

近期热点文章 Latest and Hot Papers

Decoupled Catalytic Hydrogen Evolution from a Molecular Metal Oxide Redox Mediator in Water Splitting

B. Rausch, M. D. Symes, G. Chisholm, L. Cronin
Science 345 (2014) 6202.

以杂多酸 $H_4[SiW_{12}O_{40}]$ 的还原加氢代替水分解中的氢析出反应, 然后将还原产物 $H_6[SiW_{12}O_{40}]$ 在隔离的空间与 Pt 催化剂接触释放出 H_2 .

Synergistic Geometric and Electronic Effects for Electrochemical Reduction of Carbon Dioxide Using Gold-Copper Bimetallic Nanoparticles

D. Kim, J. Resasco, Y. Yu, A. M. Asiri, P. Yang
Nature Commun. DOI: 10.1038/ncomms5948

由 Au-Cu 双金属纳米粒子组装成的单层表现出对 CO_2 还原反应高的催化活性, 其性能主要受电子效应和几何效应控制.

Aqueous Rechargeable Li and Na Ion Batteries

H. Kim, J. Hong, K.-Y. Park, H. Kim, S.-W. Kim, K. Kang

Chem. Rev. DOI:10.1021/cr500232y

关于水溶液锂离子和钠离子二次电池的综述. 引用了 249 篇文献.

Radical C-H Functionalization of Heteroarenes under Electrochemical Control

A. G. O'Brien, A. Maruyama, Y. Inokuma, M. Fujita, P. S. Baran, D. G. Blackmond

Angew. Chem. Int. Ed. DOI:10.1002/anie.201407948

通过电化学方法实现 C—H 键的功能化, 特别是对采用常规氢氧自由基引发法难以实现的杂环分子.

Enhanced Electrochemical Methanation of Carbon Dioxide with a Dispersible Nanoscale Copper Catalyst

K. Manthiram, B. J. Beberwyck, A. P. Alivisatos
J. Am. Chem. Soc. DOI: 10.1021/ja5065284

玻碳电极负载的 Cu 纳米粒子具有高的 CO_2 转化为甲烷的活性和法拉第效率, 且反应机理不同于

Cu 箔电极.

Development of Double-Perovskite Compounds as Cathode Materials for Low-Temperature Solid Oxide Fuel Cells

S. Yoo, A. Jun, Y.-W. Ju, D. Odhhuu, J. Hyodo, H. Y. Jeong, N. Park, J. Shin, T. Ishihara, G. Kim

Angew. Chem. Int. Ed. DOI:10.1002/anie.201407006

通过 Ca 离子掺杂显著提高固体氧化物燃料电池 (SOFC) 阴极双钙钛矿材料的氧离子传导性能和对氧还原反应 (ORR) 的催化活性.

Organic Dicarboxylate Negative Electrode Materials with Remarkably Small Strain for High-Voltage Bipolar Batteries

N. Ogihara, T. Yasuda, Y. Kishida, T. Ohsuna, K. Miyamoto, N. Ohba

Angew. Chem. Int. Ed. DOI:10.1002/anie.201405139

以锂离子嵌入型有机金属框架化合物为双极电池负极材料, 具有高的循环性能, 以及较高的比能量和比功率. 实现两节串联的 8 V 双极电池.

Synthesis of Pt-Ni Alloy Nanocrystals with High-Index Facets and Enhanced Electrocatalytic Properties

X. Xu, X. Zhang, H. Sun, Y. Yang, X. Dai, J. Gao, X. Li, P. Zhang, H. -H. Wang, N. -F. Yu, S. -G. Sun

Angew. Chem. Int. Ed. DOI:10.1002/anie.201406497

合成形状可控的具有高指数晶面的 PtNi 合金纳米粒子, 对甲醇和甲酸的电氧化反应以及 ORR 具有高的催化活性.

Water-Splitting Electrocatalysis in Acid Conditions Using Ruthenate-Iridate Pyrochlores

K. Sardar, E. Petrucco, C. I. Hiley, J. D. B. Sharman, P. P. Wells, A. E. Russell, R. J. Kashtiban, J. Sloan, R. I. Walton

Angew. Chem. Int. Ed. DOI:10.1002/anie.201406668

水热合成含 Ru 和 Ir 的焦绿石型晶体作为 pH<7 溶液中氧析出反应 (OER) 的催化剂. 现场 XANES

研究表明 Ru 位点的催化活性高于 Ir 位点.

Direct Comparison of Electrochemical and Spectrochemical Kinetics for Catalytic Oxygen Reduction

D. J. Wasylenko, C. Rodríguez, M. L. Pegis, J. M. Mayer
J. Am. Chem. Soc. DOI: 10.1021/ja505667t

采用电化学方法和谱学方法研究 Fe 卟啉催化 ORR 的机理,得出相互吻合的认识.

