

Supplementary Material

Spectroscopic evidence for Li doping creation shallow V_{Zn} in ZnO

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Supplementary information:

ZnO nanoparticles with mean particle sizes in the range of 50~90 nm (Sigma-Aldrich, 99.99%) were also employed to verify the reproducibility of the 3 eV emission induced by H_2O_2 oxidation. As shown in Figure.S1, treating with diluted H_2O_2 solution (6 wt %) suppressed donor defects and produced the 414 nm emission. Further increase H_2O_2 solution concentration to above 10 % can fully remove the donor-bound exciton at 368 nm and generated the deep level emission at 550 nm. These phenomena apparently demonstrate that abundant V_{Zn} were created after H_2O_2 treatment.

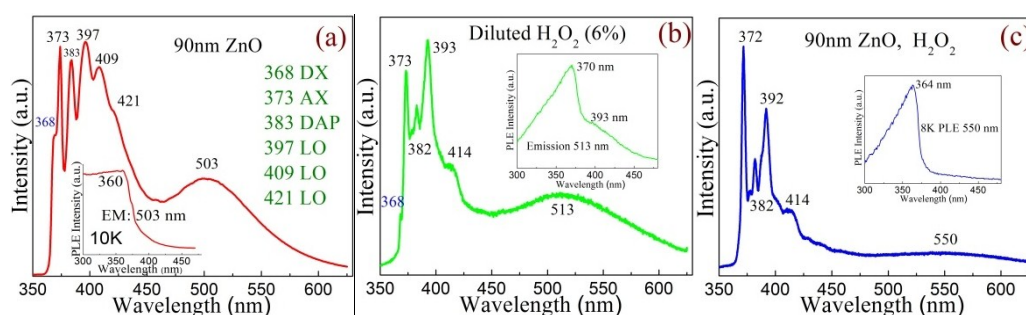


Fig. S1. 10 K PL spectra of pristine 90 nm ZnO (a), treated with 6 % H_2O_2 (b) and 30% H_2O_2 solution (c). The inset shows the corresponding PLE spectra for the green emission. All of the spectra are recorded at 10 K.