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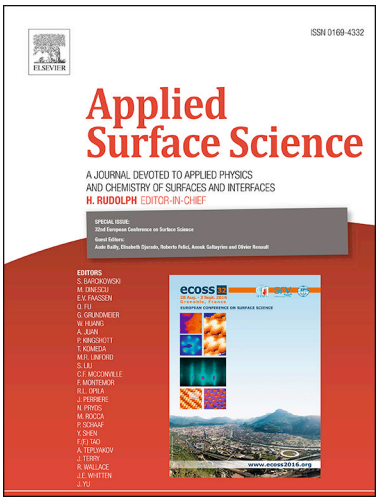

Full Length Article

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Synthesis of the polypyrrole encapsulated copper nanowires with excellent oxidation resistance and temporal stability

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Abstract

Copper nanowires (Cu NWs) encapsulated with polypyrrole (PPy) (Cu@PPy) have been fabricated by a facile liquid-phase reduction with copper (II) chloride as precursor. The as-synthesized Cu NWs grow along the crystal orientation of (110) and the encapsulated polypyrrole layer is also observed on the surface of Cu NWs. The Cu@PPy nanostructure is investigated by X-ray diffraction (XRD), scanning electron microscopy (SEM), and Fourier transform infrared spectroscopy (FTIR). And the experimental results show that the synthesized Cu@PPy are uniform and cross each other with the average width of 160 nm. Additionally, the results of XRD and XPS indicate the Cu@PPy nanostructure has excellent oxidation resistance and temporal stability.

Keywords: Copper nanowires (Cu NWs); Polypyrrole (PPy); Oxidation resistance; Temporal stability.

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