

A Novel Bimetallic – Metal–Organic Framework (BM) and Nitrogen–Doping Catalyst Addition
On Cathode For Effective Electrochemical Reduction Of CO₂

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Copper–Zinc–1,3,5–benzenetricarboxylic acid metal–organic frameworks, CuZn–MOF were synthesized using ZIF–8 as a template, and then the catalysts were calcination at high temperature with nitrogen (N₂) supply through into pyrolysis processes. Bimetallic–MOF (BM) and N–doping Bimetallic–MOF (NBM) based catalyst has advantages like uniformly distributed bimetallic ions, less tendency towards aggregation, and more stable interfacial sites. Therefore, BM and NBM, as the CO₂ capturing agent, was deposited on a working electrode and was used as cathodes to reduce CO₂ to CO, and CH₄. In our study, the electrochemical reduction CO₂ (ERC) was taking place on an H–type cell in 0.1 M KHCO₃ aqueous solution; the results shows without nitrogen–doped the higher with the BM–n (n= 3–4) addition on the surface of a working electrode, and with nitrogen–doped into the samples at 700oC (NBM1–700) shows Faradaic efficiency to CO as high as ~90%.