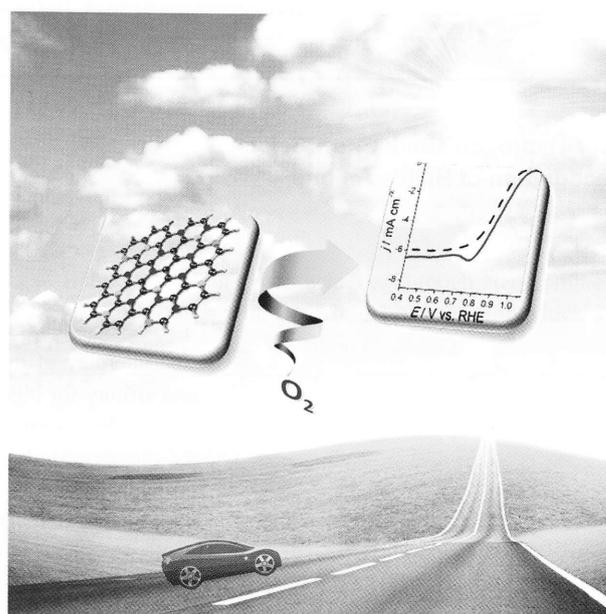


中国科学院科学出版基金资助出版

COVER PICTURE

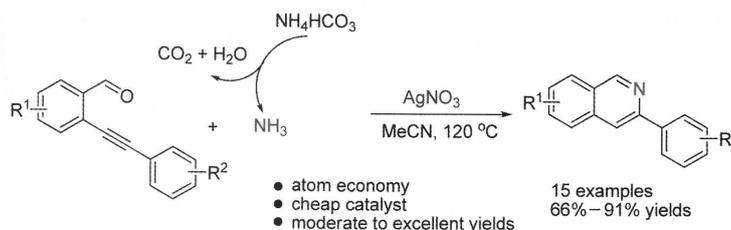
The cover picture shows multiple elements doped reduced graphene oxide (rGO) as an efficient electrocatalyst for the oxygen reduction reaction (ORR). As alternatives to Pt-based electrocatalysts, the development of nonprecious metal catalysts with high performance in the cathodic ORR is highly desirable for large-scale commercialization of automotive fuel cells. A simple two-step doping method for the preparation of pentabasic (Fe, B, N, S, P)-doped rGO as an efficient ORR catalyst has been developed. Simultaneously doping appropriate amounts of Fe and B into the ternary doped N, S, P-rGO composite produced a synergistic effect for enhancing ORR activity, which endowed the prepared catalyst with even higher ORR performance than that of the commercial Pt/C catalyst in alkaline electrolytes. More details are discussed by Liu *et al.* on page 878—886.



COMMUNICATIONS

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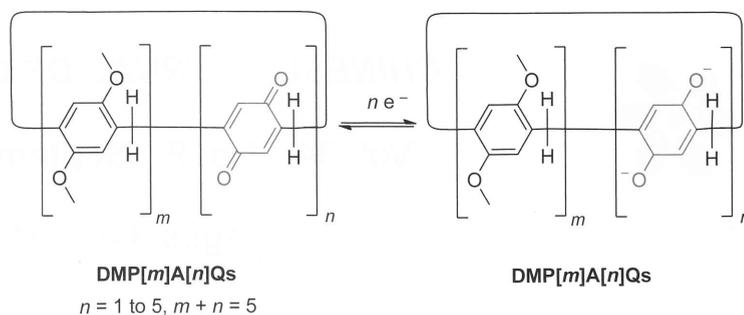
Efficient Synthesis of Isoquinolines by AgNO₃-Catalyzed Sequential Imination-Annulation of 2-Alkynyl Aldehydes with Ammonium Bicarbonate



Yunhui Zhao,* Mingjian Luo, Yubo Li, Xiong Liu, Zilong Tang, Keqin Deng, Gang Zhao

An operationally simple approach for the tandem synthesis of isoquinolines by the reaction of *o*-alkynylaldehydes with ammonium bicarbonate *via* Ag-catalyzed 6-endo-dig ring closure is described. The reaction conditions and the scope of the reaction are examined, and a variety of substituted isoquinolines are prepared in moderate to excellent yields.

