

عنوان مقاله:

Evaluation of electrocatalytic performance of PtCo/C nanoparticles in different proportions of cobalt for oxygen reduction reaction

محل انتشار:

فصلنامه هیدروژن و پیل سوختی ایران، دوره 10، شماره 4 (سال: 1402)

تعداد صفحات اصل مقاله: 8

نویسندگان:

Kolsoom Mehrabinejad - Ph.D. student of physical chemistry, Payam Noor Ardakan University, center Yazd

Mehdi Kheirmand - Department of Chemistry, School of basic sciences, Yasouj University, Yasouj, Iran

Hamid Reza Zare Mehrjardi - Associate Professor, Payam Noor Ardakan University, center Yazd

Reza Behjatmanesh Ardakani - Professor, Payam Noor Ardakan University, center Yazd

خلاصه مقاله:

Abstract In this research, the electrocatalytic activity of nanoparticles with ۲۰% by weight of platinum on Vulcan XC-۷۲R carbon with different proportions of cobalt catalyst content (۱:۲, ۱:۰.۳۳, ۱:۳ cobalt: platinum) were synthesized. The electrochemical experiments were carried out in a conventional three electrode configuration. the catalytic behavior of prepared catalysts for oxygen reduction reaction (ORR) in acidic media were studied. The catalytic activities of catalysts for ORR were considered via cyclic voltammetry (CV), linear sweep voltammetry (LSV), rotating disc electrode (RDE) technique and electrochemical impedance spectroscopy (EIS). The electrochemical results showed the best performance of catalytic behavior for oxygen reduction reaction is belongs to the ۱:۲ PtCo/C catalyst. The results showed, the ORR kinetic mechanism is followed according the four-electron path way. The physicochemical results (scanning microscope spectroscopy (SEM)) showed more suitable distribution and better active surface of the ۱:۲ PtCo/C catalyst, that enhanced the utility of catalyst for ORR.

کلمات کلیدی:

PtCo/C, Oxygen reduction reaction, Platinum, cobalt

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1952159>

