

Highly Efficiency Using Trimetallic MOFs Catalyst for Electrochemical Reduction CO₂

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Abstract

The electrochemical reduction of CO₂ now a day has significant exciting, as possible, as a reaction for the storage of renewable energy. Using noble metal (Pd) components in catalysts and non-noble-metal components (Cu and Zn) combine to MOFs material (PCZ-BTC) that selectively converts CO₂ to CO with a low overpotential is reported. The results showed that as high as 95% of Faradaic efficiency toward CO can be obtained when PCZ-2 was used as an ERC electrode, which was around two-fold higher value than that of bimetallic-BTC (~ 49%). These results imply geometric arrangements can tune the selectivity, and these improvements are attributable to the electrical interaction between metals centers. Therefore, this catalyst shows a competing or even better faradic efficiency toward CO compared to recently reported catalysts.

Keywords: Metal-organic framework; Electrocatalyst; Electrochemical reduction CO₂, CO selectivity