Voltammetric Behavior of 1,4-Dimethoxy-pillar[m]arene[n]quinones

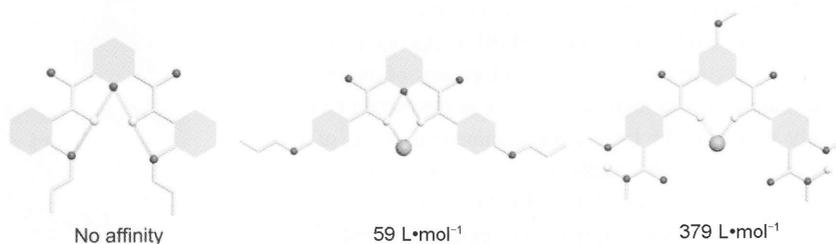


Hina Saba, Jianggen An, Yong Yang, Min Xue,* Yongsong Liu

Voltammetric reduction of a series of 1,4-dimethoxy-pillar[m]arene[n]quinones (DMP[m]A[n]Qs) has been studied on glassy carbon electrode in acetonitrile. All the quinone units showed relative electron uptake behavior except 1,4-dimethoxy-pillar[5]quinones (DMP[5]-Qs). The electrochemical behavior of the systems being investigated was obviously different when compared with linear analogues of quinones systems. This is attributed to the close proximity of redox-active sites as well as the delocalization of electrons on the aromatic rings.

FULL PAPERS

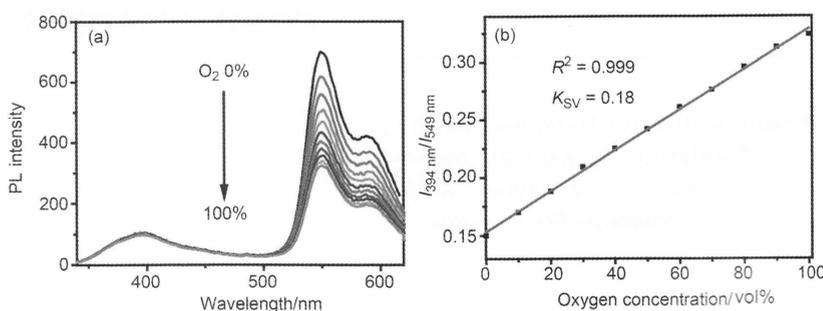
Effect of Hydrogen Bonding on Selective Recognition of Halide Anions



Juan Du, Kang Kang, Jinchuan Hu, Lijun Mao, Lihua Yuan, Wen Feng*

The interplay of molecular rigidity enforced by interior or exterior hydrogen bonding and affinity for binding halide anions is described to demonstrate the effect of intramolecular hydrogen bonding in anion recognition process. To this end pyridine-2,6-dicarboxamides **1** and **2**, and aromatic oligoamides **3** and **4** containing intramolecular hydrogen bonds were explored for their ability in associating with tetrabutylammonium halide (Cl⁻, Br⁻, and I⁻). The trimeric amide **3**, which adopts a crescent conformation as revealed by single-crystal X-ray diffraction analysis, strongly binds chloride anion with binding constant as high as 379 L·mol⁻¹ in chloroform. This is more than 6 times greater than the binding constant for the control receptor **2** with a backbone that is only partially rigidified.

