

### Fabrication of High-Performance UV photodetector with Length-Controlled ZnO Nanorod

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Recently, many research groups have investigated zinc oxide (ZnO) for wide range of applications. Especially, ZnO nanorod is an excellent UV-sensing material because it has wide band gap (3.34 eV) and prominent photoconductivity when exposed to UV. To synthesize ZnO nanorod, solution-processing technique has attracted attention because it is able to synthesize ZnO nanorod via a simple, inexpensive process on a large scale.

In this study, we synthesized ZnO nanorods successfully by solution-processing method and controlled the lengths of nanorods by varying the precursor concentration of solutions between 0.5M and 3M in growth step. The morphologies of the nanorods were characterized using scanning electron microscopy (SEM). The crystal structures of the ZnO nanorods were confirmed by X-ray diffractometer (XRD). Then, we fabricated solution-processed ZnO nanorod based UV photodetectors and characterized the sensitivity of the devices with different lengths of ZnO nanorod. The devices showed better UV sensing properties when the lengths of ZnO nanorod are increased.