

Poster Presentation

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Role of N 2p Vacancy in P-TYPE ZnO thin films

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The Nitrogen-doped ZnO (ZnO:N) thin films were prepared by remote plasma in situ atomic layer deposition (ALD) method. We investigate how nitrogen doping percentage affects the electronic structure of ZnO thin films by x-ray absorption near-edge structure (XANES) and x-ray photoelectron spectroscopy (XPS). It reveals that the O 2p-Zn 3d hybridization enhanced with the increasing of nitrogen doping percentage while the O 2p-Zn 4sp hybridization exhibits no significant variation. Photoluminescence (PL) and x-ray diffraction (XRD) measurements have also been used to discuss the atomic structure and photoluminescence properties of ZnO thin films. On the nitrogen related defects, the formation of the occupation of oxygen sites with nitrogen doping percentage is the main factor to affect the atomic and electronic structures of ZnO:N thin films.

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