Short Communication

Co@N-doped Porous Carbon Derived from Co-MOFs as an Efficient Bifunctional Electrocatalysts for Full Water Splitting

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Co@N-doped porous carbon were prepared by a one-step pyrolysis method derived from Co-MOFs. The obtained Co@N-doped porous carbon have a large number of metallic Co nanoparticles and contain considerable mesopores. The result indicate that the Co@NC materials exhibit high degree of graphitization. The sample of Co-1.4@NC has the largest grain size of cobalt and high specific surface area of with massive mesopores. As a remarkable bifunctional electrocatalysts, Co-1.4@NC presents remarkable hydrogen evolution reaction (HER) and oxygen evolution reaction (OER) activities in alkaline medium for overall water splitting to produce O₂ and H₂. The result may be attributed to the rich catalytic active species as well as superior electrical conductivity, high surface area and the porous structure. The cost-effective, highly active and stable Co@NC electrocatalysts have great potential for application in electrocatalytic overall water splitting and fuel cells.

Keyword: Co@N-doped porous carbon; Hifunctional electrocatalysts; Hydrothermal method; oxygen evolution reactions

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