

# CJC

# Chinese Journal of Chemistry

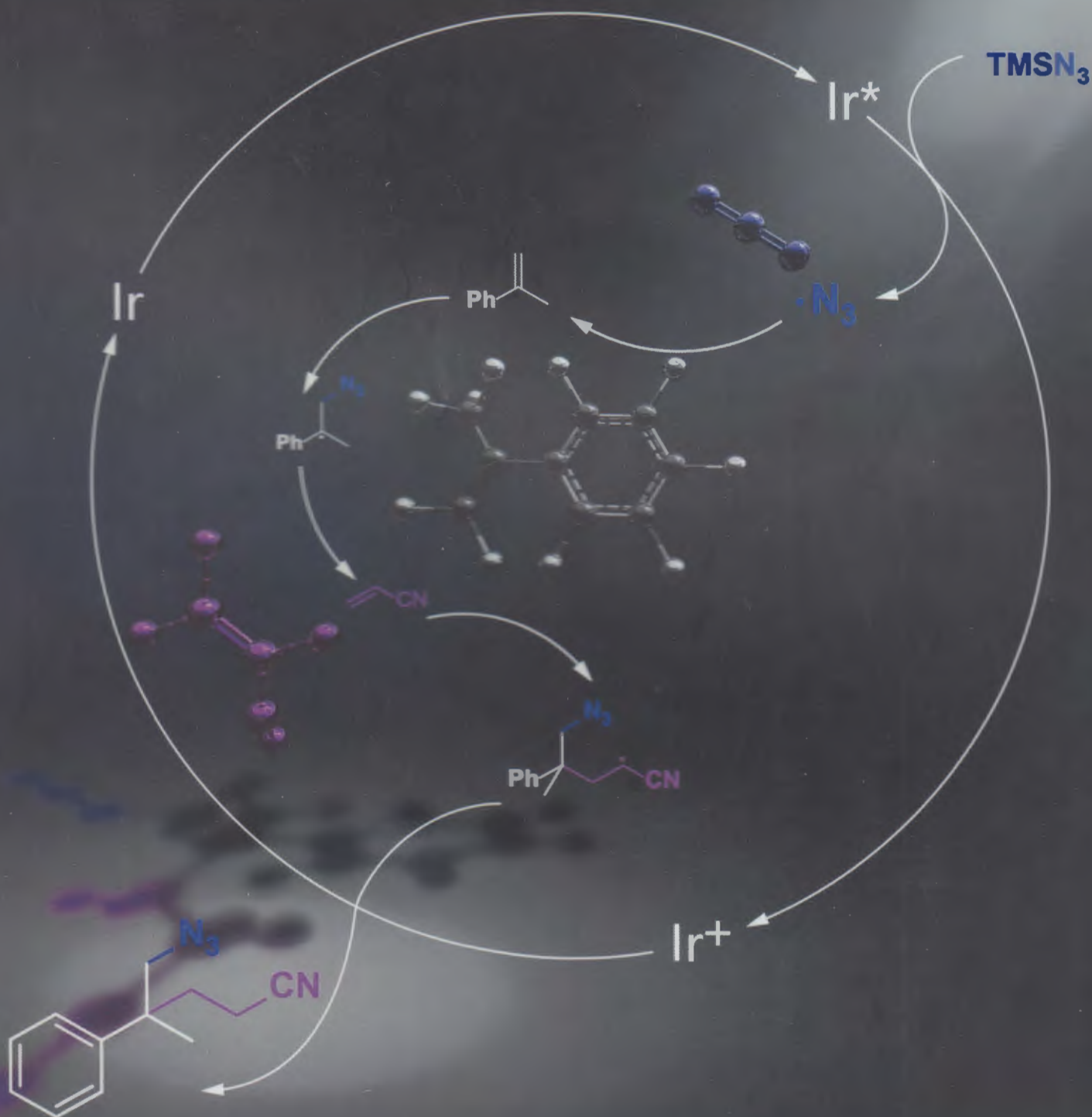
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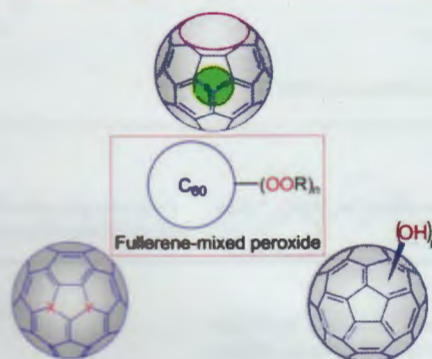


