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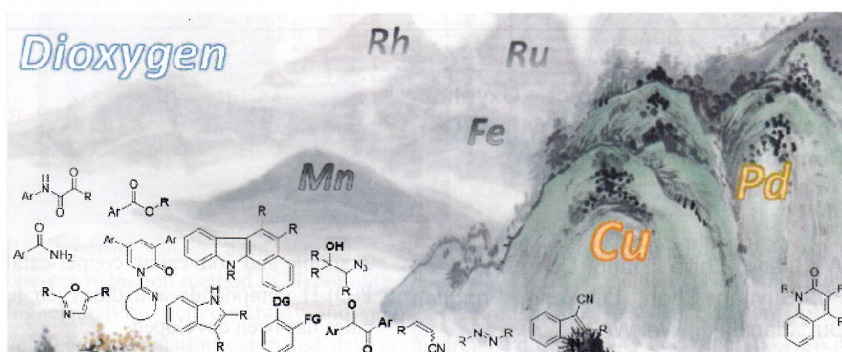
Pages 1337—1478

Project for Enhancing International  
Impact of China STM Journals

## ACCOUNT

1349

Reoxidation of Transition-metal Catalysts with O<sub>2</sub>



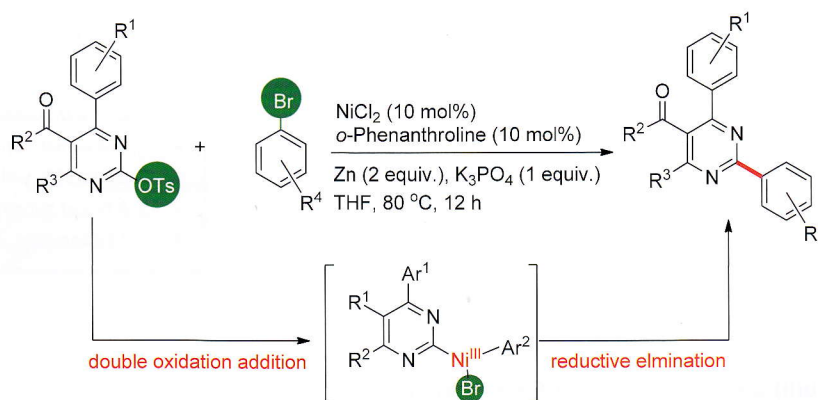
In this Account we highlight some of our progress on the aerobic oxidation approaches including oxidative couplings, oxygenation reactions, oxidative C—H/C—C bond functionalizations, oxidative annulations, in which the transition-metal catalysts were reoxidized by O<sub>2</sub>.

Xinyao Li, Ning Jiao\*

## COMMUNICATIONS

1366

Nickel-Catalyzed Cross-Electrophile Coupling of Aryl Bromides with Pyrimidin-2-yl Tosylates



21 examples, moderate to high yields

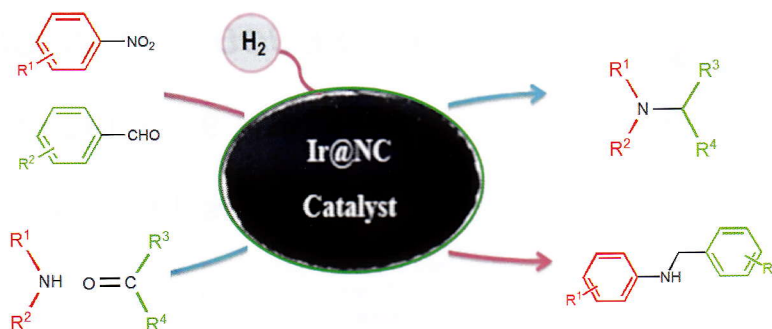
Chunyu Gong, Congde Huo, Xicun Wang,\* Zhengjun Quan\*

A new protocol for the NiCl<sub>2</sub>-catalyzed cross-electrophile coupling of aryl bromides with pyrimidin-2-yl tosylates to give the corresponding C2-arylation pyrimidine derivatives has been developed.

