

SUPPORTING INFORMATION

Influence of Al doping on Microstructural, Optical and Photocatalytic Properties of Sol-Gel Based Nanostructured Zinc Oxide Films on Glass

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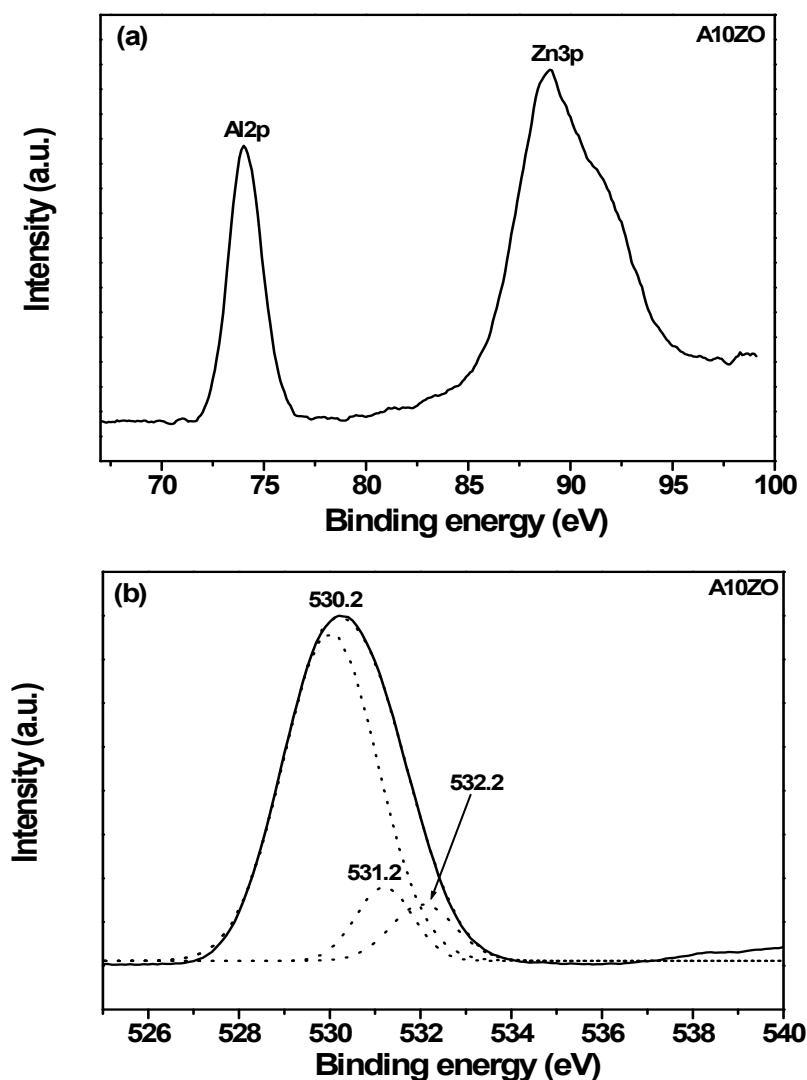


Figure S1: XPS data of A10ZO film. (a) The binding energies of Zn3p along with Al2p core levels; (b) the binding energy of O1s core level and its Gaussian-fitted components.

