

Fabrication of Nanostructured Molybdenum Carbide on Carbon Nanotube – Graphene Composite for Hydrogen Evolution Reaction in Alkaline Media

이건희, 윤덕현[†]

강원대학교

(youndh@kangwon.ac.kr[†])

As fossil fuels become depleted and environmental problems arise, hydrogen is attracting as an environmentally friendly energy source. The development of active non-precious metal catalysts for hydrogen evolution reaction (HER) with a low overpotential is critical to commercialize the large-scale hydrogen production system from water splitting powered by renewable energy source. In this study, the molybdenum carbides, promising alternatives for platinum, were synthesized on various supports including CNT, graphene and CNT-GR via modified urea-glass route and their electrochemical performance for hydrogen evolution reaction were investigated in alkaline media. Because urea is used as a carbon source without toxic gases such as CH₄, our synthetic method is simple and safe compared to the previous synthetic methods. And, among the prepared catalysts, Mo₂C/CNT-GR showed the highest performance for HER owing to the improved contact area with electrolyte by incorporating CNT-graphene hybrid.