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A host-guest approach to fabricate metallic cobalt nanoparticles embedded in silk-derived N-doped carbon fibers for efficient hydrogen evolution

Fenglei Lyu^a, Qingfa Wang^{a*}, Han Zhu^{b*}, Mingliang Du^b, Li Wang^a and Xiangwen Zhang^a

a Key Laboratory for Green Chemical Technology of the Ministry of Education, School of Chemical Engineering and Technology, Tianjin University, 135 Yaguan Road, Tianjin, 300072, PR China

b Department of Materials Engineering, College of Materials and Textiles, Zhejiang Sci-Tech University, Hangzhou, 310018, PR China

* Corresponding Author: Email Address: gfwang@tju.edu.cn and zhuhanfj@zstu.edu.cn

Abstract

Hydrogen evolution reaction (HER) plays a key role in generating clean and renewable energy. As the most effective HER electrocatalysts, Pt group catalysts suffer from severe problems such as high price and scarcity. It is highly desirable to design and synthesize sustainable HER electrocatalysts to replace the Pt group catalysts. Due to their low cost, high abundance and high activities, cobalt-incorporated N-doped nanocarbon hybrids are promising candidate electrocatalysts for HER. In this report, we demonstrated a robust and eco-friendly host-guest approach to fabricate metallic cobalt nanoparticles embedded in N-doped carbon fibers derived from natural silk fibers. Benefiting from the one-dimensional nanostructure, the well-dispersed

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