A Novel Ratiometric Oxygen Sensor Based On a Sextuple Hydrogen-Bonding Self-Assembly Molecular Heterodimer

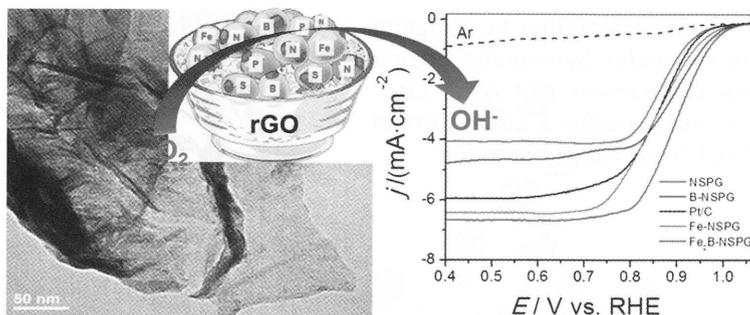


Hui Zeng, Cheng Zhang, Yan Huang,* Zhiyun Lu*

A novel hydrogen-bonding (HB) self-assembly heterodimer was synthesized. The inefficient energy transfer between the phosphor and fluorophore owing to the isolation by the rigid bulk hydrogen-bonding spacing moiety is advantageous to the simultaneous acquirement of fluorescence/phosphorescence dual emission in neat-film state. Using this HB self-assembly heterodimer, neat-film-based ratiometric oxygen sensors showing strictly linear Stern-Volmer behavior in the full oxygen concentration range from 0 to 100 vol%, good photostability, good reversibility and rapid response/recovery times were demonstrated.

878

Synergistic Enhancement of Electro-catalytic Activity toward the Oxygen Reduction Reaction in Alkaline Electrolytes with Pentabasic (Fe, B, N, S, P)-Doped Reduced Graphene Oxide

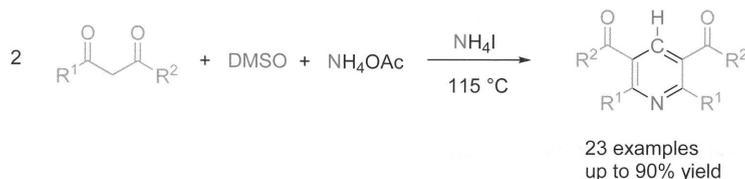


A simple two-step doping method for the preparation of pentabasic (Fe, B, N, S, P)-doped rGO as an efficient ORR catalyst has been developed. Simultaneously doping appropriate amounts of Fe and B into the ternary doped N, S, P-rGO composite produced a synergistic effect for enhancing ORR activity, which endowed the prepared catalyst with even higher ORR performance than that of the commercial Pt/C catalyst in alkaline electrolytes.

Wei Chen, Munil Sin, Ping-Jie Wei, Qian-Ling Zhang,* Jin-Gang Liu*

887

One-Pot Synthesis of Hantzsch Pyridines via NH_4I Promoted Condensation of 1,3-Dicarbonyl Compounds with DMSO and NH_4OAc

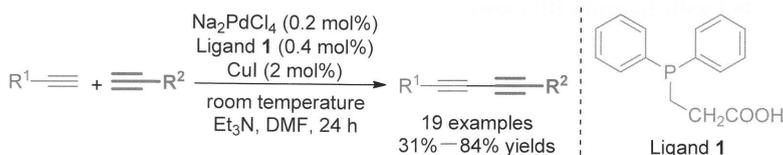


A one-pot synthesis of Hantzsch pyridines was achieved through NH_4I -promoted condensation of 1,3-dicarbonyl compounds with DMSO and NH_4OAc , in which the C4 of the pyridine rings was derived from the decomposition of DMSO.

