

Synthesis of electroless copper-deposited ZnO nanowires for methanol steam reforming

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Currently, there has been increasing research interest in micro fuel system which surpass the limit of secondary cell such as energy density and recharging time since the functions of portable electronic devices has been increased. In order to satisfy the energy needs for newly emerging electronic devices, micro reforming system is inevitable at the level of current technology and many obstacles to commercializing micro fuel system comes out from it especially from reforming catalyst. As a part of the efforts to address these problems, we present new catalysts which have much more catalytic site and are more stable than existing ones using semiconductor processing and emerging nanotechnology which are available for micro reforming system. For this work, the ZnO nanowires with a various range of diameters and lengths were vertically grown by the conventional wet solution method on the ZnO seed layer formed by atomic layer deposition. In the next step, the copper nanoparticles were formed on the surface of ZnO nanowires by electroless deposition method. The electroless deposition has been investigated to find out uniformly heterostructure ZnO nanowires with copper nanodots without length dependence.