Synthesis of well-defined nanosheets based Nickel-Molybdate ($NiMoO_4$) nanowalls for electrochemical Supercapacitor

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This work depicts the synthesis of well-defined nanosheets based $NiMoO_4$ nanowalls on Ni foam by a hydrothermal method at 160oC and utilized as electro-active materials for the fabrication of supercapacitors. The $NiMoO_4$ nanowalls with large surface area were comprised of well-defined and crystalline ultrathin nanosheets. X-rays diffraction, UV-Vis absorption, FTIR and Raman spectroscopic analysis were used to explain the crystal nature, structure, composition and quality of $NiMoO_4$ nanowalls. X-rays photoelectron spectroscopy (XPS) demonstrated to investigate the chemical composition and oxidation state of elements in synthesized $NiMoO_4$ nanowalls. As electrode in electrochemical supercapacitor, $NiMoO_4$ nanowalls exhibited excellent electrochemical and electrocatalytic properties in alkaline electrolyte. Our strategy described here is simple, facile, and can be expended as a typical method to synthesize $NiMoO_4$ materials with different dimensionality.