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Latest and Hot Papers

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近期热点文章 Latest and Hot Papers

Electrocatalysis by Mass-Selected Pt_n Clusters

A. von Weber, S. L. Anderson

Acc. Chem. Res. DOI:10.1021/acs.accounts.6b00387
纳米电化学专刊, 关于 Pt 团簇用于电催化的评述文章. 引用了 40 篇参考文献.

Reaction Mechanisms for the Electrochemical Reduction of CO₂ to CO and Formate on the Cu (100) Surface at 298 K from Quantum Mechanics Free Energy Calculations with Explicit Water

T. Cheng, H. Xiao, W. A. Goddard

J. Am. Chem. Soc. DOI:10.1021/jacs.6b08534
CO₂ 电还原机理的理论计算研究. 在含水层的 Cu (100) 表面, CO₂ 从物理吸附到化学吸附的过程是还原为 CO 的速控步骤; 物理吸附的 CO₂ 与表面 H 原子结合是生成 HCOO⁻ 的速控步骤, 但反应能垒更高.

Small Gold Nanoparticles Interfaced to Electrodes through Molecular Linkers: A Platform to Enhance Electron Transfer and Increase Electrochemically Active Surface Area

S. L. Young, J. E. Kellon, J. E. Hutchison

J. Am. Chem. Soc. DOI:10.1021/jacs.6b07674
Au 纳米颗粒修饰在碳电极表面, 通过分子共价连接比物理性的堆积具有更高的电子转移速率和更大的电化学活性面积.

Tunable Syngas Production from CO₂ and H₂O in an Aqueous Photoelectrochemical Cell

S. Chu, S. Fan, Y. Wang, D. Rossouw, Y. Wang, G. A. Botton, Z. Mi

Angew. Chem. Int. Ed. DOI:10.1002/anie.201606424
发现 Cu 与 ZnO 结合具有 CO₂ 还原催化协同效应, 超电势仅 0.18 V 便可获得 70% 法拉第效率的 CO 产物. CO/H₂ 产物比例从 2:1 到 1:4 可调.

Structure Design and Performance Tuning of Nanomaterials for Electrochemical Energy Conversion and Storage

T. Sheng, Y.-F. Xu, Y.-X. Jiang, L. Huang, N. Tian, Z.-Y. Zhou, I. Broadwell, S.-G. Sun

Acc. Chem. Res. DOI:10.1021/acs.accounts.6b00485
纳米电化学专刊, 关于电化学能量转化与储存纳米材料的评述文章. 引用了 50 篇参考文献.

A Model for the pH-Dependent Selectivity of the Oxygen Reduction Reaction Electrocatalyzed by N-Doped Graphitic Carbon

B. W. Noffke, Q. Li, K. Raghavachari, L.-s. Li

J. Am. Chem. Soc. DOI:10.1021/jacs.6b06778
结合计算和实验解释氮杂石墨材料在不同 pH 下催化氧还原反应 (ORR) 的差异. 在碱性条件下, 氮杂石墨的憎水性使离子化产物 HO₂⁻ 难以稳定, 反应以 4 电子途径为主; 但在酸性条件下, H₂O₂ 可以稳定, 反应以 2 电子途径为主.

Scanning Electrochemical Microscopy: A Comprehensive Review of Experimental Parameters from 1989 to 2015

D. Polcari, P. Dauphin-Ducharme, J. Mauzeroll

Chem. Rev. DOI:10.1021/acs.chemrev.6b00067
扫描电化学显微方法的全面综述. 引用了 527 篇参考文献.

Single-Nanoparticle Electrochemistry through Immobilization and Collision

T. J. Anderson, B. Zhang

Acc. Chem. Res. DOI:10.1021/acs.accounts.6b00334
关于单纳米颗粒电化学研究的评述文章. 引用了 47 篇参考文献.

Proton Conductivity in Phosphoric Acid: The Role of Quantum Effects

M. Heres, Y. Wang, P. J. Griffin, C. Gainaru, A.P. Sokolov

Phys. Rev. Lett. 2016, 117, 156001.
研究磷酸中的质子传导机理. 通过同位素实验表明, 磷酸的高质子传导率不是 H 的量子隧穿效应, 而是因为具有较低量子零点能.

Single Molecule Nanoelectrochemistry in Electrical Junctions

R. J. Nichols, S. J. Higgins

Acc. Chem. Res. DOI:10.1021/acs.accounts.6b00373
纳米电化学专刊, 关于单分子电导与分子电子学研究的评述文章. 引用了 30 篇参考文献.

