Electronic Supplementary Material (ESI) for RSC Advances.

Electronic Supplementary Information

Zn interstitials and O vacancies responsible for *n*-type ZnO: What does the emission spectra reveal?

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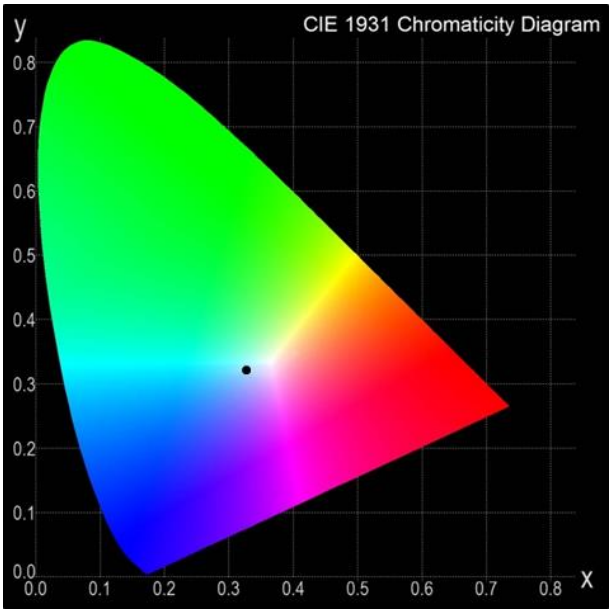

Figure S1: Chromaticity coordinate plotted on CIE-1931 diagram for ZnO/ITO emission spectrum at λ_{exc} = 375 nm. The tristimulus values are (X, Y, Z) = (104.8, 100.0, 118.7) (normalizing for Y = 100). Using these values, the calculated xy chromaticity values to be x = 0.3239, y = 0.3091. We converted these chromaticities to the CIE 1960 UCS u and v coordinates: u = 0.1690, v = 0.3167, which gives the correlated color temperature (CCT) = 5980 K on the Planckian locus. This temperature is near to 6504 K, which is the CCT of D-65 illuminant, the CIE standard for daylight.

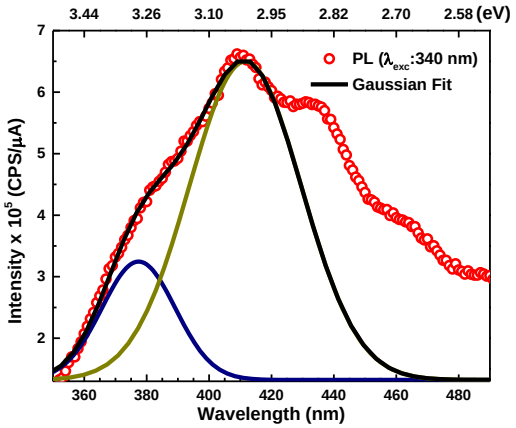

Figure S2: Spectral decomposition of the broad NBE PL peak for ZnO/Zn at λ_{exc} = 340 nm. UV (377 nm) and violet (411 nm) components and the envelope are shown.

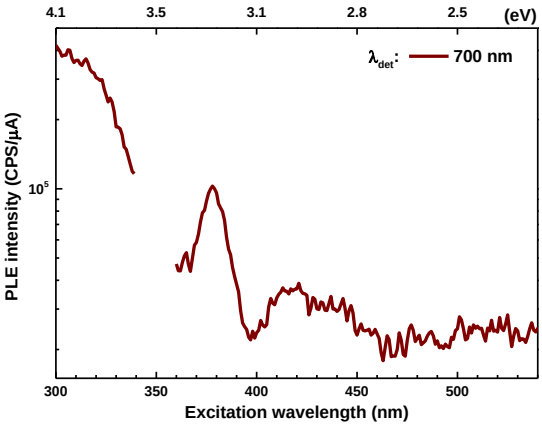

Figure S3: PLE spectra at λ_{det} = 700 nm for ZnO/Zn nanorods in a range of 300 nm – 540 nm.

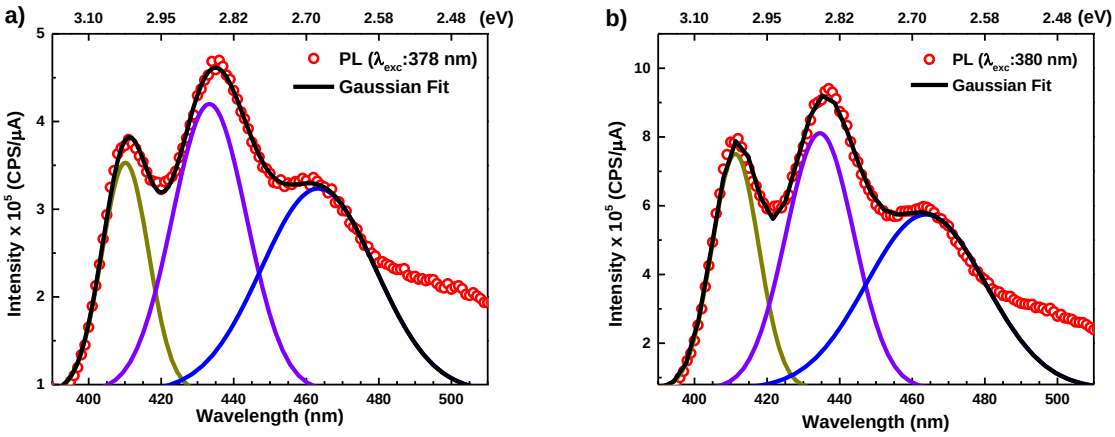

Figure S4: Spectral decomposition of the violet-blue PL peaks for a) ZnO/ITO and b) ZnO/Zn.

Table S1: Centre wavelength and full-width-half-maximum (FWHM) of UV and violet-blue PL peaks for ZnO/ITO and ZnO/Zn samples.

ZnO/ITO			ZnO/Zn		
Peak centre (nm)	FWHM (nm)	FWHM (eV)	Peak centre (nm)	FWHM (nm)	FWHM (eV)
378.7 ± 0.2	15.2 ± 0.7	0.13	377.4 ± 0.8	27.7 ± 1.1	0.23
410.1 ± 0.1	15.1 ± 0.2	0.11	411.2 ± 0.1	15.2 ± 0.2	0.11
434.7 ± 0.2	25.6 ± 0.7	0.16	434.5 ± 0.1	22.0 ± 0.5	0.14
463.3 ± 0.6	37.1 ± 2.0	0.21	463.7 ± 0.6	38.5 ± 1.5	0.24

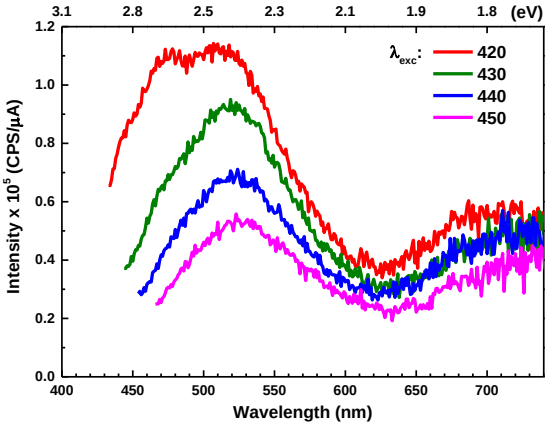

Figure S5: Excitation dependent photoluminescence spectra of ZnO/Zn nanorods for higher excitation wavelengths. The spectra show the dominating green emission at 530 nm, which decays with increasing λ_{exc} and the red emission at 700 nm similarly as ZnO/ITO.