Au/NiCo₂O₄/3D HPG (Three-Dimensional Hierarchical Porous Graphene) Composite as Electrocatalyst for Glycerol Electrooxidation in Alkaline Medium

Bo-Cai Liu¹, Wei-Yan Xia², Shang-Qing Wang¹, Chang-Wei Xu^{1,*}, Zi-Li Liu^{3,*}

¹ School of Chemistry and Chemical Engineering, Guangzhou University, Guangzhou 51006, China

² The Experimental School Affiliated to Guangzhou College, Guangzhou 510430, China

³ Guangzhou Key Laboratory for new energy and green catalysis, Guangzhou University, Guangzhou 51006, China

*E-mail: cwxu@gzhu.edu.cn (C.W. Xu), gzdxlzl@163.com (Z.L. Liu)

doi: 10.20964/2018.10.03

Received: 13 February 2018 / Accepted: 20 May 2018 / Published: 1 September 2018

Spinel oxide NiCo₂O₄ firstly has been explored to promote activity of Au for glycerol electrooxidation, which is supported on a three-dimensional hierarchical porous graphene-like carbon (3D HPG) material. Addition NiCo₂O₄ into the Au/HPG catalyst can significantly improve the catalytic performance for glycerol oxidation. When NiCo₂O₄ is added to the Au/HPG, onset potential is more 108 mV negatively than that on the Au/HPG. Peak current density on the Au/NiCo₂O₄(wt 6:1)/HPG is 5.1 times as high as that on the Au(20wt%)/HPG. The Au/NiCo₂O₄ in this work shows a great potential as electrocatalyst for glycerol electrooxidation in alkaline medium.

Keywords: Fuel cells; Glycerol; Gold; Spine oxide; NiCo₂O₄

[FULL TEXT](#)

© 2018 The Authors. Published by ESG (www.electrochemsci.org). This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).