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Size-dependent magnetic and electrocatalytic properties of nickel phosphide nanoparticles

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Abstract

Nickel phosphide (Ni_2P) nanoparticles (NPs) with different sizes were synthesized *via* thermal decomposition of bis(triphenylphosphine)nickel dichloride precursor in the presence of oleylamine. The size of the as-synthesized Ni_2P NPs could easily be controlled by increasing the reaction temperature from 300 to 340 °C. The structure and morphology were characterized by X-ray diffraction (XRD), transmission electron microscopy (TEM), N_2 adsorption-desorption and X-ray photoelectron spectroscopy (XPS). Then the influences of the size of the Ni_2P NPs on the magnetic and electrocatalytic properties were investigated systematically. The results indicate that the as-synthesized Ni_2P NPs exhibit ferromagnetic characteristic at 5 K. The Ni_2P NPs with

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