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Chemistry Authors Up Close

991  
The Chemistry of Fullerene-mixed Peroxides

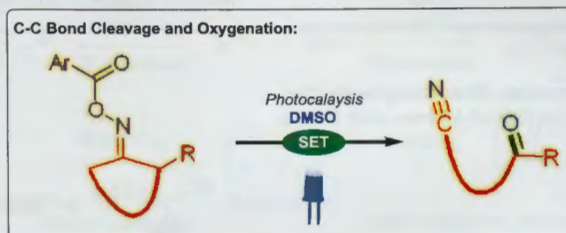


In this account, I highlight some of our progress toward the design/fabrication of nanostructured fullerene-mixed peroxides, which have been shown to be good precursors for open-cage, heterofullerenes and fullerenols.

Liangbing Gan\*

Comprehensive Report

995  
Photoinduced C—C Bond Cleavage and Oxidation of Cycloketoxime Esters

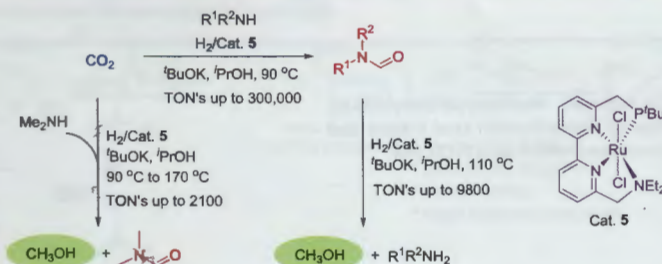


Binlin Zhao, Hui Tan, Cheng Chen, Ning Jiao,\*  
Zhuangzhi Shi\*

A SET-induced strategy has been established for C—C bond cleavage and oxidation sequence of cycloketoxime esters in the presence of photocatalyst. The protocol is distinguished by mild and safe reaction conditions that avoid peroxide, acid, base and toxic cyanide salts.

Concise Reports

1000  
An Efficient Ruthenium Catalyst Bearing Tetradentate Ligand for Hydrogenations of Carbon Dioxide

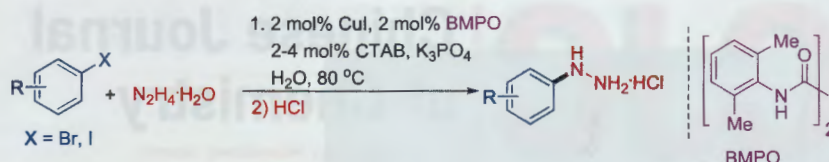


Feng-Hua Zhang, Chong Liu, Wei Li, Gui-Long Tian, Jian-Hua Xie, Qi-Lin Zhou\*

A ruthenium catalyst with tetradentate bipyridine ligand gave TONs up to 300 000, 9800, and 2100 for the hydrogenations of CO<sub>2</sub> to formamides, formamides to methanol and amines, and the direct hydrogenation of CO<sub>2</sub> to methanol, respectively.

1003

### Synthesis of Aryl Hydrazines via CuI/BMPO Catalyzed Cross-Coupling of Aryl Halides with Hydrazine Hydrate in Water

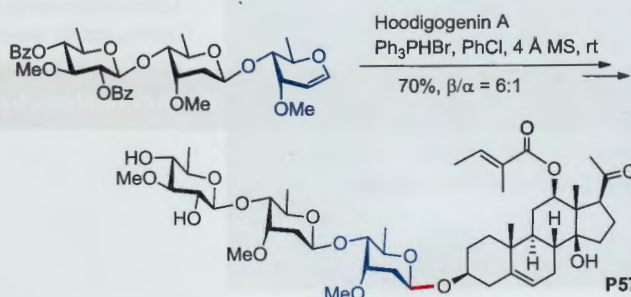


Siripuram Vijay Kumar, Dawei Ma

A practical method for preparing aryl hydrazines from aryl halides is developed.

