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High-performance oxygen reduction catalysts in both alkaline and acidic fuel cells based on pre-treating carbon material and iron precursor

Ping Song[1], Heather M. Barkholtz[2], Ying Wang[3], Weilin Xu[1,*] Dijia Liu[2,*] Lin Zhuang[3*]

[1]State Key Laboratory of Electroanalytical Chemistry, Jilin Province Key Laboratory of Low Carbon Chemical Power, Changchun Institute of Applied Chemistry, Chinese Academy of Sciences, Changchun 130022, China.
E-mail: weilinxu@ciac.ac.cn
[2]Chemical Sciences and Engineering Division, Argonne National Laboratory, Argonne, IL 60439, USA
Email: djliu@anl.gov
[3]College of Chemistry and Molecular Sciences, Hubei Key Lab of Electrochemical Power Sources, Wuhan University, Wuhan 430072, China.
Email: lzhuang@whu.edu.cn

Abstract: We demonstrate a new and simple method for pre-treating the carbon material and iron precursor to prepare oxygen reduction reaction (ORR) catalysts, which can produce super-high performance and stability in alkaline solution, with high performance in acid solution. This strategy using cheap materials is simply controllable. Moreover, it has achieved smaller uniform nanoparticles to exhibit high stability, and the synergetic effect of Fe and N offered much higher performance in ORR than commercial Pt/C, with high maximum power density in alkaline and acid fuel cell test. So it can make this kind of catalysts be the most promising alternatives of Pt-based catalysts with best performance/price.

Keywords Pre-treatment • Uniform nanoparticle • Super-high performance • High stability • Fuel cell

1. Introduction

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