

Abstract Submitted  
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**Photoresponse of Single Mn doped ZnO nanowires in UV application**<sup>1</sup> MON-SHU HO, Department of Physics, National Chung Hsing University — This paper reports the fabrication of Mn doped ZnO nanowires(NWs) using a low temperature hydrothermal method. The resulting nanowires were characterized using field emission scanning electron microscopy, energy dispersive spectroscopy, X-ray diffraction analysis, transmission electron microscopy and photoluminescence spectroscopy. A single Mn doped ZnO NW UV sensor with high performance sensing capabilities was then assembled using a focused ion beam technique. The photoresponse of the ZnO NW sensors was investigated under irradiation from 365 nm and 400 nm ultra-violet lamps. The proposed sensor exhibited rapid photoresponse speeds and short recovery times with a photocurrent ratio ( $\Delta I = I_{\text{light}} / I_{\text{dark}}$ ) superior to that of pure ZnO NW sensor. A possible mechanism to account for adsorption-desorption of oxygen and water molecules on Mn/ZnO NW surfaces was finally proposed to give the expression.

<sup>1</sup>Photoresponse of Single Mn doped ZnO nanowires in UV application

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