1007

### A Glycal Approach to the Synthesis of Pregnane Glycoside P57

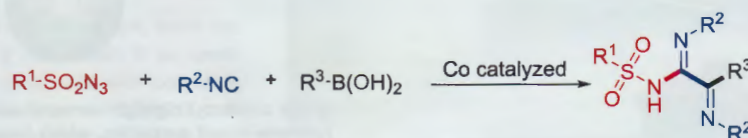


Chao Liu, Yuyong Ma, Chengfeng Pei, Wei Li,\* Biao Yu\*

Pregnane glycoside P57 with potent appetite suppressant activity was synthesized via a  $\beta$ -selective TPHB-promoted glycosylation with a trisaccharide glycal as donor.

1011

### Cobalt(II)-Catalyzed Bis-isocyanide Insertion Reactions with Boric Acids and Sulfonyl Azides via Nitrene Radical Coupling

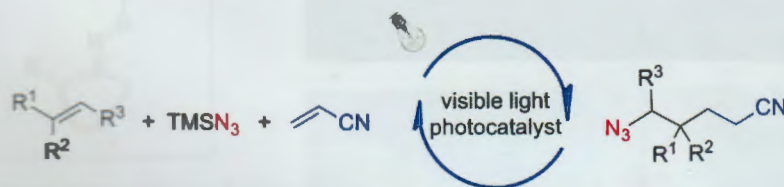


Zheng-Yang Gu, Rong Zhang, Shun-Yi Wang,\* Shun-Jun Ji\*

A Co(II)-catalyzed effective synthesis of amidinium imine derivatives with isocyanides and boric acids using organic azides as nitrene source has been developed. This protocol provides a new, environment-friendly and simple strategy to effective synthesis of the amidinium imine derivatives with a range of substrates without any oxidants and additives.

1017

### Visible Light-Promoted Three-Component Carboazidation of Unactivated Alkenes with TMSN<sub>3</sub> and Acrylonitrile

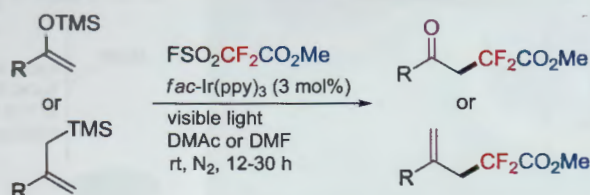


Bo Yang, Xiang Ren, Xuzhong Shen, Tongtong Li, Zhan Lu\*

Visible light-promoted three-component carboazidation of unactivated alkenes using TMSN<sub>3</sub> and acrylonitrile as reaction partners without any stoichiometric peroxides was reported. The intramolecular reaction of 1,6-diene could also undergo smoothly to afford the cyclization product. The obtained  $\delta$ -azido alkylnitriles could be readily converted into valuable building blocks for medicinal chemistry and organic synthesis. A facile azido radical initiated [3+2] cycloaddition reaction of vinylcyclopropane with acrylonitrile was also observed to deliver a substituted cyclopentane.

1024

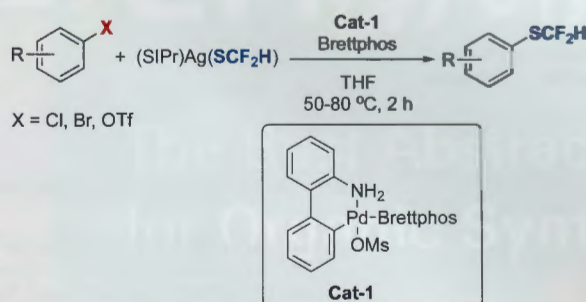
### Visible Light-Induced Methoxycarbonyldifluoromethylation of Trimethylsilyl Enol Ethers and Allyltrimethylsilanes with FSO<sub>2</sub>CF<sub>2</sub>CO<sub>2</sub>Me



Wei Yu, Yao Ouyang, Xiu-Hua Xu, Feng-Ling Qing\*

A photoredox catalytic method, using FSO<sub>2</sub>CF<sub>2</sub>CO<sub>2</sub>Me as a CF<sub>2</sub>CO<sub>2</sub>Me radical source, has been developed for the conversion of silyl enol ethers and allylsilanes to CF<sub>2</sub>CO<sub>2</sub>Me substituted ketones and allylic compounds, respectively.

