Abstract Submitted
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Current-Voltage Characteristics of ZnO and MgZnO Nanoparticle Films[1] CHRIS BERVEN, SIRISHA CHAVA, RAMEY ABDELRAHAMAN, ABBY HEIEREN, JOHN MORRISON, JESSE HUSO, LEAH BERGMAN, University of Idaho, Dept. of Physics, Moscow ID — We report on initial results on the measurement of the current-voltage (I-V) characteristics of films of ZnO and $Mg_xZn_{1-x}O$ (x = 0.15) nanoparticles. The nanoparticles were prepared using wet chemical techniques on insulating thermally grown SiO_x (15 um thick) Si substrates. Contact to the nanoparticles was by laying down gold wires, about 2 mm apart, across the as-prepared nanoparticle films. On top of the gold wires was put a glass cover slip on the back of which was painted conducting silver paint. On top of the cover-slip was a portion of a glass slide which was compressed down onto the cover slip and wires to ensure good electrical contact to the nanoparticles. This arrangement enabled the application of a gate voltage to the nanoparticle device. Our initial results show that the I-V characteristics are non-linear and gating can modulate the I-V characteristics. The ZnO device shows no hysteresis whereas the MgZnO device shows hysteresis in the I-V characteristics only for negative source-drain bias. The measurements were performed in a environmental chamber, in the dark at 18 mTorr and 2 x 10^7 Torr, for the ZnO and MgZnO films, respectively.

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