Liming Chang, Junyi Lai, Gaoqing Yuan*

895

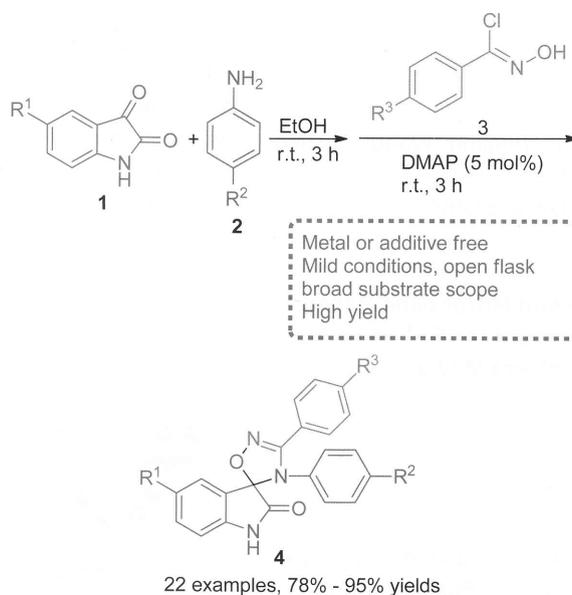
Synthesis of Unsymmetrical 1,3-Diynes via Pd/Cu-Catalyzed Cross-Coupling of Terminal Alkynes at Room Temperature



Yashuai Liu, Ping Liu,* Ningning Gu, Jianwei Xie, Yan Liu,* Bin Dai

901

Synthesis of 3',4'-Diaryl-4'H-spiro[in-doline-3,5'-[1',2',4']oxadiazol]-2-ones via DMAP-catalyzed Domino Reactions and Their Antibacterial Activity



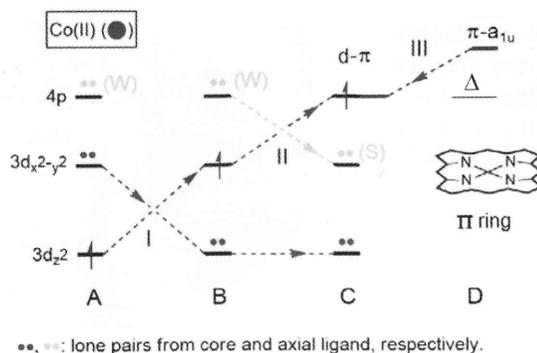
Guanghao Shi, Xinwei He, Yongjia Shang,* Liwei Xiang, Cheng Yang, Guang Han, Bing Du*

CONTENT

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Origin of d- π Interaction in Cobalt(II) Porphyrins under Synergistic Effects of Core Contraction and Axial Ligation: Implications for a Ligand Effect of Natural Distorted Tetrapyrrole

Qiuhua Liu, Xi Zhang, Wennan Zeng, Jianxiu Wang,* Zaichun Zhou*

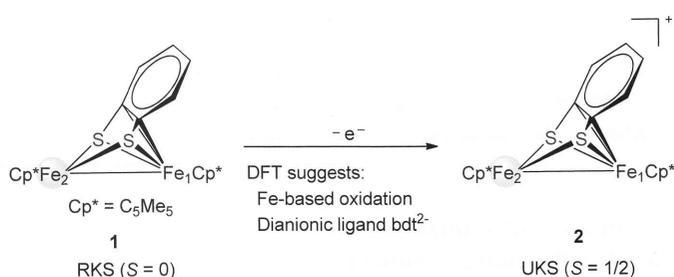


The reactivity of the metalloporphyrins was closely related to their ligand effect at axial position. Our results indicate that strong axial ligation and core contraction both play important roles in electron transfer in redox catalysis involving Co(II) complexes.

919

Electronic Structure of Thiolate-bridged Diiron Complexes and a Single-electron Oxidation Reaction: A Combination of Experimental and Computational Studies

Si Chen, Lun Luo, Yang Li, Dawei Yang, Jingping Qu, Yi Luo*

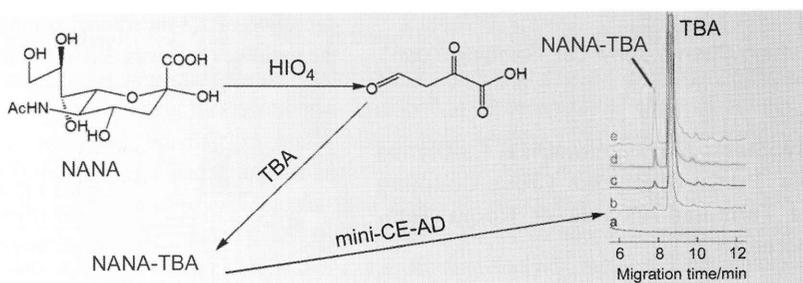


The oxidation of **1** to **2** is calculated to be a Fe₂-based process (see the Figure above). The bdt is a dianion ligand in complex **1** and **2** rather than previously proposed monoanion radical.