# CONTENT

1371

## General Reductive Amination of Aldehydes and Ketones with Amines and Nitroaromatics under H<sub>2</sub> by Recyclable Iridium Catalysts

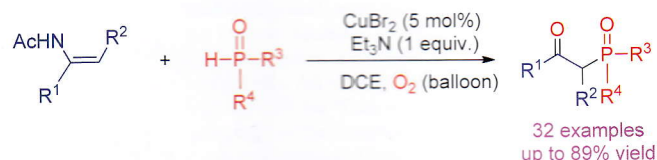


Heterogeneous iridium catalysts were prepared and applied for the reductive amination of aldehydes and ketones with nitroaromatics and amines using H<sub>2</sub>. General reductive amination of aldehydes and ketones with amines and nitroaromatics was developed by recyclable Ir catalysts using H<sub>2</sub> gas under mild reaction conditions.

Dejun Sui, Fei Mao, Haipeng Fan, Zhengliang Qi, Jun Huang\*

1378

## Copper-Catalyzed Direct Oxyphosphorylation of Enamides with P(O)-H Compounds and Dioxygen



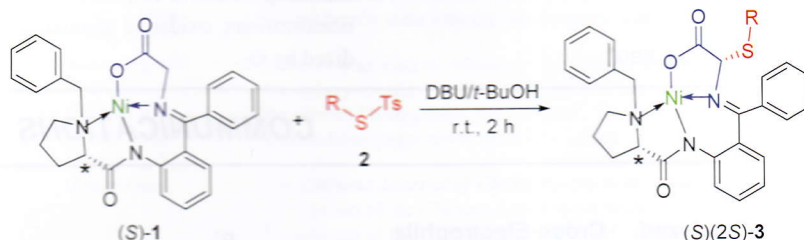
Wu Liang, Zhijie Zhang, Dong Yi, Qiang Fu, Suyuan Chen, Lu Yang, Fengtian Du,\* Jianxin Ji, Wei Wei\*

A simple and convenient copper-catalyzed direct oxyphosphorylation of enamides with P(O)-H compounds and dioxygen leading to  $\beta$ -ketophosphine oxides/ $\beta$ -ketophosphonates has been developed.

## FULL PAPERS

1383

## Asymmetric Synthesis of Chiral $\alpha$ -Substituted Mercaptoglycine Derivatives via $\alpha$ -Sulfenylation of Ni(II) Complex of Glycine and *S*-Substituted 4-Methylbenzenesulfonylthioate

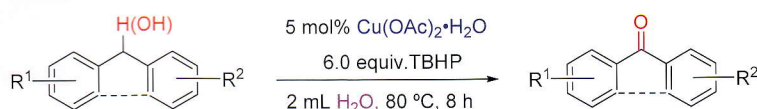


- > Chiral  $\alpha$ -substituted mercaptoglycine derivatives
- > Convenient and mild reaction conditions
- > Up to 98% yield, *dr* 92:8 to 94:6
- > A broad substrates scope
- > 15 examples

Jia Li, Xiaohan Song, Shengbin Zhou, Jiang Wang,\* Hong Liu\*

1391

## Cu(II)-Catalyzed Ligand-Free Oxidation of Diarylmethanes and Second Alcohols in Water

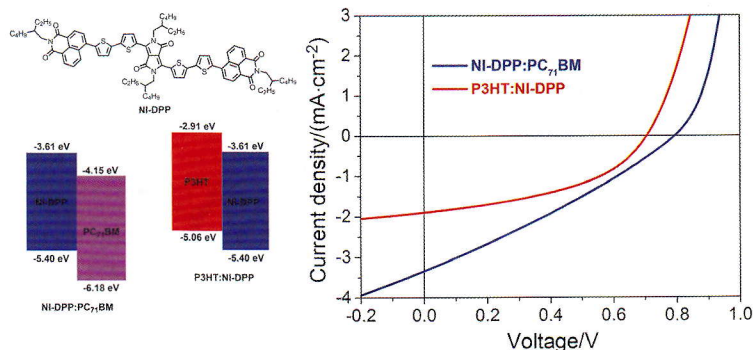


- (i) simple copper salt, ligand-free; (ii) water as solvent; (iii) wide scope of substrates; (iv) good tolerance of functional groups; (v) relatively mild reaction condition