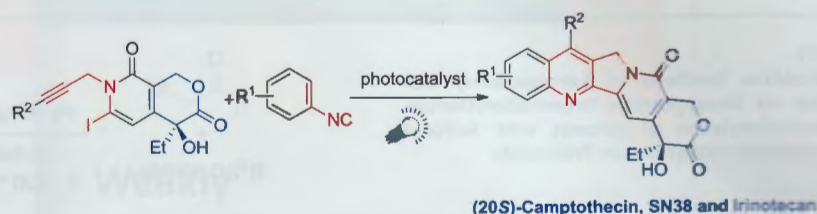
1031  
Pd-Catalyzed Difluoromethylthiolation of Aryl Chlorides, Bromides and Triflates



A highly efficient Pd-catalyzed difluoromethylthiolation of aryl chlorides, bromides and triflates is described.

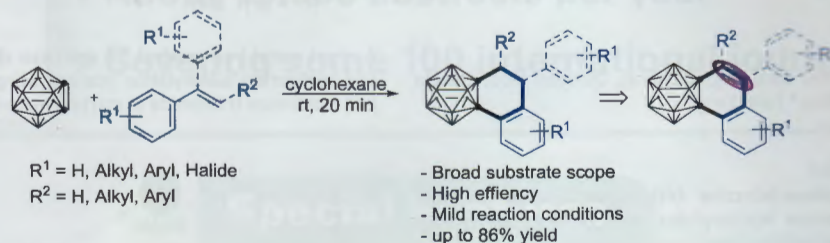
Jiang Wu, Changhui Lu, Long Lu, Qilong Shen\*

1035  
Visible-Light-Induced Radical Cascade Cyclization: Synthesis of (20S)-Camptothecin, SN-38 and Irinotecan



Yao Yuan, Wuheng Dong, Xiaoshuang Gao, Gaomin Xie, Dennis P. Curran,\* Zhaoguo Zhang\*

1041  
Broad Scope Extra-Annular [4 + 2] Cycloaddition of *o*-Carboryne with Styrenes: Efficient Route to Carborane-Fused Polycyclics



*o*-Carboryne undergoes efficiently extra-annular [4 + 2] cycloaddition with substituted styrenes and 1,1'-diarylethenes at room temperature to give a large variety of carborane-fused polycyclics with a very broad substrate scope. This reaction represents an efficient method for the synthesis of highly functionalized carborane-fused polycyclics and polyarenes.

Jie Zhang, Zuwei Xie\*

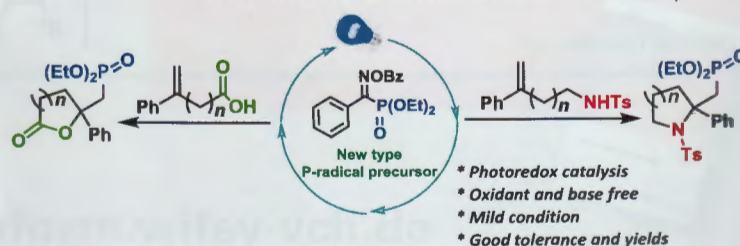
1047  
Diverse Fates of  $\beta$ -Silyl Radical under Manganese Catalysis: Hydrosilylation and Dehydrogenative Silylation of Alkenes



When a radical meets manganese: A general hydrosilylation of olefins was enabled by the sole catalysis of  $\text{Mn}(\text{CO})_5\text{Br}$ , while dehydrogenative silylation of aryl olefins was achieved by using dinuclear  $\text{Mn}_2(\text{CO})_{10}$ . Mechanistic studies suggested hydrogen atom transfer (HAT) and organometallic  $\beta$ -H elimination pathways from the  $\beta$ -silyl radical intermediate operating in the hydrosilylation and dehydrogenative silylation of olefins, respectively.

Xiaoxu Yang, Congyang Wang\*

1052  
Visible-Light-Catalyzed Phosphonation-Annulation: An Efficient Strategy to Synthesize  $\beta$ -Phosphonopyrrolidines and  $\beta$ -Phosphonolactones

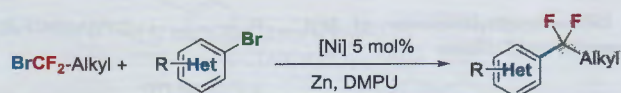


A new type of phosphine radical precursor for C–P bond formation has been developed and successfully used in visible-light-catalyzed phosphonation-annulation of unsaturated sulfonamides and carboxylic acids. The catalytic process is simple and green accessible, and no additional oxidant or base is needed. Mechanistic studies suggest that the reaction proceeds via a single electron transfer pathway.