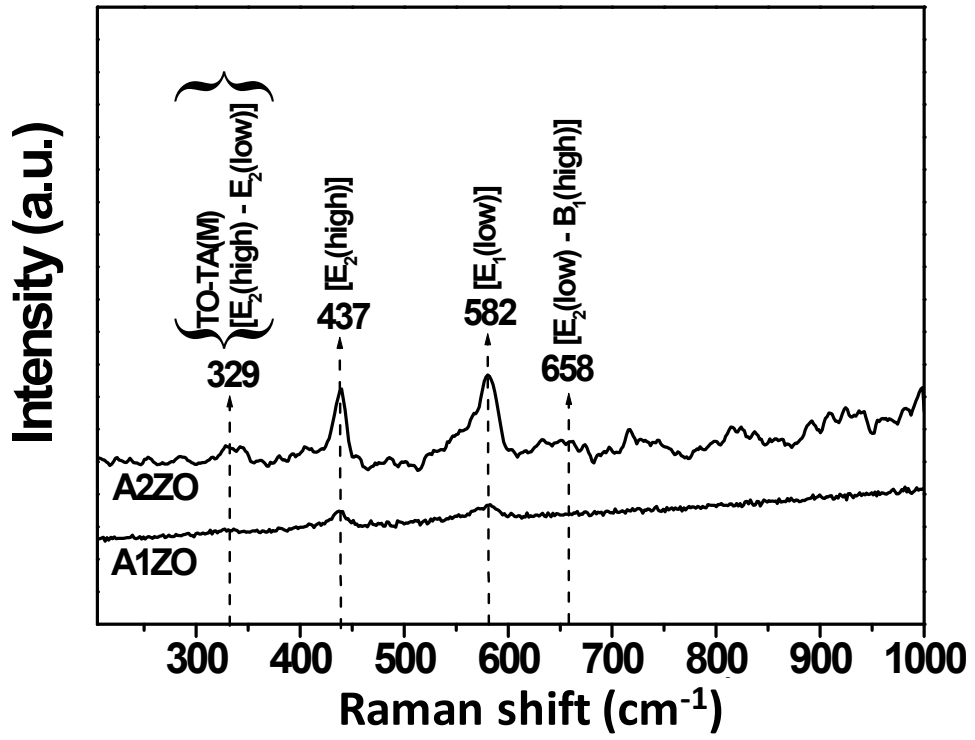


Figure S2: Substrate corrected Raman spectra of A1ZO and A2ZO films.

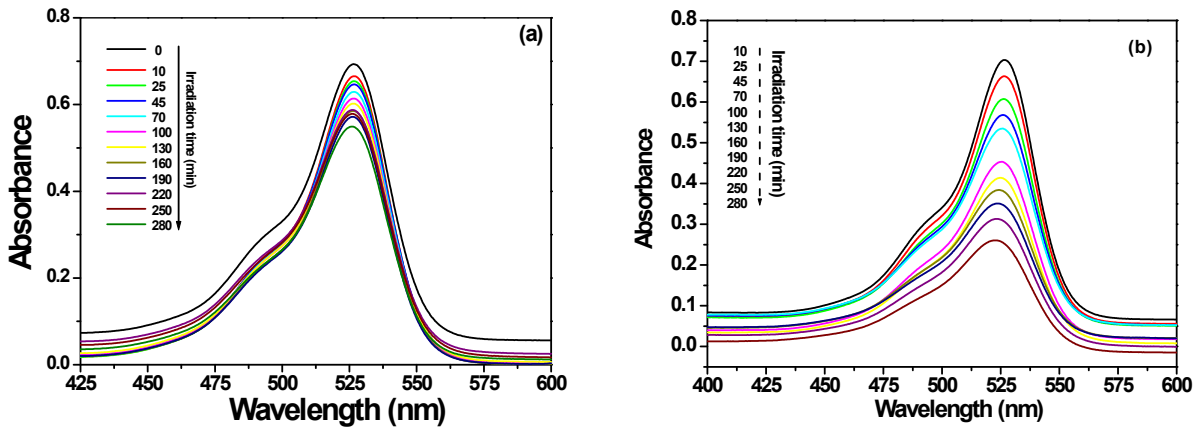


Figure S3: Absorption spectra of remnant dye (Rh-6G) concentration at different time of UV ($\lambda = 254 \text{ nm}$) exposure using (a) A0ZO, (b) A4ZO and (c) A10ZO films as photocatalysts.

