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## Hydrothermal Growth of ZnO Nanorods for Photoelectrochemical Cell: Effect of Growth Time and Temperature

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**Abstract.** A thin layer of zinc oxide (ZnO) film was predeposited onto indium tin oxide (ITO) glass via dip-coating method followed by hydrothermal growth. Pretreated ITO glasses were dipped into precursor solution containing zinc acetate, diethanolamine (DEA) and ethanol. After three layers of ZnO seed layers were deposited, the samples were annealed at 350 °C. This was followed by 4 hours hydrothermal growth in silicon oil bath at two different temperatures, 90 °C and 120 °C. The morphological, structural and compositional properties of the prepared films were characterized using field emission scanning electron microscopy (FESEM), energy dispersive x-ray spectroscopy (EDX) and ultraviolet-visible spectroscopy (UV-Vis). Current density and photoelectrochemical conversion efficiencies were evaluated by in electrolyte mixture of sodium sulfide (Na<sub>2</sub>S) and sodium sulfite (Na<sub>2</sub>SO<sub>3</sub>) alkaline aqueous solution.

**Keywords:** ZnO; Nanorods; Hydrothermal growth; Dip-coating; Photoelectrochemical cell