

ISSN 0253-2786
CN 31-1321/O6
<http://sioc-journal.cn>

有机化学

Youji Huaxue

Chinese Journal of Organic Chemistry

金属有机化学专辑

第 37 卷 第 5 期 Vol. 37 No. 5 2017



ISSN 0253-2786



中国化学会
主办
中国科学院上海有机化学研究所

有机化学

(月刊)

Chinese Journal of Organic Chemistry

(YOUJI HUAXUE)

第37卷 第5期 (总342期) 2017年5月*

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* 通讯联系人。

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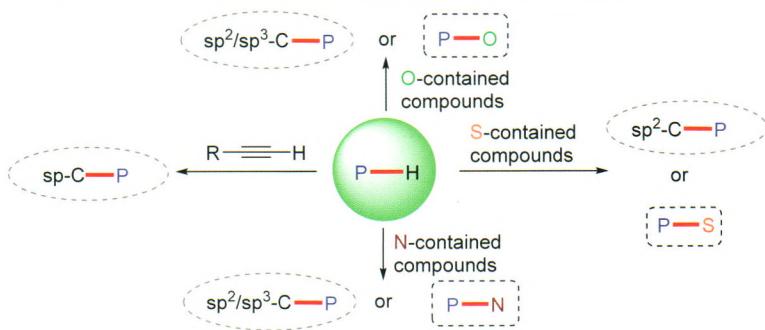
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On the Cover

The first rhodium-catalyzed stereospecific intermolecular [3+2] cycloaddition reaction of vinylaziridines and ynamides was realized by Zhu, Feng and Zhang on page 1165. The reaction provides an efficient and atom-economic route to valuable 2-amino pyrrolidine derivatives in an enantioselective manner by a chirality-transfer strategy. Of note, just as the ECNU's Liwa bridge has a significant effect on the ECNU's teachers and students, the $[\text{Rh}(\text{NBD})_2]\text{BF}_4$ catalyst plays a central role on the current reaction.

REVIEWS

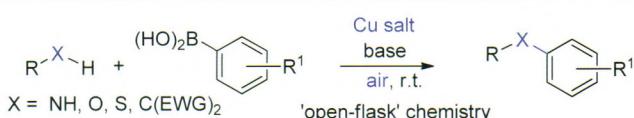
Recent Advances in the Synthesis of Organophosphorus Compounds via Cross Coupling between Readily Available Materials and P—H Compounds



Yang, Jia; Xiao, Jing; Zhou, Yongbo*; Chen, Tieqiao*; Yin, Shuangfeng; Han, Libiao*
Chin. J. Org. Chem. 2017, 37(5), 1055

This mini-review focuses on the recent advances in the synthesis of organophosphorus compounds via cross coupling of P—H compounds with readily available starting materials, mainly including the reactions of terminal alkynes and heteroatom compounds (oxygen, sulfur or nitrogen-contained compounds) with P—H compounds forming $\text{sp}^2\text{-C-P}$, $\text{sp}^2\text{-C-P}$, $\text{sp}^3\text{-C-P}$, and P—Z bonds. Related reaction mechanisms are also discussed.

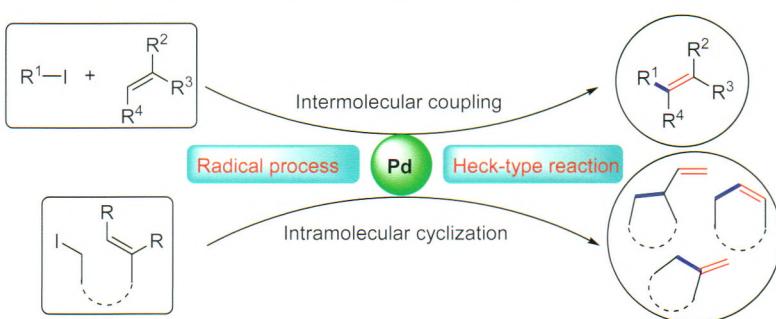
Recent Advances in Chan-Evans-Lam Coupling Reaction



Ma, Xiaopan; Liu, Fengping; Mo, Dongliang*
Chin. J. Org. Chem. 2017, 37(5), 1069

In this paper, the development of Chan-Evans-Lam reaction in the construction of carbon-heteroatom and carbon-carbon bonds as well as its application in total synthesis in recent five years are reviewed.

