Electrocatalytic Oxidation of Methanol on Nickel Doped Metal-Organic Frameworks MIL-110 Modified Glassy Carbon Electrode in Alkaline Medium

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Nickel doped metal-organic frameworks MIL-110 catalysts were prepared by impregnation method. The as-prepared Ni/MIL-110 catalysts with different Ni content (10 wt.%, 20 wt.% and 30 wt.%) were characterized by XRD, SEM, elemental distribution analysis, N₂ adsorption-desorption and TEM. Ni/MIL-110 modified glassy carbon electrodes were employed to investigate the methanol electrooxidation reaction (MOR) in 0.1 M NaOH by cyclic voltammetry (CV) and chronoamperometry (CA). Ni/MIL-110 shows good electrocatalytic activity toward MOR and MOR reaction is under diffusion controlled. And the catalytic rate constant is calculated to be $0.96 \times 10^3 \text{ cm}^3 \text{ mol}^{-1} \text{ s}^{-1}$ by CA analysis.

Keywords: Alkaline medium, Glassy Carbon Electrode, Metal-organic Frameworks, Methanol Electrooxidation

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