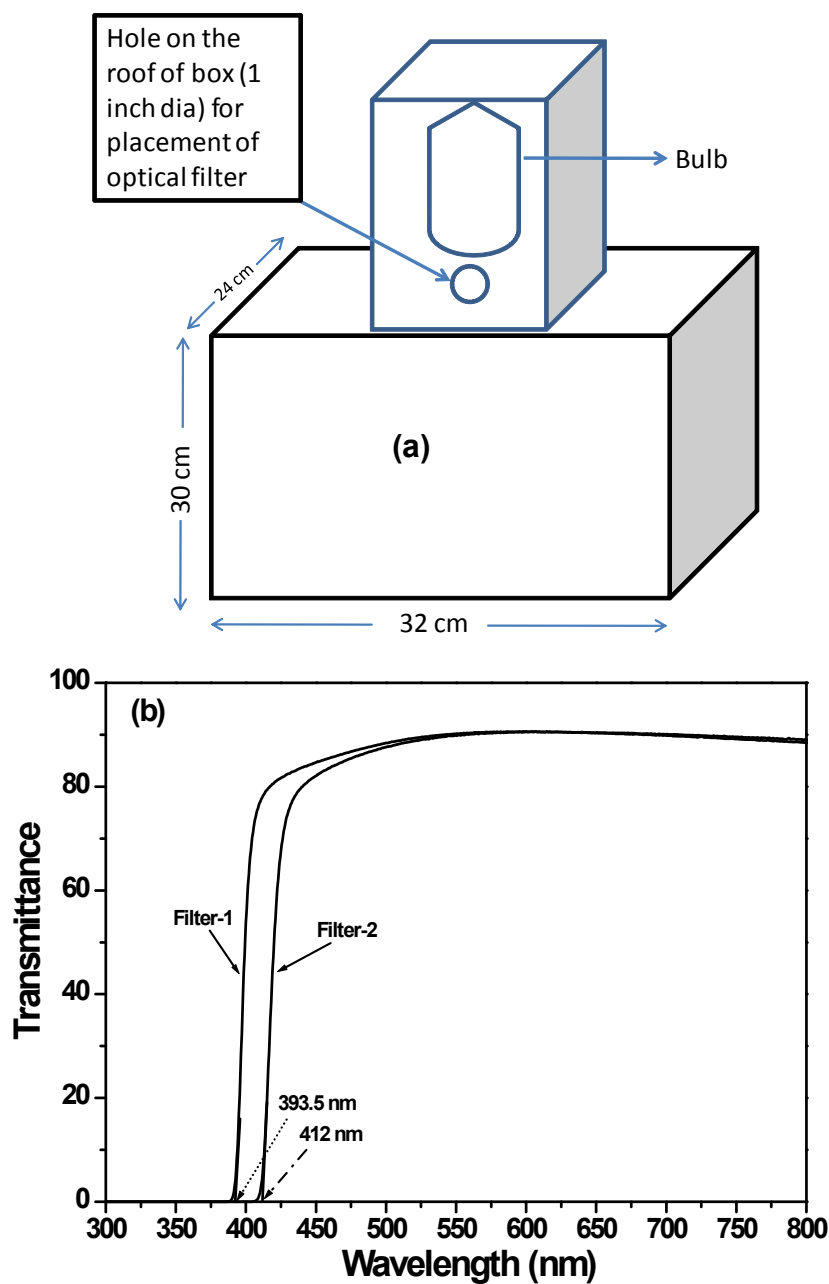


Figure S4: (a) Scheme showing the set-up for photocatalytic activity (PA) measurement under visible light exposure using the UV cut off glass filters (Filter-1 and Filter-2 having cut off wavelengths 393.5 nm and 412 nm respectively). (b) Visible transmittance spectra of the UV cut off glass filters for the PA measurement using A4ZO film as photocatalyst.

