

A 2D Fe Zn Bimetallic Metal Organic Framework for Advanced Electrocatalytic Oxygen Evolution Reaction

Huynh Ngoc-Diem, Ravi Nivetha, Jana Jayasmita, Tran Van Phuc, 허승현[†]
University of Ulsan

Oxygen Evolution (OER) is the key reaction for an energy-related application like electrochemical water splitting and rechargeable metal-air batteries. However, sluggish nature and durability hindered their particular application. 2D Metal-Organic framework nanosheets can exhibit an outstanding OER catalytic activity due to their higher-order pore structure, structure tunability, and abundant active sites. Herein, we report a 2D FeZn bimetallic MOF as highly active and stable electrocatalysts of OER viz simple solvothermal route. The FeZn -MOF nanosheets achieved a small overpotential of 130 mV at a current density of 10 mA cm^{-2} without IR-correction in 1M NaOH and it exhibits long-term durability of 20 hr. This excellent electrochemical performance is due to the introduction of Zn in Fe-based MOF could benefit from fast kinetics and charge transferability towards OER. Moreover, this work provides a promising avenue to develop a low-cost, high-performance, and stable 2D electrocatalyst.

Keywords: Oxygen Evolution reaction (OER), Metal Organic Framework (MOF), bimetallic and two dimensional (2D).