Mini Review

Recent Development of Metal Alloy Nanostructures for Electrochemical Hydrogen Generation

*Quanli Han, Lvduo Fan and Hongqiang Wan**

School of Mechanical Engineering, Xi'an Technological University, Xian, P.R. China

*E-mail: hqwmql@sina.cn

doi: 10.20964/2019.12.21

Received: 21 April 2019 / Accepted: 6 September 2019 / Published: 29 October 2019

Alkaline electrolytic water hydrogen production is an important method for large-scale industrialized hydrogen production. Research and development of new cathode electrode materials with lower hydrogen evolution overpotential and higher hydrogen evolution catalytic activity has become an important means to solve the problem of high energy consumption and low efficiency in electrochemical hydrogen generation. At present, alloys have been proven to be the best catalytic material for hydrogen evolution from electrolytic water splitting in alkaline solution. In this review, alloy-based electrochemical catalysts for electrochemical hydrogen production are summarized. We summarize the catalysts from binary, ternary and alloy deposited substrates. The performances of the catalysts are compared and illustrated. A high catalytic activity for hydrogen evolution can be obtained from the synergistic effect of alloying elements.

Keywords: Alloy; Electrochemistry; Hydrogen generation; Electrode; Clean energy

[FULL TEXT](#)

© 2019 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/>).