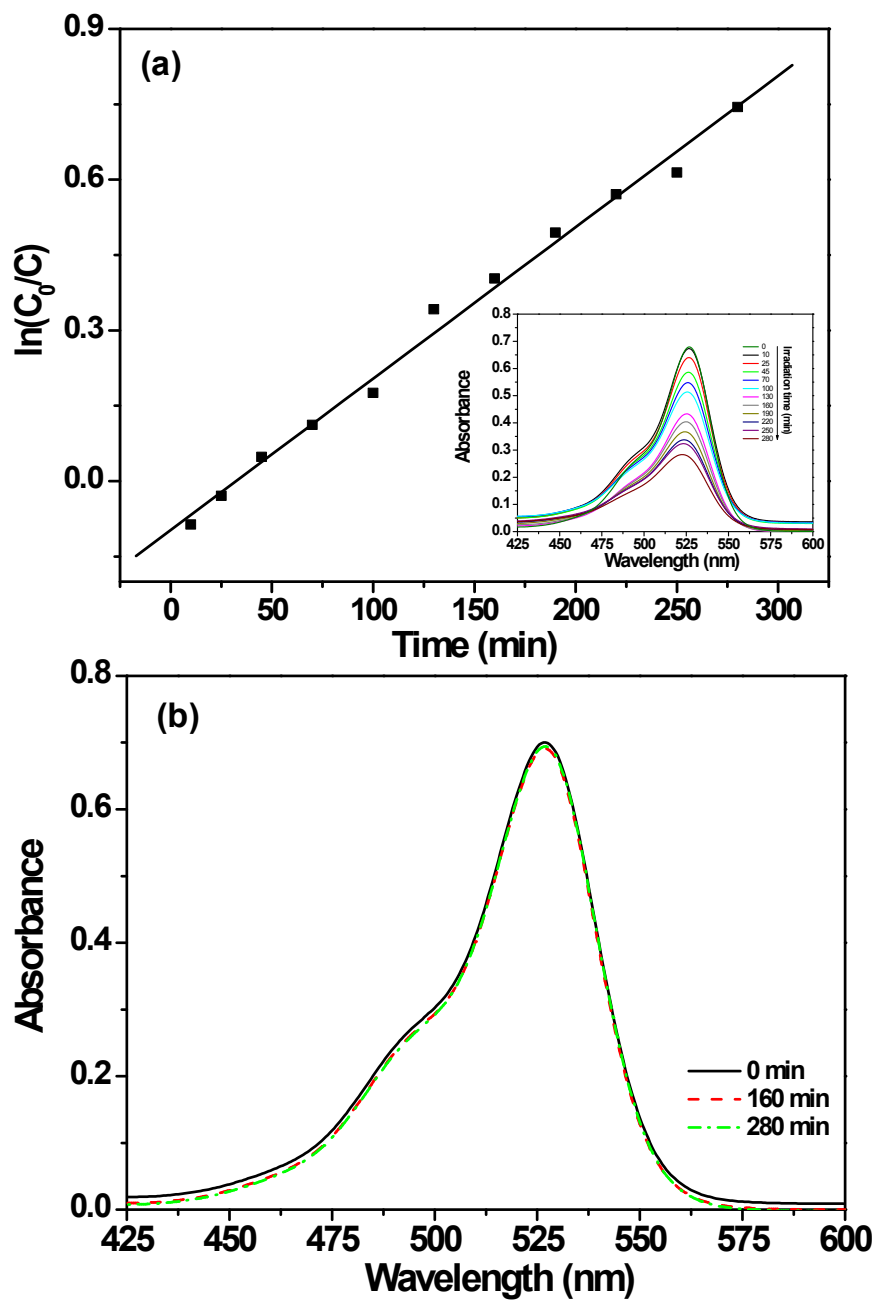


Figure S5: (a) Determination of photodecomposition first order rate constant 'k' (inset shows the absorption spectra of remnant dye (Rh-6G) concentration at different exposure time using Filter-1 for A4ZO film as photocatalyst). (b) Absorption spectra of remnant dye (Rhodamine 6G) concentration at different time of light exposure for A4ZO film as photocatalyst using Filter-2.

