Facile synthesis of metal organic framework and its application for CO_2 electrolysis

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Three-dimensionally ordered and highly porous metal organic framework (MOF) was synthesized via facile route and was applied for electrochemical reduction of CO_2. Various 3d-transition metals were employed as center metal, in pursuit of investigating their effect on reduction selectivity and efficiency. A lab-scale electrolyzer was used for the electrochemical reaction. In-situ gas chromatography enabled the real-time identification and measurement of the produced chemicals and their proportion. Comprehensive calculations presented a time-/metal-dependent electrochemical activity of MOF toward electrolysis of CO_2. The results supported that MOF could be a candidate catalytic material for the electrochemical conversion of CO_2 into useful hydrocarbon species.