Jianglong Wu, Yan Liu,\* Xiaowei Ma, Ping Liu,\* Chengzhi Gu, Bin Dai

1396

Phthalimide and Naphthalimide end-Capped Diketopyrrolopyrrole for Organic Photovoltaic Applications

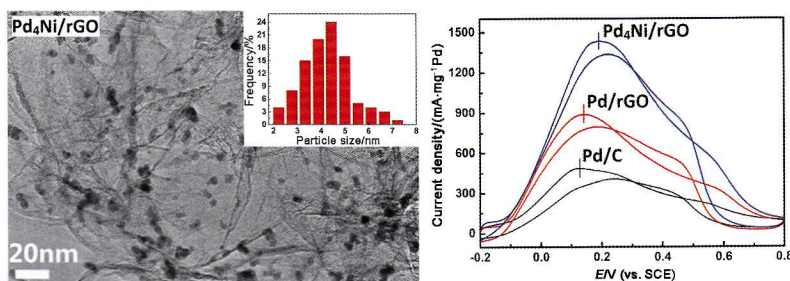


Ming Chen, Chenchen Du, Xiaolei Ren, Maoheng Yi, Jinduo Yi, Chufeng Chen, Feng Liu, Minjie Li,\* Changqi Ma,\* Hongyu Wang\*

NI-DPP can serve as both an electron donor and acceptor in blends with PC<sub>71</sub>BM or P3HT, respectively.

1405

Facile Synthesis of Pd-Ni Nanoparticles on Reduced Graphene Oxide under Microwave Irradiation for Formic Acid Oxidation

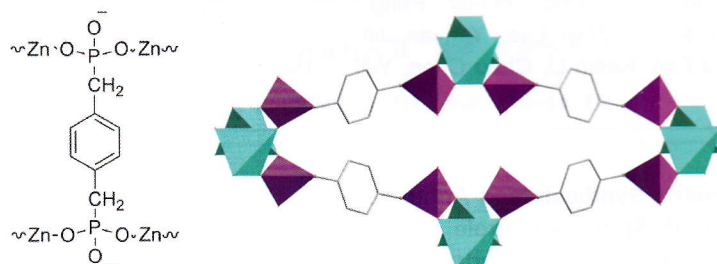


Miaoyu Li, Ruiqin Liu, Gaoyi Han,\* Yanni Tian, Yunzhen Chang, Yaoming Xiao

Pd<sub>x</sub>Ni particles have been supported on reduced graphene oxide (Pd<sub>x</sub>Ni/rGO) by a one-pot reduction method in glycol under microwave irradiation and Pd<sub>x</sub>Ni/rGO exhibits higher activity, better stability and smaller electron transfer resistance toward formic acid electro-oxidation compared with commercial Pd/C, Pd/rGO and other Pd<sub>x</sub>Ni/rGO samples.