Mesoporous Amorphous Silicon: A Simple Synthesis of a High-Rate and Long-Life Anode Material for Lithium-Ion Batteries

L. Lin, X. Xu, C. Chu, M. K. Majeed, J. Yang

Angew. Chem. Int. Ed. DOI:10.1002/anie.201608146
采用 Mg 还原 SiCl_4 获得多孔无定形 Si 材料, 用作锂离子电池负极, 700 周循环后容量仍达 $1025 \text{ mAh} \cdot \text{g}^{-1}$ @ $3 \text{ A} \cdot \text{g}^{-1}$.

Computational Exploration of the Li-Electrode|Electrolyte Interface in the Presence of a Nanometer Thick Solid-Electrolyte Interphase Layer

Y. Li, K. Leung, Y. Qi

Acc. Chem. Res. DOI:10.1021/acs.accounts.6b00363
关于锂电表面固态电解质中间相的计算研究的评述文章. 引用了 47 篇参考文献.

Facile Synthesis of Black Phosphorus: An Efficient Electrocatalyst for the Oxygen Evolving Reaction

Q. Jiang, L. Xu, N. Chen, H. Zhang, L. Dai, S. Wang
Angew. Chem. Int. Ed. DOI:10.1002/anie.201607393
采用热蒸发转化法制备黑磷薄层材料, 用作氧析出反应(OER)催化剂, 1.48 V 起波, 1.6 V 的电流密度为 $10 \text{ mA} \cdot \text{cm}^{-2}$.

Cation-Deficient Spinel ZnMn_2O_4 Cathode in $\text{Zn}(\text{CF}_3\text{SO}_3)_2$ Electrolyte for Rechargeable Aqueous Zn-Ion Battery

N. Zhang, F. Cheng, Y. Liu, Q. Zhao, K. Lei, C. Chen, X. Liu, J. Chen

J. Am. Chem. Soc. DOI:10.1021/jacs.6b05958
以尖晶石 ZnMn_2O_4 作为锌离子电池正极材料, $\text{Zn}(\text{CF}_3\text{SO}_3)_2$ 为电解质, 电极可逆容量为 $150 \text{ mAh} \cdot \text{g}^{-1}$, $0.5 \text{ A} \cdot \text{g}^{-1}$ 充放循环 500 周容量保持 94%.

Redox Active Polymers as Soluble Nanomaterials for Energy Storage

M. Burgess, J. S. Moore, J. Rodríguez-López

Acc. Chem. Res. DOI:10.1021/acs.accounts.6b00341
以具有氧化还原活性的聚合物为活性物质的液流电池的评述文章. 引用了 38 篇参考文献.

Supertetrahedral Networks and Lithium-Ion Mobility in Li_2SiP_2 and LiSi_2P_3

A. Haffner, T. Bräuniger, D. Johrendt

Angew. Chem. Int. Ed. DOI:10.1002/anie.201607074
 Li_2SiP_2 与 LiSi_2P_3 的单晶 X 射线衍射研究, 表明其

结构包含多个互穿的金刚石四方结构, NMR 研究表明其中锂离子迁移能垒不高于 0.1 eV.

Confined Chemical Etching for Electrochemical Machining with Nanoscale Accuracy

D. Zhan, L. Han, J. Zhang, K. Shi, J.-Z. Zhou, Z.-W. Tian, Z.-Q. Tian

Acc. Chem. Res. DOI:10.1021/acs.accounts.6b00336
关于电化学微加工的评述文章. 引用了 54 篇参考文献.

Hydrolysis of Electrolyte Cations Enhances the Electrochemical Reduction of CO_2 over Ag and Cu

M. R. Singh, Y. Kwon, Y. Lum, J. W. Ager, A. T. Bell

J. Am. Chem. Soc. DOI:10.1021/jacs.6b07612
研究 Ag 和 Cu 表面 CO_2 还原反应的阳离子效应. 认为与这些碱金属离子的水解电离作用有关, 大阳离子的这种效应较弱, 使电极表面的局部 pH 较小, CO_2 溶解度较大, 因而反应活性较高.

Plasmonic Imaging of Electrochemical Reactions of Single Nanoparticles

Y. Fang, H. Wang, H. Yu, X. Liu, W. Wang, H.-Y. Chen, N. J. Tao

Acc. Chem. Res. DOI:10.1021/acs.accounts.6b00348
关于单颗粒电化学反应等离子成像的评述文章. 引用了 98 篇参考文献.

Integrated Photoelectrochemical Solar Energy Conversion and Organic Redox Flow Battery Devices

W. Li, H.-C. Fu, L. Li, M. Cabán-Acevedo, J.-H. He, S. Jin

Angew. Chem. Int. Ed. DOI:10.1002/anie.201606986
可再生光电化学太阳能电池与有机氧化还原液流电池相结合, 能量密度为 $1.15 \text{ Wh} \cdot \text{L}^{-1}$, 光电转化效率为 1.7%.

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