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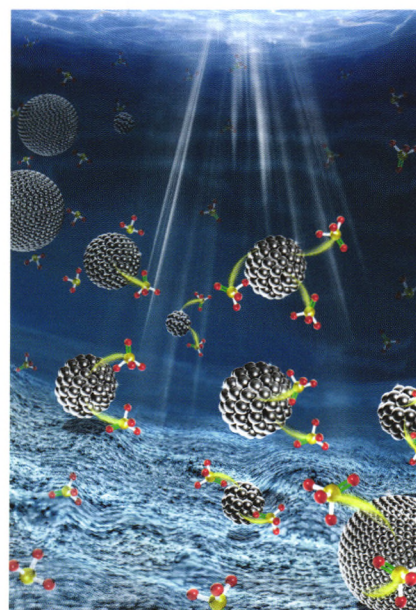
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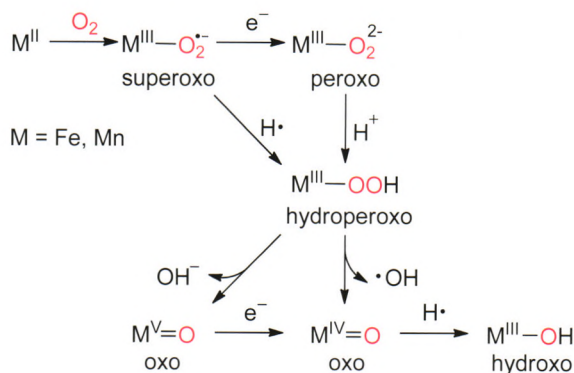
* 通信联系人.

On the cover: Silver nanoparticles is found to catalyze the oxidation of As(III) into As(V) under environmentally relevant conditions, indicating its new role of detoxification of As(III) besides sterilization. This finding provides new insights into treatment of As contamination. [Liu, Jingfu *et al.* on page 387-392.]



Review

Progress in Mononuclear Iron-Oxygen and Manganese-Oxygen Adducts

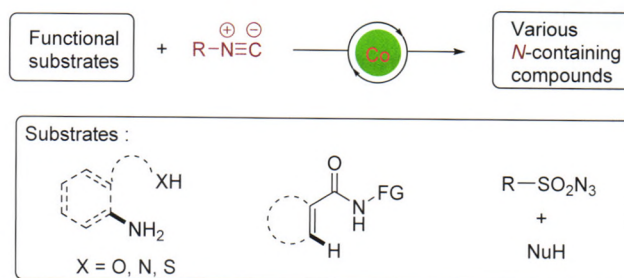


In biological system, metalloenzymes utilize dioxygen for metabolically oxidative transformations, in which organic compounds can be oxidized efficiently. Therefore, it is of great interest to unravel the enzymatic mechanism in the development of clean and efficient catalytic oxidation reactions. In the dioxygen activation by metalloenzymes, a series of metal-oxygen adducts, such as metal-superoxo, -peroxo, -hydroperoxo, -oxo and -hydroxo species, are formed as the active intermediates. In general, these intermediates are difficult to capture for further characterizations and investigations because of their instability and the complicated enzymatic systems. Alternatively, the enzyme models, designed and synthesized by mimicking the active center and coordination environment of metalloenzymes, can be easily acquired and manipulated for further structure and reactivity studies. In this review, we briefly illustrate the active sites of metalloenzymes in biology and focus on the recent achievements in mononuclear iron-oxygen and manganese-oxygen adducts in biomimetic studies.

Du, Junyi; Xia, Chungu; Sun, Wei*

Acta Chim. Sinica **2018**, 76(5), 329-346

Recent Advances in Cobalt Catalyzed Isocyanide Coupling Reactions

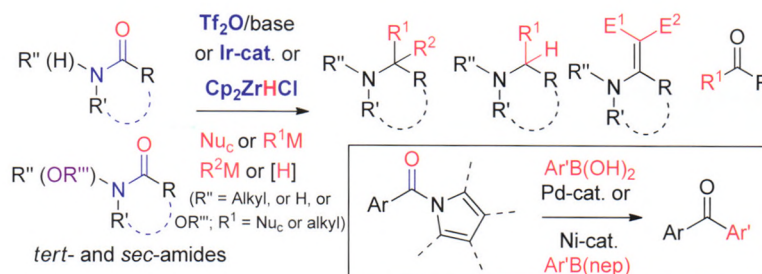


Isocyanide is an important reactive reactant containing stable divalent carbon atoms, which has been widely used in the construction of nitrogen compounds, new drugs and natural products. Cobalt as a cost efficient transition metal has great advantages in the isocyanide coupling reactions. In this review the recent advances in the cobalt-catalyzed isocyanide coupling reactions were summarized.

