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Oriented growth of cross-linked metal-organic framework film on graphene surface for non-enzymatic electrochemical sensor of hydrogen peroxide in disinfectant

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ABSTRACT

High-density and cross-linked copper-based metal-organic framework (Cu-MOF) sheets were successfully prepared via a simple oriented growth method on a carboxylated graphene-modified electrode surface. Hydrogen peroxide (H₂O₂) was selected as a model molecule to examine the performance of the thin film of Cu-MOF/graphene. The proposed sensor showed an extended linear detection range from 2.00×10^{-7} to 1.85×10^{-4} mol L⁻¹ ($R = 0.998$), a high sensitivity of 0.792 A (mol L⁻¹)⁻¹, and a low detection limit of 6.7×10^{-8} mol L⁻¹, due to the synergistic catalysis from the porous structure and favorable electron transfer mediating function of the

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