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Electrochemical Determination of Salivary N-Acetylneuraminic Acid by Miniaturized Capillary Electrophoresis Coupled with Sample Stacking

Yiliang Zheng, Tingting Wang, Jiaying Kong, Yaolu Ma, Yi Heng, Yujuan Ren, Jiannong Ye, Qingcui Chu*

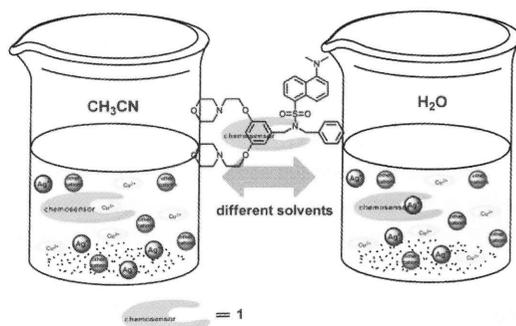


A miniaturized capillary electrophoresis with amperometric detection (mini-CE-AD) was developed for the determination of *N*-acetylneuraminic acid (NANA), and 2-thiobarbituric acid (TBA) was used as an electrochemical derivation agent. The limit of detection could achieve 0.50 $\mu\text{g/mL}$ ($1.6 \mu\text{mol}\cdot\text{L}^{-1}$, $S/N=3$) based on an online enrichment approach of moving chemical reaction boundary. The proposed method was successfully applied to the analysis of NANA in human saliva. Due to its simple design and construction, low cost, and portability, the mini-CE-AD device should possess more practicability in more field work as an alternative to conventional and microchip CE approaches.

931

Sulfonamide and Morpholine-Based Dual Chemosensor for Cu²⁺ and Ag⁺ in Different Solvent Media

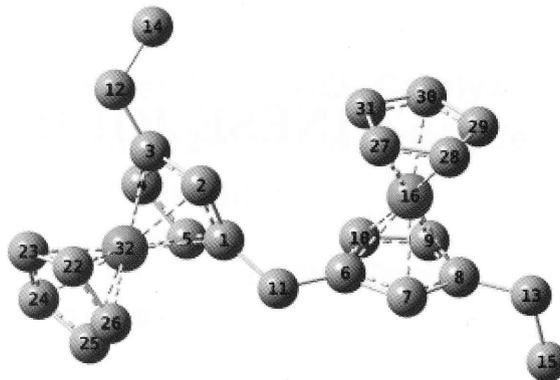
Fang Hu,* Rui Li, Jinjian Wang, Luyan He, Xing Li,* Jun Yin, Shenghua Liu



In this study, compound **1** bearing sulfonamide and morpholine functionalities was synthesized. UV/vis absorption spectra and fluorescence spectra indicated that it displayed high sensitivity and selectivity for Cu²⁺ and Ag⁺ by switching solvent media.

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Correlation between Molecular Structure of Ferrocene Derivative and Impact Sensitivity of Fine-AP/Ferrocene Derivative Mixture



This figure was the equilibrium molecular configuration of DEFM, one of the new effective DFDs. The bond lengths, the electrostatic potentials of characteristic groups and the DFD molecules, and the molecular frontier orbital energy of DFDs were calculated. The results showed that the DFDs with methylene bridge group were more stable than those with methylethylidene bridge group. The impact sensitivities of the fine-AP/DFD mixtures were in inverse proportion to the stabilities of the DFDs.

Lei Deng, Benzhen Jiang, Wei Zhang,*
Jun Yang,* Tong Bao, Yan Yu, Xiaoqiang
Li, Xing Zhou