Chong Li, Zhi-Chao Qi, Qiang Yang, Xiao-Yue Qiang, Shang-Dong Yang\*

1059

Nickel-Catalyzed Difluoroalkylation of (Hetero)aryl Bromides with Unactivated 1-Bromo-1,1-difluoroalkanes



27 examples, yield up to 88%

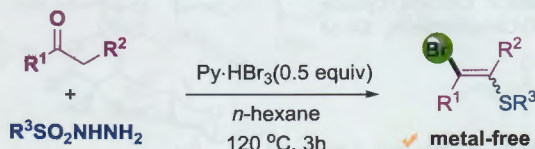
\*Broad substrate scope \*Excellent functional group compatibility \*Synthetic simplicity

A title reaction has been developed (see the Scheme). The reaction enables the difluoroalkylations of a variety of (hetero)aryl bromides with unactivated difluoroalkyl bromides with high efficiency and excellent functional group tolerance. The feature of this approach is the synthetic simplicity without preformation of arylmetals, thus providing a facile route for applications in medicinal chemistry.

Xu He, Xing Gao, Xingang Zhang\*

1063

Metal-Free Synthesis of  $\beta$ -Bromoalkenyl Sulfides via Deoxygenative Bromination/Olefination/Sulfenylation of Ketones with Sulfonyl Hydrazides and Pyridinium Tribromide



R<sup>1</sup> = aryl, alkyl R<sup>2</sup> = H, alkyl  
R<sup>3</sup> = aryl, alkyl

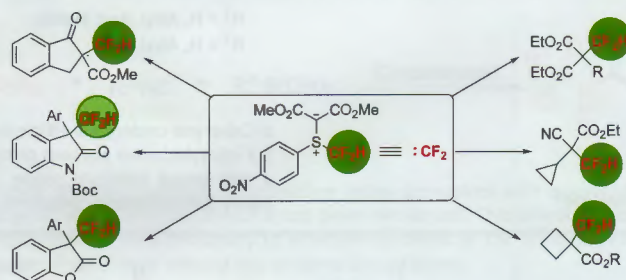
- ✓ metal-free
- ✓ commercially available raw materials
- ✓ 23 examples up to 99:1 E/Z

Yishu Bao, Lingyu Zhong, Qiaodan Hou, Qingfa Zhou,\* Fulai Yang\*

A novel metal-free method for synthesis of  $\beta$ -bromoalkenyl sulfides via deoxygenative bromination/olefination/sulfenylation process using commercially available ketones, sulfonyl hydrazides and pyridinium tribromide as starting materials has been developed.

1069

Carbon-Selective Difluoromethylation of Soft Carbon Nucleophiles with Difluoromethylated Sulfonium Ylide



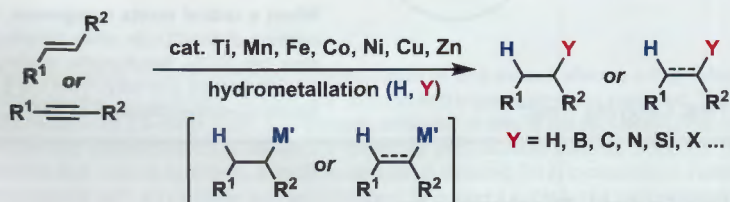
Jiansheng Zhu, Hanliang Zheng, Xiao-Song Xue,\* Yisa Xiao, Yafei Liu, Qilong Shen\*

A highly carbon-selective difluoromethylation of soft carbon nucleophiles including  $\beta$ -ketoesters, malonates, oxindoles, benzofuranones and ketene silyl acetals with a difluoromethylated sulfonium ylide under mild conditions was described. Mechanistic studies suggest that these difluoromethylating reactions proceed *via* a difluorocarbene pathway.

### Critical Review

1075

Recent Advances in Hydrometallation of Alkenes and Alkynes via the First Row Transition Metal Catalysis



Jianhui Chen, Jun Guo, Zhan Lu\*