Recent Advances on Alkyl-Heck Reaction

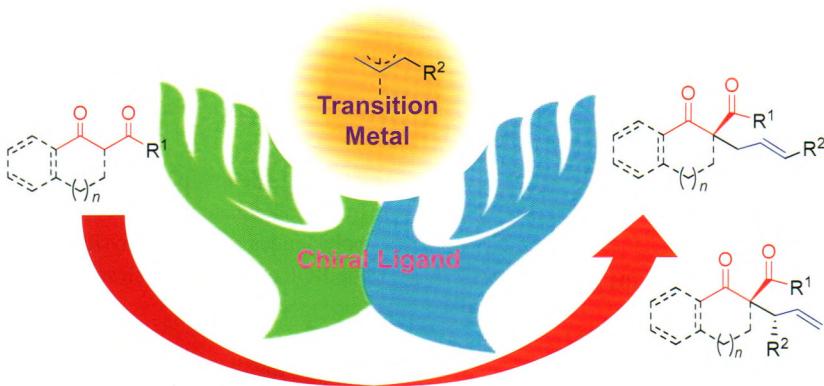


Dong, Xu; Hou, Yongzheng; Meng, Fanwei; Liu, Hongbo; Liu, Hui*
Chin. J. Org. Chem. 2017, 37(5), 1088

The recent progress in the palladium radical involved Heck-type reaction is reviewed. For most of these transformations, the plausible mechanisms are demonstrated in details. Clarification of these issues is the key point for understanding this field and developing new high performance methodologies.

CONTENT

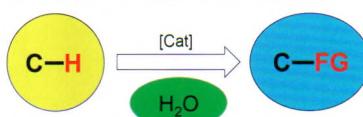
Progress on Transition Metal-Catalyzed Asymmetric Allylic Alkylation Reaction of 1,3-Dicarbonyl Compounds



Asymmetric allylic alkylation reaction of 1,3-dicarbonyl compounds is one of the most important methods for forming chiral carbon center. This review summarizes the progress on transition metal-catalyzed asymmetric allylic alkylation reaction of 1,3-dicarbonyl compounds. Different allylating reagents such as allylic esters, allylic alcohols, allylic halides, olefins, allenes and others for the synthesis of α -allyl substituted 1,3-dicarbonyl compounds are discussed.

Zheng, Nan; Song, Wangze*
Chin. J. Org. Chem. 2017, 37(5), 1099

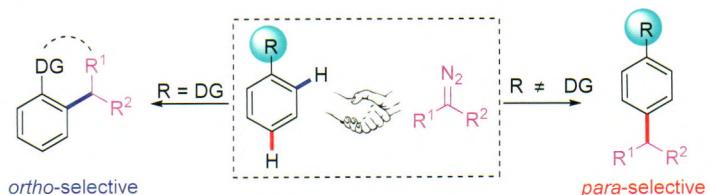
Progress in Catalytic C—H Activation Reactions in Water



C—H bond functionalization is one of the hot spots in the research field of organic chemistry, and normally performed in organic solvents. This paper reviews the recent progress of aqueous catalyzed C—H functionalization reactions, including hybridized sp -, sp^2 -, and sp^3 -C—H bonds.

Yang, Jun; Fu, Ting; Long, Yang; Zhou, Xiangge*
Chin. J. Org. Chem. 2017, 37(5), 1111

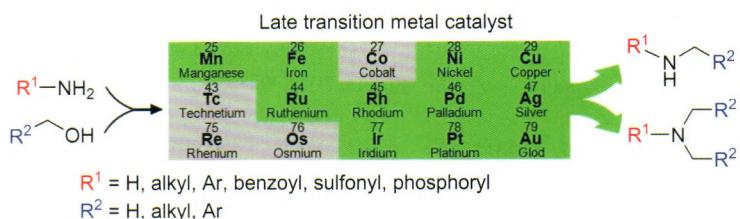
Development of Transition-Metal-Catalyzed C(sp^2)—H Functionalization of Arenes with Diazo Compounds



C—H bond functionalization has been one of the most important subject in chemistry. This review summarizes the progress in transition-metal-catalyzed C(sp^2)—H functionalization of arenes with diazo compounds. To realize the site selectivity, two strategies are utilized. One is directed C—H activation, which gives the *ortho*-selective C—H functionalization products. The other is undirected approach, which normally exhibits *para*-selectivity.

