

Abstract Submitted
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Effects of Annealing on the Electronic Properties of ZnO Nanowires in Field Effect Transistors¹ ABHISHEK PRASAD, ARCHANA PANDEY, YOKE KHIN YAP — Controlled doping of ZnO nanowires (ZnO NWs) is important for their application in field effect transistors (FETs). However, native defects are always presented in the as-grown ZnO NWs and have complicated the doping efforts. Here we report on effective elimination of these native defects. Our ZnO NWs were grown in a double-quartz tube thermal CVD system [1, 2]. These samples were then subjected for a series of annealing in various gas ambients, durations, and temperatures. All these samples were characterized by SEM, TEM, Raman and PL spectroscopy. FETs fabricated by these ZnO NWs were characterized to correlate all these investigation. Results indicate that hydrogen annealing suppresses some native defects in ZnO NWs and enhance their conductivity by three orders of magnitude.

[1]. Prasad et al, in Chapter 4 of *Sensors Based on Nanostructured Materials* (Springer, 2009).

[2]. Mensah et al, *Appl. Phys. Letts.* 90, 113108 (2007).

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