

### Electrochemical detection of 3-methoxypropionitrile using hydrothermally synthesized Nickel cobalt binary oxide

장광수, Sadia Ameen, 김은비, 압둘라, 피자히라미야, 알람샤바즈, 신형식<sup>†</sup>  
전북대학교  
(hsshin@jbnu.ac.kr<sup>†</sup>)

The metal oxides with different morphologies and dimensions are recently receiving numerous attentions as sensing electrode materials for the detection of various harmful chemicals due to their excellent and tunable wide band gap. In this work, nickel-cobalt binary oxide ( $\text{Ni}_2\text{CoO}_4$ ) nanostructures were synthesized through a facial hydrothermal treatment using cobalt nitrate, nickel nitrate and trimethylamine. The synthesized  $\text{Ni}_2\text{CoO}_4$  nanostructures were of diameter  $\sim 500$  nm as confirmed from the morphological characterizations. The phase and composition of  $\text{Ni}_2\text{CoO}_4$  nanostructures were investigated by X-ray powder diffraction and X-ray photoelectron spectroscopy, which displayed the typical stacked layer structures. The  $\text{Ni}_2\text{CoO}_4$  nanostructures were of good surface area and displayed a high pore volume. It is expected that  $\text{Ni}_2\text{CoO}_4$  nanostructures based electrode would display excellent sensing properties towards the detection of toxic 3-methoxypropionitrile chemical.