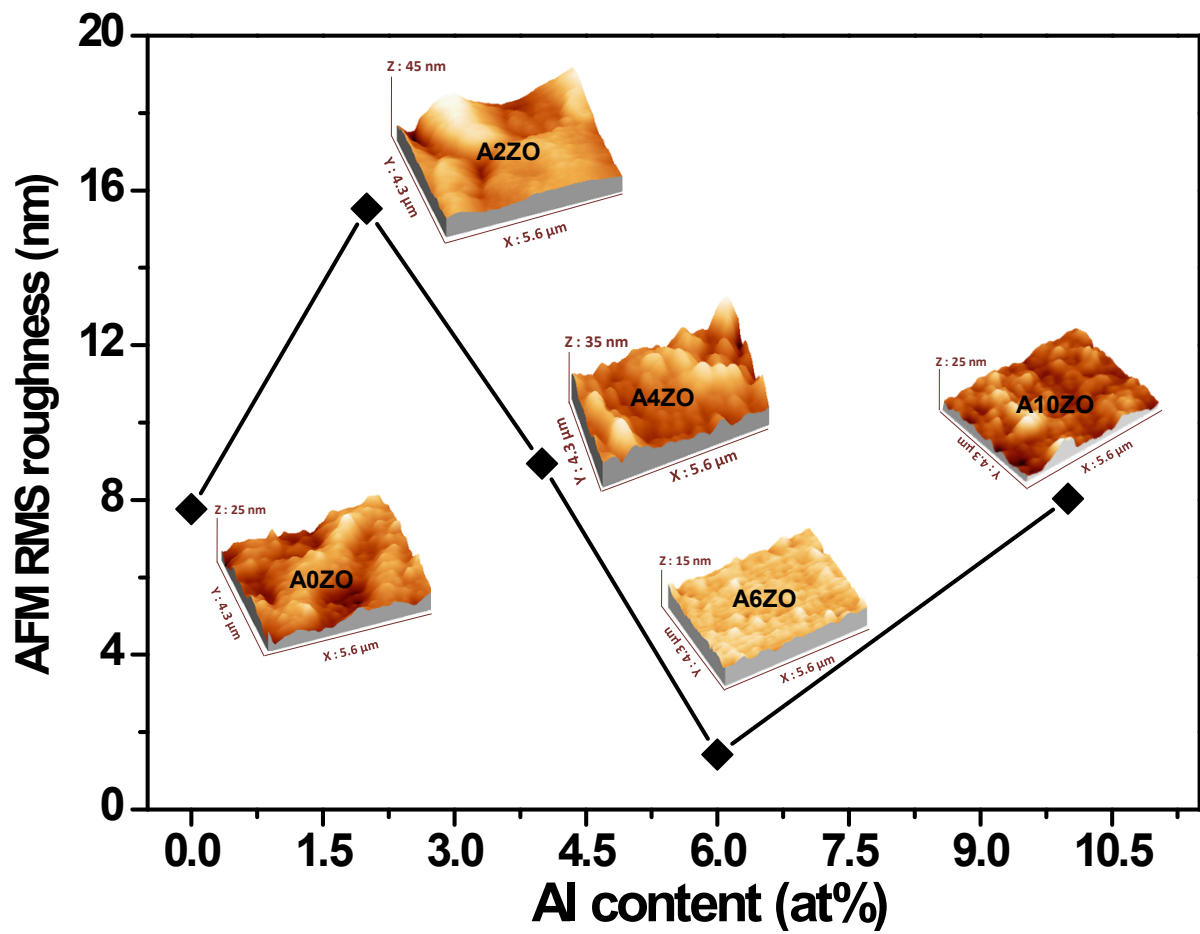


Figure S6: A plot shows the change of AFM RMS surface roughness with dopant content of the films. The plot also displays the respective AFM images of the films.

Table S1: Relative peak intensity (I) of photoluminescence emission at 398 nm with respect to the intensity of emissions at 424 nm, 450 nm, 485 nm and 530 nm

<i>Sample designation</i>	I_{398}/I_{424}	I_{398}/I_{450}	I_{398}/I_{485}	I_{398}/I_{530}
A0ZO	0.66	0.80	1.14	2.99
A2ZO	0.78	1.02	1.47	4.16
A4ZO	0.98	1.52	2.83	10.74

Table S2: Relative S1, S2 and S3 XPS O1s signals with respect to total O1s signals (S1+ S2+ S3) (calculated from individual signal peak area)

<i>Sample designation</i>	$S1/(S1+S2+S3)$	$S2/(S1+S2+S3)$	$S3/(S1+S2+S3)$
A0ZO	0.33	0.31	0.36
A4ZO	0.42	0.53	0.05
A10ZO	0.80	0.11	0.09