Liu, Lu*; Zhang, Junliang*
Chin. J. Org. Chem. 2017, 37(5), 1117

Progress in Late Transition Metal-Catalyzed N-Alkylation of Amines with Alcohols

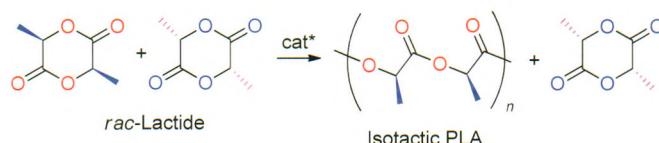


$R^1 = H, \text{alkyl, Ar, benzoyl, sulfonyl, phosphoryl}$
 $R^2 = H, \text{alkyl, Ar}$

The progress in late transition metal-catalyzed N-alkylation reaction with alcohols as alkylating agents starting from various aliphatic, aromatic and heterocyclic aromatic amines in recent years is reviewed. Various homogeneous and heterogeneous catalytic systems as well as the substrate application scope of each method involved in this reaction are mainly introduced. The expectation and development direction about this N-alkylation in future are suggested.

Wu, Hui; Wu, Juncheng; Du, Zhengyin*
Chin. J. Org. Chem. 2017, 37(5), 1127

Progress in Ring Opening Polymerization
of Lactides Catalyzed by Chiral Organometallic Complexes



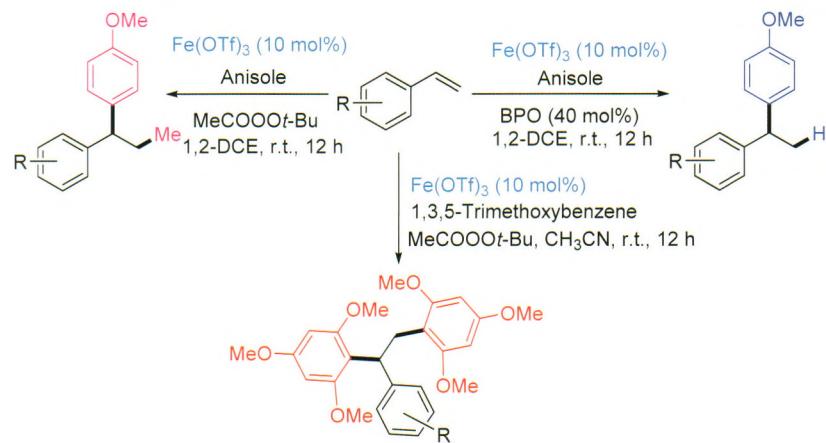
Zhao, Ning*

Chin. J. Org. Chem. 2017, 37(5), 1139

The ring opening polymerization (ROP) of lactides in stereoselective manner catalyzed by chiral organometallic complexes has received widespread attention because of the polylactides attractive physical and mechanical properties. In this paper, the progress in the ROP of lactides catalyzed by chiral organometallic complexes is reviewed.

COMMUNICATION

Iron Catalyzed Oxidative Hydroarylation,
Methylarylation, and Diarylation of Vinylarenes to Generate Unsymmetrical
1,1-Diarylalkanes



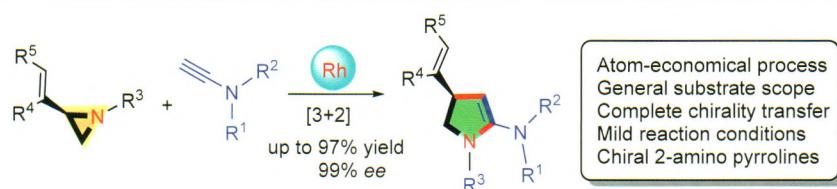
Babu, Kaki Raveendra; Chen, Shaowei;
Li, Yajun; Bao, Hongli*

Chin. J. Org. Chem. 2017, 37(5), 1160

A novel iron catalyzed hydroarylation, methylarylation and diarylation of styrenes to form unsymmetrical 1,1-diarylalkanes with electron rich anisole and 1,3,5-trimethoxybenzene under mild conditions have been developed. Benzoyl peroxide is used as an oxidant for hydroarylation, whereas in the case of methylarylation and diarylation the oxidant *tert*-butyl peracetate is used.