1411

Ionothermal Synthesis and Structural Characterization of a Novel Open Framework Zinc Diphosphonate with Carboxylate-like Linker

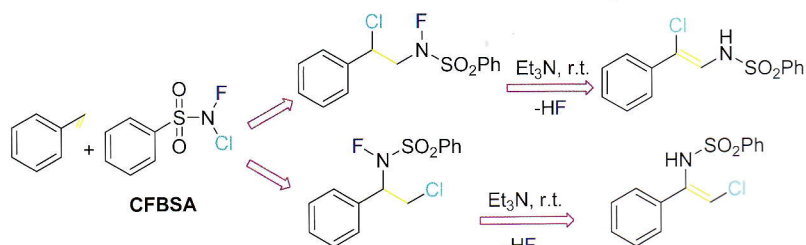


Li Zhang, Lei Liu,\* Jinxiang Dong

A novel crystalline zinc diphosphonate with open-framework was ionothermally synthesized from tetraethyl-*p*-xylylenebisphosphonate and Zn(OAc)<sub>2</sub> in a protic eutectic mixture of urea/methylamine hydrochloride. Its structure is completely different from the typical organic pillared structure, resulting from the bidentate mode of phosphate groups similar to dicarboxylate linkers in MOFs.

1417

A Novel Method for Preparation of 2-Chloro Enesulfonamides



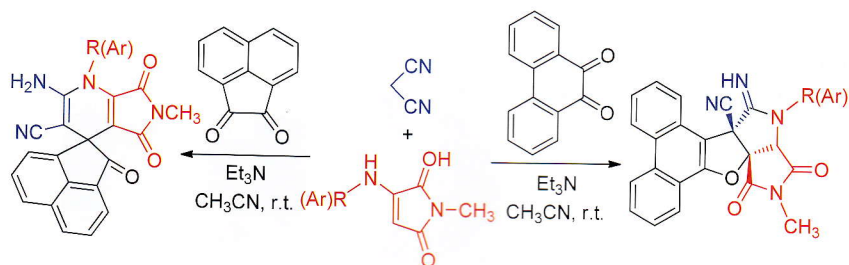
Haiyong Zhao, Xiaoqi Pu, Xianjin Yang\*

A novel metal-free method for the synthesis of 2-chloro enesulfonamides from styrenes is described. The addition of CFBSA to styrenes and the elimination of HF in the presence of Et<sub>3</sub>N were accomplished in a one-pot process under mild conditions in moderate yields.

# CONTENT

1422

## Molecular Diversity of Three-Component Reaction of $\beta$ -Enamino Imide, Malononitrile and Cyclic $\alpha$ -Diketones

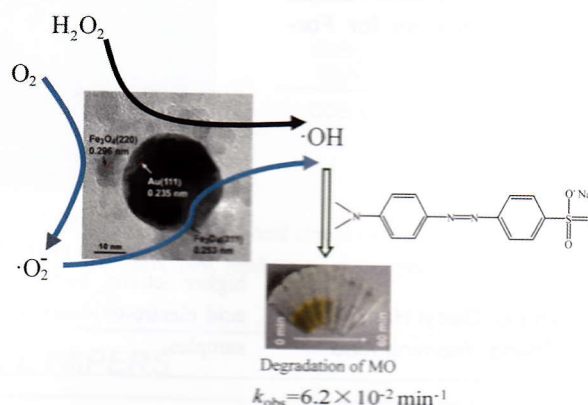


The three-component reaction of  $\beta$ -enamino imide and malononitrile with acenaphthylene-1,2-dione or ninhydrin afforded functionalized spiro[indene-2,4'-pyrrolo[3,4-*b*]pyridines] and spiro[acenaphthylene-1,4'-pyrrolo[3,4-*b*]pyridines]. The similar reaction of phenanthrene-9,10-dione resulted in phenanthro[9',10':4,5]furo[2,3-*c*]pyrrolo[3,4-*b*]pyrroles.

