polymers was explored. The **P1** can be utilized as the cathode interlayer for polymer solar cells and the resulting device exhibited a significantly improved performance. Our results indicate that TCP is an effective strategy for the development of multi-functional polymer materials.

Research of $B(C_6F_5)_3$/Aromatic Ammonium Chloride Systems Catalyzed Hydroamination/Reduction Reaction



Zhang, Luwen; Wen, Zhiguo; Borzov, Maxim; Nie, Wanli*

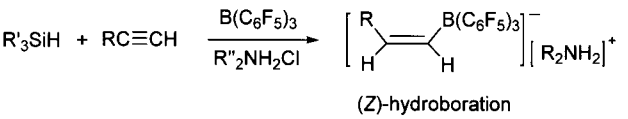
Acta Chim. Sinica **2017**, *75*(8), 819-823

A new method of an one-pot hydroamination/reduction reaction of terminal alkyne with aromatic amines catalyzed by the $B(C_6F_5)_3$/aromatic ammonium chloride systems was described. Hydrosilane has been chosen as reducing reagent instead of hydrogen.

Research of the Stereoselectivity and Mechanism of the Hydroboration Reaction Between $B(C_6F_5)_3$/Ammonium Chloride Systems with Terminal Alkyne

Sun, Guofeng; Su, Min; Fang, Jie; Borzov, Maxim; Nie, Wanli*

Acta Chim. Sinica **2017**, *75*(8), 824-830



(*Z*)-hydroboration

R''_2NH = *t*-$BuNH_2$, $CyNH_2$, *i*-Pr_2NH, Et_2NH, TMP, Et_3NH, *n*-Bu_4N, *etc.*

This paper describes a series of reactions between $B(C_6F_5)_3$/ammonium chloride systems with terminal alkynes and the characteristics of the *Z*-stereoselective hydroboration products. The mechanism of the stereoselectivity has been discussed and found that the ammonium hydroborate $[R_2NH_2][HB(C_6F_5)_3]$ intermediates could not react with the alkynes alone. Trace amount of the Lewis acid $B(C_6F_5)_3$ is necessary to firstly activate the alkynes. And the weak interaction between the Cl ion and $B(C_6F_5)_3$ plays also an important role on these stereoselective hydroboration reactions.

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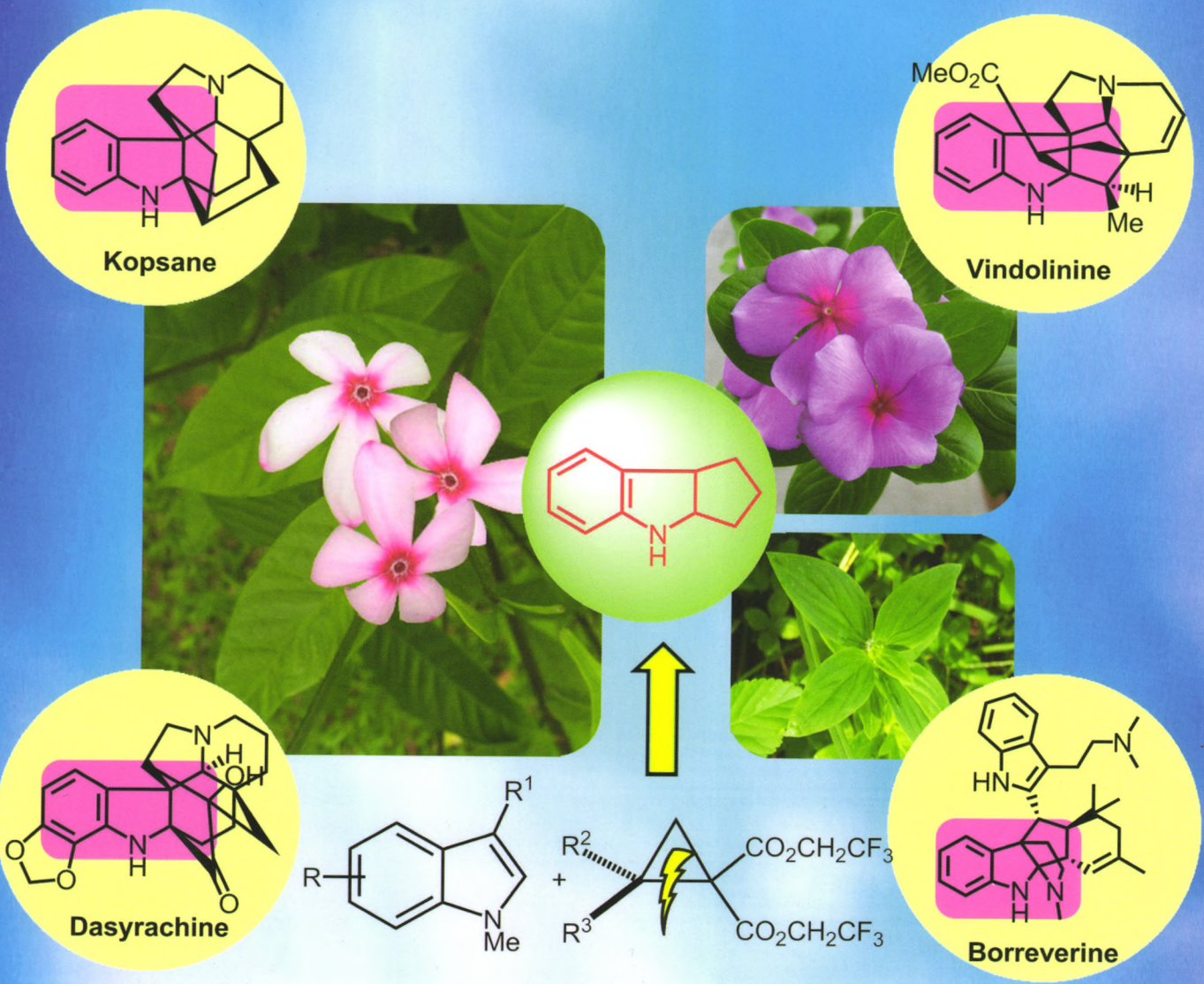

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