ARTICLES

Rhodium(I)-Catalyzed Stereospecific
[3+2] Cycloadditions of Vinylaziridines
and Ynamides

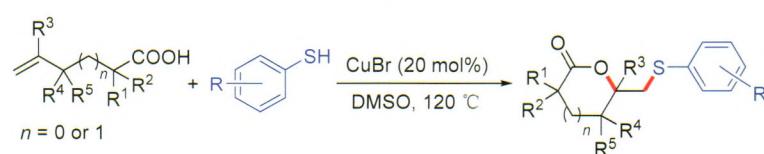


Zhu, Chaoze; Feng, Jianjun*; Zhang, Junliang*

Chin. J. Org. Chem. 2017, 37(5), 1165

The first rhodium-catalyzed stereospecific intermolecular [3+2] cycloaddition reaction of vinylaziridines with ynamides for the synthesis of valuable 2-amino pyrroline derivatives was realized. Use of readily available starting materials, a broad substrate scope, high selectivity and yield, as well as mild reaction conditions make this approach very practical and attractive.

Copper-Catalyzed Oxysulfenylation of
Alkenoic Acids with Benzenethiols: A
Strategy to Construct Sulfenylated Lactones



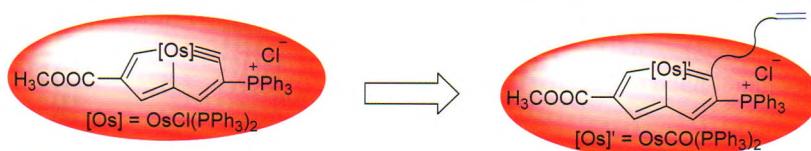
Chen, Manman; Wang, Lijing*; Li, Wei*

Chin. J. Org. Chem. 2017, 37(5), 1173

An efficient copper-catalyzed oxysulfenylation of alkenoic acids with benzenethiols via radical pathway was developed. The reactions are easy to conduct, occur under mild conditions, and form a broad range of sulfenylated lactones in good yields.

CONTENT

Synthesis of Olefinic Carbolong Complexes

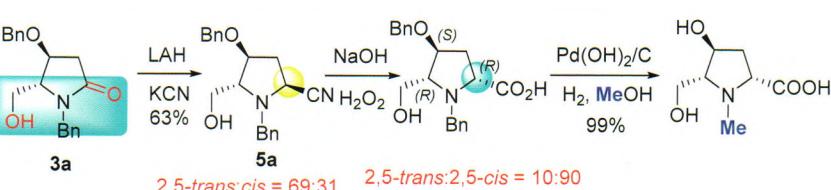


Lu, Zhengyu; Chen, Jiangxi; Xia, Haiping*
Chin. J. Org. Chem. 2017, 37(5), 1181

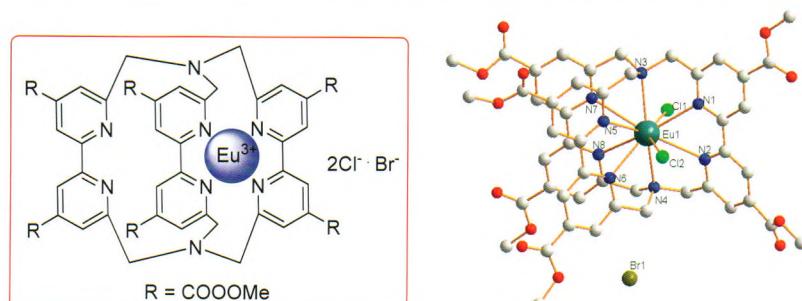
Direct Reductive Cyanation of A 2-Pyrrolidinone Chiral Building Block Bearing An Unprotected Hydroxyl Group: A Stereoselective Synthesis of *N*-Methyl-2-*epi*-bulgecinine

Gao, Yanjiao; Xiao, Zhenhua; Liu, Liangxian*; Huang, Peiqiang*
Chin. J. Org. Chem. 2017, 37(5), 1189

Synthesis and Properties of Sodium and Europium(III) Cryptates Incorporating the 4,4'-Substituted-2,2'-bipyridine Units

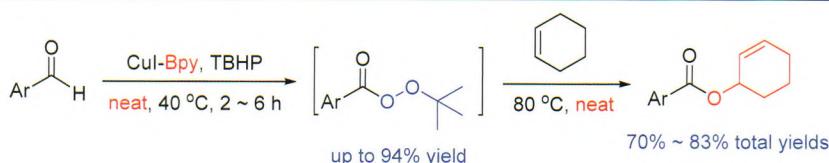


The direct reductive cyanation of 5-hydroxymethyl-2-pyrrolidinone derivative paved a concise synthesis of 2,5-cis-(--)-N-methyl-2-*epi*-bulgecinine.