Gu, Zhengyang; Ji, Shunjun*

Acta Chim. Sinica **2018**, 76(5), 347-356

Direct Transformations of Amides: Tactics and Recent Progress

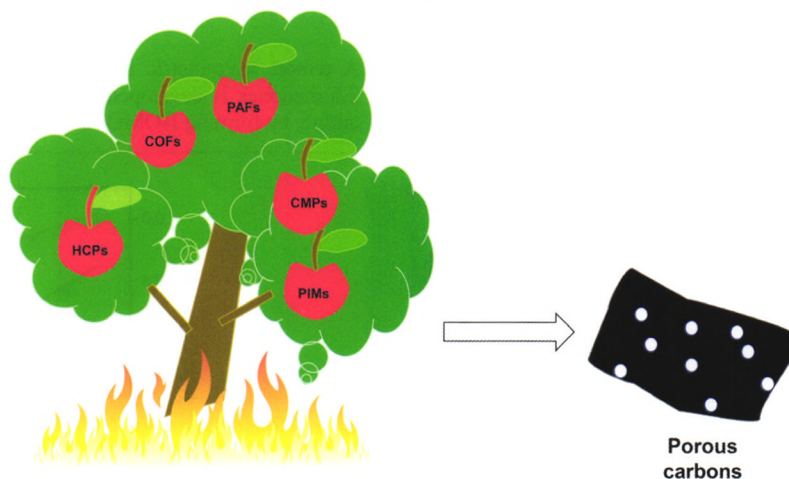


In this review, we highlight the major progresses recorded in recent years on the direct transformation of amides focusing on nucleophilic addition to amide carbonyl group that leads to a C—C bond formation. The materials are organized according to the tactic used.

Huang, Pei-Qiang*

Acta Chim. Sinica **2018**, 76(5), 357-365

One-step Strategy to Synthesize Porous Carbons by Carbonized Porous Organic Materials and Their Applications



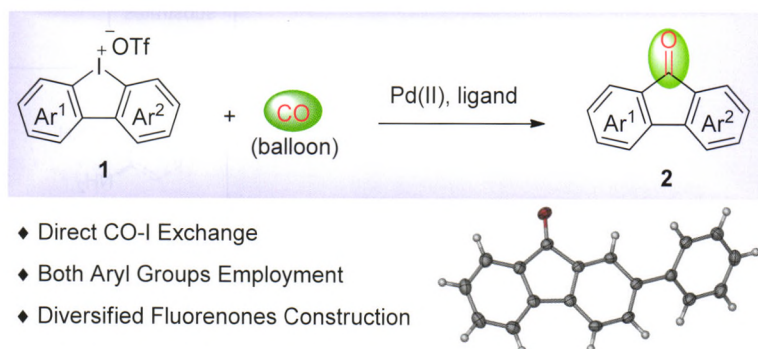
Porous carbons which prepared by carbonized porous organic materials with high carbon content, have high specific surface area, good physical and chemical stability, and excellent mechanical performance, therefore can be widely used in many fields, such as clean energy storage, energy storage and conversion, *etc.* This review systematically summarize the preparation methods of porous carbons derived from porous organic materials, and a brief comparison of different methods for preparing porous carbon is presented. Then, the review describes in detail about the application of porous carbons in energy storage and conversion. At the last, combination with the research status of porous carbons, the review points out the challenges for porous carbons, and also projects the application of porous carbons.