Man Xiao, Chaoguo Yan\*

1431

## Enhancement of $\text{Fe}_3\text{O}_4/\text{Au}$ Composite Nanoparticles Catalyst in Oxidative Degradation of Methyl Orange Based on Synergistic Effect

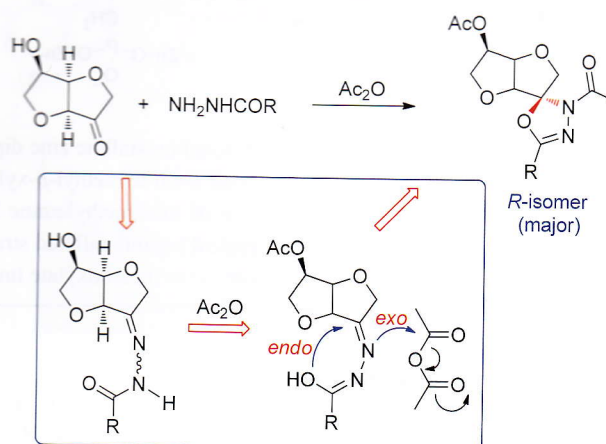


Qin Gao, Yan Xing, Mingli Peng,\*  
Yongshuai Liu, Zhiyi Luo, Yanyan Jin,  
Haiming Fan, Kebin Li, Chao Chen, Yali Cui

The synergistic enhancement effect was observed in the oxidative degradation of Methyl Orange (MO) by employing  $\text{Fe}_3\text{O}_4/\text{Au}$  NPs as catalyst and  $\text{H}_2\text{O}_2$  as oxidant.

1437

## Asymmetric Synthesis and Antitumor Activity of Spiro-Oxadiazole Derivatives from 1,4:3,6-Dianhydro-*D*-fructose

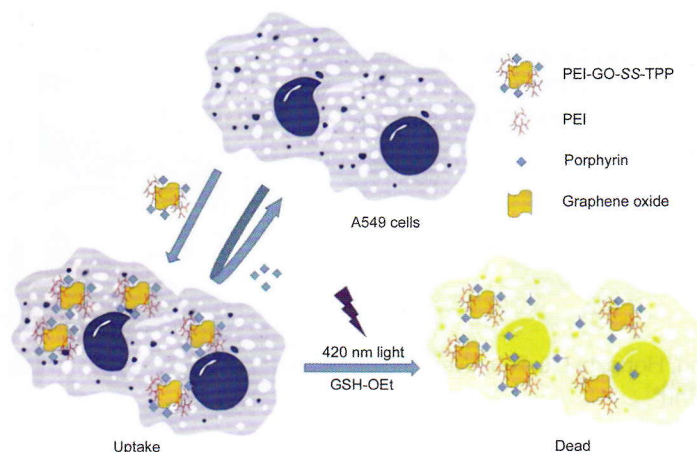


Wenke Xu, Yongxun Ge, Yu Hou, Yingju Liu, Yingchun Hua, Weiwei Han, Zhiyan Qin, Fengguo Liu\*

A series of spiro-oxadiazoles were synthesized from 1,4:3,6-dianhydro-*D*-fructose and hydrazides via a stereo-selective two-step reaction sequence. The structures of the newly synthesized compounds were established by spectral analysis. The absolute configuration of compound **2a** was further confirmed by single crystal X-ray analysis. All the synthesized compounds were screened for their *in vitro* antitumor activity, showing that these compounds have poor inhibitory activity against A549, MGC-803 tumor cells.

1445

## Photodynamic Therapy of Oligoethylene Glycol-Dendronized Reduction-Sensitive Porphyrins

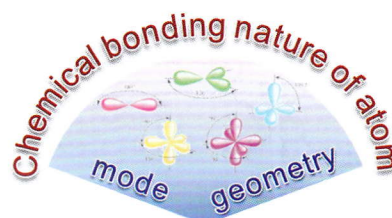


A reduction sensitive functionalized graphene oxide PEI-GO-SS-TPP was synthesized. The carrier PEI-GO could effectively enhance the uptake efficiency of porphyrin. Compared with free porphyrin, the toxicity from PEI-GO-SS-TPP is much higher with a low  $IC_{50}$  value, indicating that the PEI-GO-SS-TPP PSs are promising for photodynamic therapy.