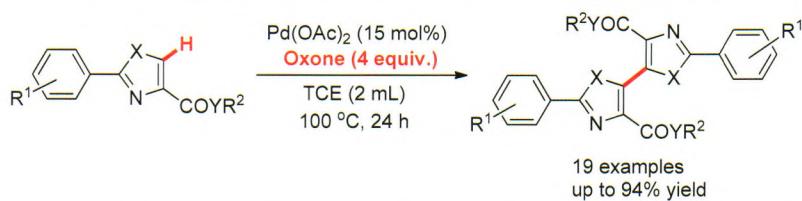


Chen, Sufang; Hong, Yubiao; Liu, Yuanzhong; Xue, Mingqiang*; Zheng, Yu; Shen, Qi
Chin. J. Org. Chem. 2017, 37(5), 1198

Ligand-Triggered, Copper Catalyzed Synthesis of Peresters and Allylic Ester from Aldehydes



A copper iodide catalyzed reaction of aldehydes and *t*-butyl hydroperoxide (TBHP) was developed for the synthesis of peresters in the presence of bipyridine ligand under mild and neat conditions. The addition of bipyridine ligand increased the catalytic activities of copper catalyst significantly and triggered the reaction. Furthermore, a one-pot synthesis of allylic esters was also achieved by the addition of alkenes to the reaction mixture under neat condition at relative lower temperature.



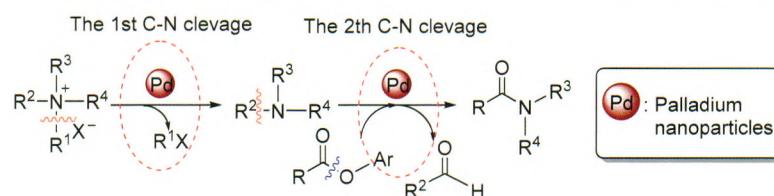
Palladium(II)-Catalyzed Homocoupling of

Oxazole/Thiazole in Absence of Silver Oxidant

Li, Yao; Ma, Lifang*; Wang, Xiaojiao; Lei, Bowen; Zhao, Yi; Yang, Jiayu; Li, Ziyuan*
Chin. J. Org. Chem. 2017, 37(5), 1213

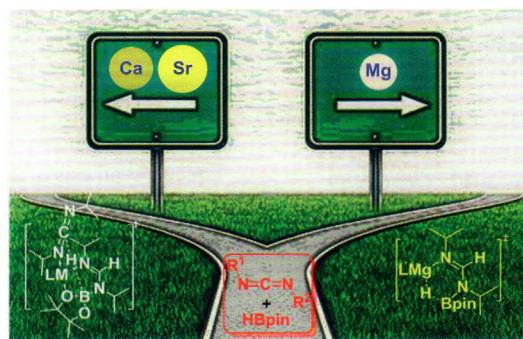
Homocoupling of oxazole/thiazole via palladium-catalyzed C—H bond activation using oxone as an oxidant has been achieved in moderate to excellent yields with good functional group tolerance. No other additive or ligand was employed in this efficient reaction. A preliminary mechanism involving a Pd^{II}/Pd^{IV} catalytic cycle is also proposed.

Aminolysis of Esters Using Quaternary Ammonium Salts as Amine Sources via Twice C—N bond Activations



Wang, Lili; Li, Pengshuai; Jia, Meilin; Bao, Yongsheng*
Chin. J. Org. Chem. 2017, 37(5), 1220

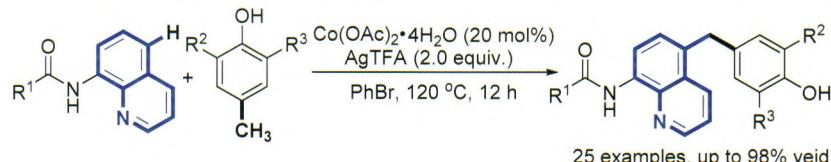
Mechanism of Alkaline Earth Metal Catalyzed Hydroboration of Carbodiimides: A Theoretical Study



Density functional theory (DFT) calculations are employed to study the mechanism of alkaline earth metal catalyzed hydroboration of carbodiimides. The active catalytic species is a hydridemagnesium complex when magnesium is used as catalyst. Alternatively, DFT calculations showed that the active catalytic species is amide-metal complex, and the corresponding reactions undergo through different pathways. These differences could be attributed to the larger radius and steric effect of calcium and strontium.