Yan, Tingting; Xing, Guolong; Ben, Teng*

Acta Chim. Sinica **2018**, 76(5), 366-376

Communication

Efficient Fluoren-9-ones Construction through CO/I Exchange of Diaryliodonium Salts



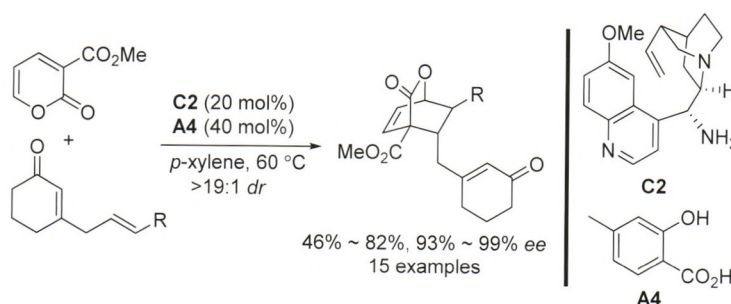
Wang, Ming; Jiang, Xuefeng*

Acta Chim. Sinica **2018**, 76(5), 377-381

An efficient CO-iodine exchange strategy between CO gas and diaryliodonium salts was developed. Both aryl groups of diaryliodonium salt were fully employed in this transformation, and diverse fluoren-9-one derivatives were systematically achieved with good functional-group compatibility in moderate to excellent yields.

Article

Asymmetric Inverse-Electron-Demand Diels-Alder Reaction of 2-Pyrene and 2,5-Dienones via HOMO-Activation

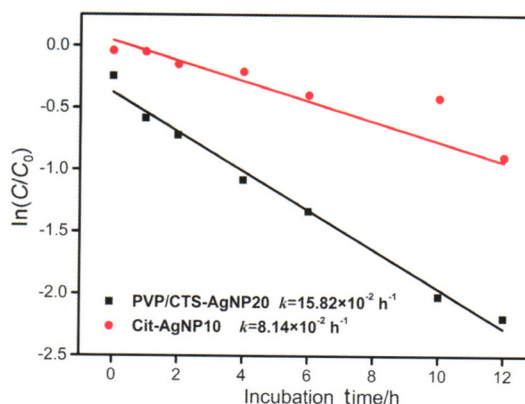


Zhou, Yuanchun; Zhou, Zhi; Du, Wei*; Chen, Yingchun*

Acta Chim. Sinica **2018**, 76(5), 382-386

A remote asymmetric inverse-electron-demand Diels-Alder reaction of 2-pyrene and 2,5-dienones is developed under the catalysis of a cinchona alkaloid derived primary amine, by forming HOMO-raised extended trienamine species.

Catalytic Oxidation of Arsenic in Water by Silver Nanoparticles

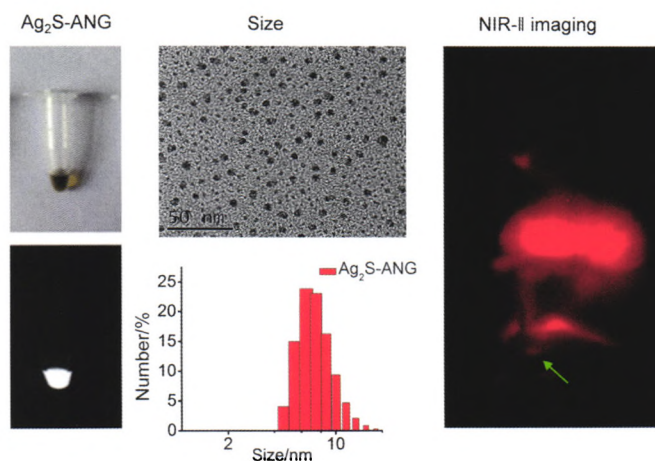


Guo, Xiaoru; Yin, Yongguang; Tan, Zhi-qiang; Liu, Jingfu*; Jiang, Guibin

Acta Chim. Sinica **2018**, 76(5), 387-392

With the development of nanoscience and nanotechnology, nanomaterials have been applied in many areas including environments. Silver nanoparticles (AgNPs) are being widely used in drinking water disinfection due to their excellent bactericidal performance. In this study, AgNPs showed significant effects on the catalytic oxidation of As(III), and this catalytic property was found to be ubiquitous in AgNPs with different coatings. In addition, there were significant differences in the catalytic oxidation rate of As(III) to As(V) by AgNPs with various coatings.