Core/Shell Au/MnO Nanoparticles Prepared Through Controlled Oxidation of AuMn as an Electrocatalyst for Sensitive H₂O₂ Detection

H. Zhu, A. Sigdel, S. Zhang, D. Su, Zh. Xi, Q. Li, S. Sun
Angew. Chem. Int. Ed. DOI:10.1002/anie.201406281

合成 AuMn 合金纳米粒子,通过在空气中热处理形成 Au 核 MnO 壳结构,对 H₂O₂ 还原反应具有高的活性,检测下限可达 8 nmol·L⁻¹.

Surface Polarization Matters: Enhancing the Hydrogen-Evolution Reaction by Shrinking Pt Shells in Pt-Pd-Graphene Stack Structures

S. Bai, C. Wang, M. Deng, M. Gong, Y. Bai, J. Jiang, Y. Xiong

Angew. Chem. Int. Ed. DOI:10.1002/anie.201406468
报道了一种 Pt-Pd-石墨烯堆积结构,Pt 壳层厚度变化可调控催化氢析出反应(HER)的活性,其机理主要是 Pt 和 Pd 功函数不同造成的表面极化效应.

Controlling Selectivity in the Chlorine Evolution Reaction over RuO₂-Based Catalysts

K. S. Exner, J. Anton, T. Jacob, H. Over
Angew. Chem. Int. Ed. DOI:10.1002/anie.201406112
DFT 计算表明,在 RuO₂(110)表面覆盖 TiO₂(110)单层,可提高催化氯析出反应(CER)的选择性,抑制氧析出反应(OER).

TiO₂ Hollow Spheres Composed of Highly Crystalline Nanocrystals Exhibit Superior Lithium Storage Properties

G. Zhang, H. B. Wu, T. Song, U. Paik, X. W. Lou
Angew. Chem. Int. Ed. DOI: 10.1002/anie.201406476
以碳球为模版合成 TiO₂ 空心球晶体,提升了 Li 嵌入脱出的循环性和速率.

N₈ Polynitrogen Stabilized on Multi-Wall Car-

bon Nanotubes for Oxygen-Reduction Reactions at Ambient Conditions

Z. Wu, E. M. Benchafia, Z. Iqbal, X. Wang
Angew. Chem. Int. Ed. DOI:10.1002/anie.201403060
采用循环伏安法在室温下合成了多壁碳纳米管负载的聚氮化合物 MWNT⁺N₈⁻,在 400 °C 下保持稳定,且对 ORR 具有优异的催化活性.

Unravelling the Structure of Electrocatalytically Active Fe-N Complexes in Carbon for Oxygen Reduction Reaction

Y. Zhu, B. Zhang, X. Liu, D. -W. Wang, D. S. Su
Angew. Chem. Int. Ed. DOI:10.1002/anie.201405314
结合电镜和穆斯堡尔谱技术研究了一种 Fe/N/C 催化剂中的 Fe-N 活性位点,指出一种 FeN₆ 结构.

A First-Cycle Coulombic Efficiency Higher than 100% Observed for a Li₂MO₃ (M = Mo or Ru) Electrode

J. Jang, Y. Kim, O. B. Chae, T. Yoon, S. -M. Kim, H. -S. Kim, H. Park, J. H. Ryu, S. M. Oh
Angew. Chem. Int. Ed. DOI:10.1002/anie.201404510
深入研究了三元氧化物 Li₂MO₃ (M=Ru or Mo)电极材料的第一周锂离子嵌入脱出过程.

Fabrication of Ultralong Hybrid Microfibers from Nanosheets of Reduced Graphene Oxide and Transition-Metal Dichalcogenides and their Application as Supercapacitors

G. Sun, J. Liu, X. Zhang, X. Wang, H. Li, Y. Yu, W. Huang, H. Zhang, P. Chen
Angew. Chem. Int. Ed. DOI: 10.1002/anie.201405325
合成了超长的石墨烯和金属二硫化物复合纤维,是优良的超级电容器电极材料.

Strongly Coupled Pd Nanotetrahedron/Tungsten Oxide Nanosheet Hybrids with Enhanced Catalytic Activity and Stability as Oxygen Reduction Electrocatalysts

Y. Lu, Y. Jiang, X. Gao, X. Wang, W. Chen
J. Am. Chem. Soc. 13 (2014) 726.
W₁₈O₄₉ 纳米片担载 Pd 晶体的复合结构对碱性介质 ORR 表现出优于 Pt 的催化活性和稳定性.

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