Xu, Dongdong; Shan, Chunhui; Bai, Ruopeng*; Lan, Yu*
Chin. J. Org. Chem. 2017, 37(5), 1231

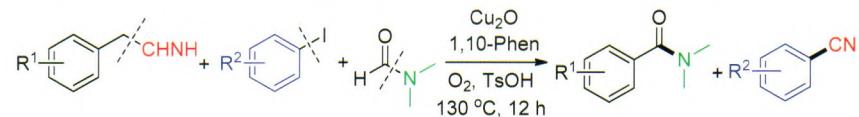
Cobalt-Catalyzed C—H Benzylation of 8-Aminoquinolines on C(5) Position



The cobalt-catalyzed benzylation of aminoquinolines through C(sp²)—H/C(sp³)—H cross-couplings is developed, affording desired products in moderate to good yields.

Zhang, Jiaheng; Hao, Xinqi; Wang, Zhenglong; Ren, Changjiu; Niu, Junlong*; Song, Maoping*
Chin. J. Org. Chem. 2017, 37(5), 1237

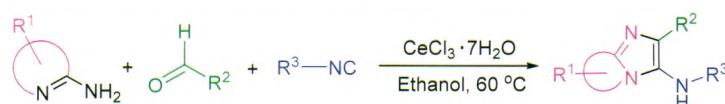
Synthesis of *N,N*-Dimethyl Benzamide and Benzonitriles through Copper-Catalyzed One-Pot Reaction



Copper-catalyzed amidation of benzyl cyanide and cyanation of aryl iodides by using *N,N*-dimethyl formamide (DMF) as amide source by “one pot” reaction is reported, generating the corresponding products *N,N*-dimethylbenzamide and benzonitrile in yields up to 85% with good regioselectivity and atomic economy.

Zhang, Wei; Hu, Chenxu; Zhou, Xiangge*
Chin. J. Org. Chem. 2017, 37(5), 1246

Convenient Synthesis of Imidazo-Fused Heterocycles via CeCl₃·7H₂O Catalyzed Groebke-Blackburn-Bienayme Reaction

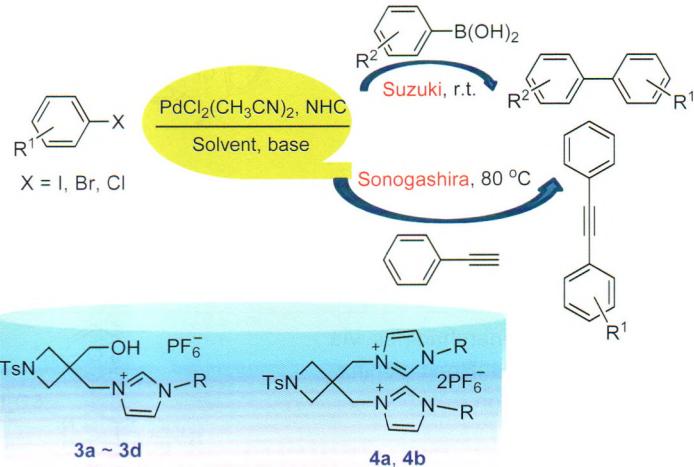


A simple, efficient and eco-friendly “one-pot” method for the convenient synthesis of imidazo-fused heterocycles via Groebke-Blackburn-Bienayme reaction has been developed, in which, the reaction was catalyzed by CeCl₃·7H₂O and started from aldehydes, aminoazines and isocyanides in ethanol under 60 °C.

Zhang, Zhaorui; Xu, Liang; Tang, Hanqin; Wu, Boxin; Feng, Di; Guo, Changbin*
Chin. J. Org. Chem. 2017, 37(5), 1252

