

Facile Synthesis of Copper Based Nanowires Suitable for Lithium Ion Battery Application

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Abstract : Copper is an excellent conductive material that is widely used in the energy devices such as Lithium-ion batteries and supercapacitors as the current collector. On the other hand, copper oxide nanowires have been used in these applications as potential electrode material. In this paper, nanowires of Copper and Copper oxide have been synthesized through a simple and time and cost-effective approach. The thermally grown Copper oxide nanowires have been converted into Copper nanowires through annealing in the Hydrogen atmosphere in a DC-PECVD system. To have a proper Copper nanostructure formation, an Au nanolayer was coated on the surface of Copper oxide nanowires. The results show the successful achievement of Copper nanowires without deformation or cracking. These structures have a great potential for Lithium-ion batteries and supercapacitors.

Keywords : Copper, Copper oxide, nanowires, Hydrogen annealing, Lithium ion battery

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