

Well-defined vertically arranged Nickel-Molybdate (NiMoO_4) as energy storage materials:
Supercapacitor applications

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The transition metals such as Fe, Co, Ni, and Mn based molybdates have recently gained immense attentions as important inorganic materials because they are showing promising applications in sensors, electronic devices, catalysis, and energy storage devices. Nickel-molybdate nanomaterials with different dimensionalities possess marvelous magnetic, electrical, physiochemical properties and electrode behavior. In this work, the highly dense vertically arranged NiMoO_4 nanosheets were grown on nickel foam through a low temperature hydrothermal process. The synthesis of NiMoO_4 nanosheets on Ni foam was optimized in terms of reaction times (6–20 h) and found that the reaction time of 12h is the optimal condition to obtain vertically arranged NiMoO_4 nanosheets. The morphological analysis clearly featured that the grown nanosheets were interconnected to each other and arranged in vertical fashion over Ni foam. The crystalline, compositional and quality of NiMoO_4 thin film were thoroughly investigated to justify their electrode and electrochemical properties. The grown NiMoO_4 nanosheets on Ni foam was directly applied as electrode for checking the electrochemical supercapacitor applications.