CONTENT

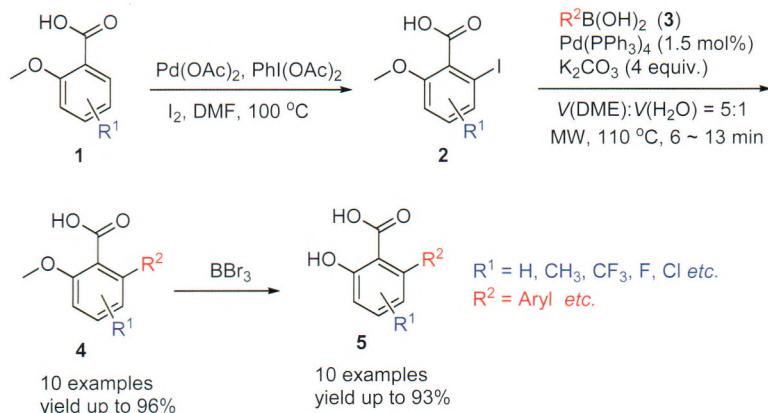
Synthesis of Imidazolium Precursors for the Hydroxyl-Group-Modified N-Heterocyclic Carbenes and Applications of the *in situ* Generated Carbene Ligands in Suzuki-Miyaura and Sonogashira Coupling Reactions



Bai, Yali; Li, Xiaowei; Xiao, Xuedong; Liu, Jiaqi; Yang, Junjuan*; Wang, Junwen*
Chin. J. Org. Chem. **2017**, *37*(5), 1258

Four hydroxyl-group-modified N-heterocyclic carbene imidazolium salts were synthesized. There are the excellent pre-catalysts for Suzuki-Miyaura and Sonogashira cross-coupling reactions with $\text{PdCl}_2(\text{CH}_3\text{CN})_2$ as the palladium source.

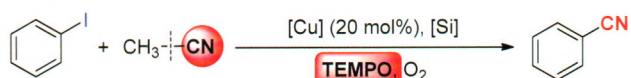
An Efficient Synthesis of Functionalized 6-Arylsubstituted Salicylates via Microwave Irradiation



Qu, Renyu; Chen, Nian; Liu, Yuchao; Chen, Qiong; Yang, Guangfu*
Chin. J. Org. Chem. **2017**, *37*(5), 1266

An efficient method for the synthesis of 6-substituted salicylates is described via a microwave-promoted Suzuki cross-coupling.

Cu-Catalyzed Cyanation of Aryl Iodides with Acetonitrile as Cyano Source

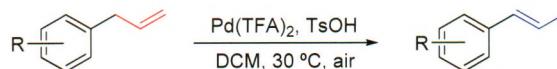


Yu, Zhengwei; Li, Linyi; Shen, Zengming*
Chin. J. Org. Chem. **2017**, *37*(5), 1273

A Cu-catalyzed protocol for the cyanation of aryl iodides by using acetonitrile as the “CN” source has been developed, in which the $\text{Cu}(\text{cat.})/2,2,6,6\text{-tetramethyl-1-piperidinyloxy}$ (TEMPO)/Si system shows good reactivity and generality.

NOTES

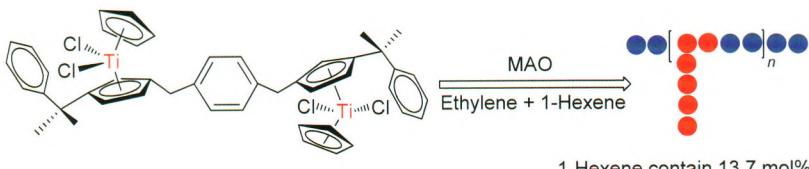
Facile Synthesis of β -Methylstyrenes via Pd/TsOH-Catalyzed Isomerization of Allylbenzenes



Ullah, Aziz; Zhang, Sheng*; Bao, Ming
Chin. J. Org. Chem. **2017**, *37*(5), 1278

Convenient and efficient protocol for isomerization of allylbenzenes into corresponding β -methylstyrenes has been developed by using $\text{Pd}(\text{TFA})_2$ and $\text{TsOH} \cdot \text{H}_2\text{O}$ as catalysts, dichloromethane as solvent at mild conditions.

Study on the Influence of the Weak Effect
of Benzyl Benzene Ring on the Poly-
merization Behavior of Ethylene



Xu, Sheng*; Liang, Chuncho; Lü, Zhongwen; Zhu, Yuling; Zhang, Cui; Mi, Puke*
Chin. J. Org. Chem. 2017, 37(5), 1284

The weak effect of the benzyl benzene ring in binuclear metallocene system was investigated. The possible polymerization mechanism is offered to explain the higher inserting yield of 1-hexene and alterative copolymerization.