Angiopep-2-conjugated Ag₂S Quantum Dot for NIR-II Imaging of Brain Tumors

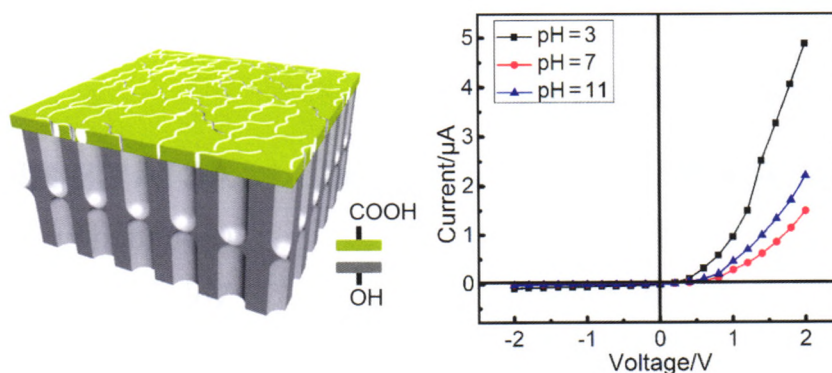


Xu, Yi; Zhao, Yan; Zhang, Yejun; Cui, Zhi-fen; Wang, Lihua; Fan, Chunhai; Gao, Jimin*; Sun, Yanhong*

Acta Chim. Sinica **2018**, 76(5), 393-399

A NIR-II probe based Ag₂S quantum dot was designed for imaging of brain tumor. Ag₂S was conjugated with Angiopep-2 (Ag₂S-ANG), which is a 19-mer peptide with brain targeting. Ag₂S-ANG had no obvious cytotoxicity and had more uptake in U87MG cells than that of Ag₂S. Ag₂S-ANG could distribute and accumulate in tumor site of U87MG tumor-bearing mice.

Facile Fabrication of Heterogeneous Nanochannels with High Ionic Rectification

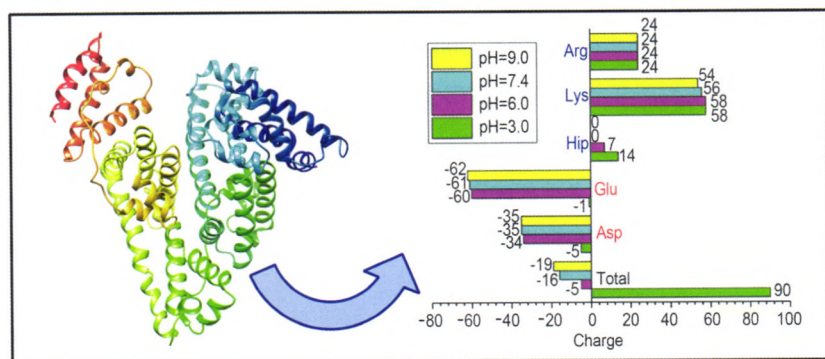


Zhang, Qian; Liu, Qingqing; Zhang, Qian-qian; Fan, Xia; Zhai, Jin*

Acta Chim. Sinica **2018**, 76(5), 400-407

Heterogeneous nanochannels were constructed based on anodic alumina oxide and transparent tape by the method of heat treatment. The heterogeneous nanochannels are composed of organic nanochannels and AAO pores containing carboxyl and hydroxyl groups, respectively. Due to the synergistic effect of the organic nanochannels and AAO nanochannels, heterogeneous nanochannels exhibit high ionic rectification with the same ion rectification direction over a wide pH range.

Spectral and Computational Simulations of HSA and BDE154 Based on Acidity Induction



Xu, Jie; Wei, Yuchen; Wu, Zhiwei; Yi, Zhongsheng*

Acta Chim. Sinica **2018**, 76(5), 408-414

In order to investigate the likely binding modes of the BDE154 onto the substrate pocket of HSA, three methods are performed including molecular docking, fluorescence spectroscopy and molecular dynamic simulation studies by means of protonation or deprotonation at four different pH levels (pH = 3.0, 6.0, 7.4, 9.0).

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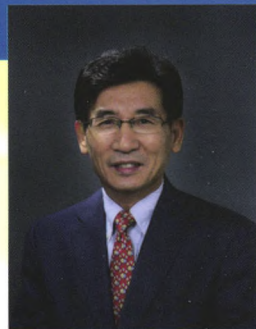
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