Mingjie Ju, Jundi Pang, Ligong Xu\*

1452

## Hybridization: A Chemical Bonding Nature of Atoms



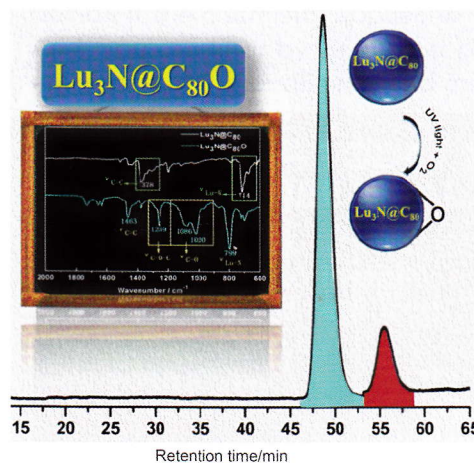
## Orbital hybridization

Outer atom shells occupied by valence electrons	Bonding type I	$sp$	CN=2–4
	Bonding type II	$spd$	CN=5–9
	Bonding type III	$spdf$	CN=10–16

Dongfeng Xue,\* Congting Sun, Xiaoyan Chen

## NOTES

1459

Synthesis and Characterization of  $Lu_3N@C_{80}O$ 

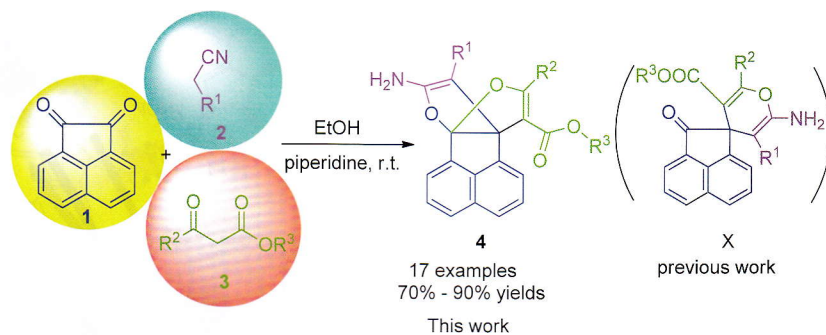
We present the photochemical synthesis of an oxide derivative of clusterfullerene,  $Lu_3N@C_{80}O$  for the first time. The compound was characterized by matrix-assisted laser desorption ionization time-of-flight mass spectrometry, UV-vis-NIR, cyclic voltammetry, and FTIR spectroscopy. The results suggest that one oxygen atom bridges with the fullerene cage after the oxidation of  $Lu_3N@C_{80}$ .

Jiaxin Zhuang, Yaofeng Wang, Jinqian Yao, Ting Yang, Ning Chen\*

# CONTENT

1463

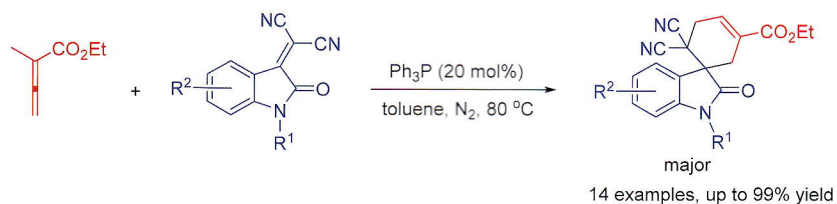
## Chemoselective Synthesis of Novel Heterocyclic [3.3.3]Propellane Derivatives via a One-pot Three-component Reaction



Jing Wang, Hongzhi Liu, Ren Wen, Jie Li, Songlei Zhu\*

1469

## Facile Synthesis of Spirooxindole-Cyclohexenes via Phosphine-Catalyzed [4 + 2] Annulation of $\alpha$ -Substituted Allenates



Rongshun Chen,\* Xia Fan, Zhaozhong Xu, Zhengjie He\*