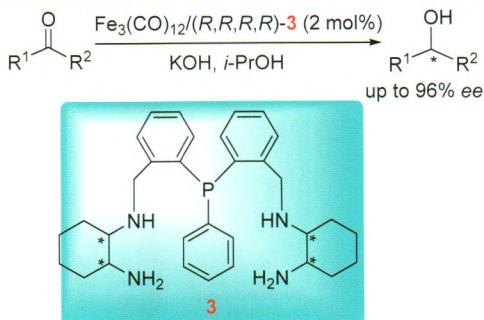
Synthesis of 6-Aryl Phenanthridines via
Iron-Catalyzed sp^2 -C—H Bond Amina-
tion/Aromatization Reaction



Shi, Dongdong; Bao, Hanyang; Xu, Zheng;
Liu, Yunkui*
Chin. J. Org. Chem. 2017, 37(5), 1290

With FeCl_2 as a catalyst and Selectfluor as an oxidant, an efficient and highly selective synthesis of 6-aryl phenanthridines in one-pot manner has been achieved via an intramolecular sp^2 -C—H bond amination/aromatization of *N*-(biphenyl-2-yl(aryl)methyl)-benzenesulfonamide derivatives. The optimized reaction conditions were established through systematic investigations of solvents, temperature, catalysts, oxidants and their dosages in the reaction.

Asymmetric Transfer Hydrogenation of
Ketones Catalyzed by Chiral Multidentate
Aminophosphine Ligands/Iron Cluster

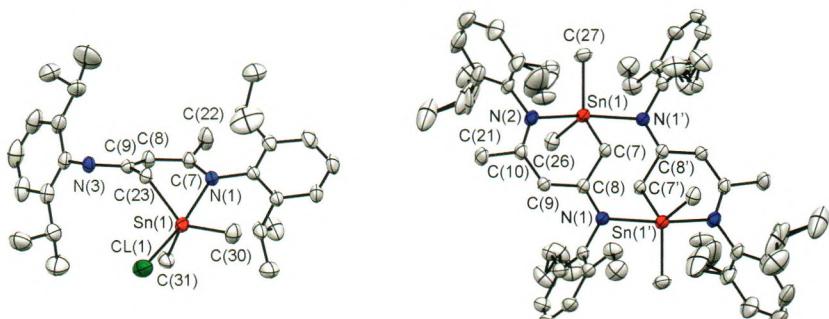


Wu, Fang; Zhang, Wenjing; An, Dongli; Li,
Yanyun*; Gao, Jingxing
Chin. J. Org. Chem. 2017, 37(5), 1295

ketones, giving the corresponding optical active alcohols with up to 96% ee.

As one of the most abundant metals on earth, iron is cheap and low toxicity. The iron-catalyzed asymmetric transfer hydrogenation of ketones was investigated. The catalytic system generated *in situ* from chiral multidentate aminophosphine ligand (*R,R,R,R*)- PN_4H_6 and $\text{Fe}_3(\text{CO})_{12}$ exhibited highly enantioselectivities for various

Synthesis and Characterization of Two
 β -Diketiminato Tin(IV) Compounds



Ma, Xiaoli*; Deng, Ziyian; Yao, Miaoqiao;
Zhong, Mingdong; Li, Wenling; Yang, Zhi*
Chin. J. Org. Chem. 2017, 37(5), 1300

Two new tin compounds, $[\text{N}(\text{Ar})=\text{C}(\text{Me})\text{CH}=\text{C}(\text{NHAr})\text{CH}_2\text{SnMe}_2\text{Cl}\cdot\text{C}_7\text{H}_8]$ ($\text{Ar}=2,6\text{-}i\text{-Pr}_2\text{C}_6\text{H}_3$) (**1**) and $[\text{N}(\text{Ar}')\text{C}(\text{Me})=\text{CHC}(\text{=NAr}')\text{CH}_2\text{SnMe}_2]_2\cdot\text{CH}_2\text{Cl}_2$ ($\text{Ar}'=2,6\text{-Et}_2\text{C}_6\text{H}_3$) (**2**), containing $\text{N}-\text{Sn}-\text{C}$ bonds have been synthesized. The latter is a rare dimer with eight-membered ring in β -diketiminato N,C-bonded complexes and its formation mechanism is given by the comparison of these two similar structures.

HIGHLIGHTS

Chin. J. Org. Chem. 2017, 37(5), 1306

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国际刊号：ISSN 0253-2786

国内刊号：CN 21-1321/O6

国内邮发代号：4-285

国外发行代号：M513

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