Carbothermic synthesis of FeO_X/ZnO@carbon for electrochemical detection of 4-nitrophenol

Baye Anteneh Fufa, Appiah Ntiamoah Richard[1], 김헌†
명지대학교; [1]Myongji University
(hernkim@mju.ac.kr†)

4-Nitrophenol (4-NP), a ubiquitous organic contaminant is carcinogenic for humans and hence its accurate detection is very important. Electrochemical detection has immerged as an effective way to achieve this. In this study, a rational design is used to synthesized FeO_X/ZnO@carbon nanocomposite with high conductivity and multiple oxidation states. The synthesis step involves hydrothermal synthesis of ZnFe-LDH on glucose-carbon followed by carbothermal reaction under N_2. The FeO_X/ZnO@carbon is duly characterized by XRD, XPS, FE-SEM/EDX and TGA. Its electrochemical performance towards 4-NP is studied by CV, EIS and DPV. Our results show that FeO_X/ZnO@carbon exhibits outstanding selectivity and sensitivity towards 4-NP detection.