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Key words : DSSC(염료 감응형), ZnO, branch(가지), solar cell(태양전지), nanorod(나노막대), nanowire(나노선)

Abstract : Branched Zinc Oxide nanorod array electrodes with remarkably enhanced surface-area have been synthesized by a simple aqueous solution process at low reaction temperature. Firstly, the seed coated nanorod arrays (i.e. grown for 32hours) as a template were fabricated by dipping in ZnO-sol solution at 60 ℃ under stirring, and then soaked in aqueous growth-solution to form branched nanorod arrays at 92 ℃ for 18 hours. The morphology of branched ZnO nanorod was analyzed and characterized by scanning electron microscopy (SEM), X-ray diffraction (XRD). The photovoltaic properties of branched nanorod array electrodes were measured at one sun illumination condition. The solar energy conversion efficiency of branched ZnO nanorod electrode was increased by 30% compare to nanorod grown for 50 hours without branching. This improved efficiency is considered the influence of increased Jsc by enhanced surface area. The UV-adsorption test and IPCE, impedance spectroscopy supports this consideration.

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