Electronic Supplementary Material (ESI) for Nanoscale.

Supporting Information for

Broadband Light Trapping Based on Periodically Textured ZnO Thin Films

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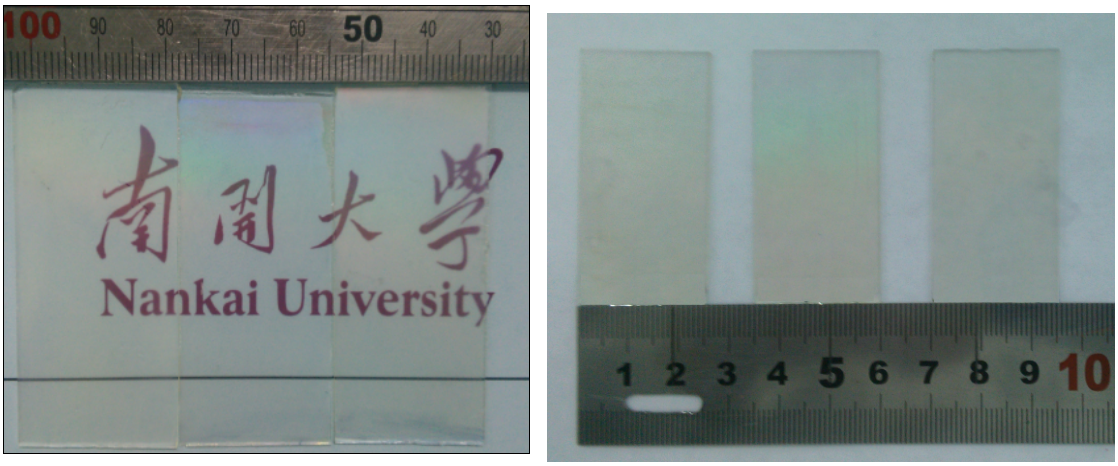
Photograph of the periodically transparent textured ZnO thin films based on PS spheres template



The periodically textured ZnO thin films fabricated with different diameters of PS spheres

Using the self-assembled PS template combined with double-layer deposition method, we can fabricate different periods ZnO thin films. The AFM images are shown in the Figure S1, and the diameter of PS spheres, etching time, thicknesses of first layer, thicknesses of second layer, and Sheet resistances show in the table S1.

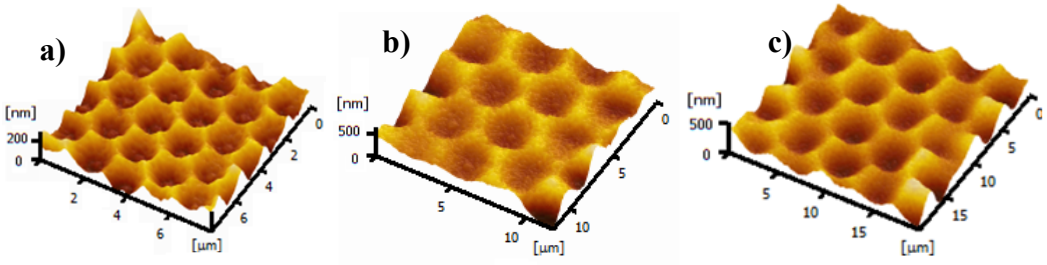


Figure S1. AFM images of the periodically textured ZnO thin films fabricated with different diameters of PS spheres: a) 1500nm, b) 3000nm, c) 4000nm

Table S1. The diameter of PS spheres, etching time, thicknesses of first layer, thicknesses of second layer, and Sheet resistances

Diameter of PS spheres(nm)	Etching time(min)	Thicknesses of first layer (nm)	Thicknesses of second layer AZO (nm)	Sheet resistances($\Omega \bullet sq^{-1}$)
1500	8	500(AZO)	500	9.5
3000	13	900(HZO)	500	8.5
4000	14	1000(HZO)	500	9.5

The spectra of the TT and the haze factor for periodically textured ZnO fabricated with different

diameters of PS spheres corresponding the substrates shown in table.S1 is in Figure S2.

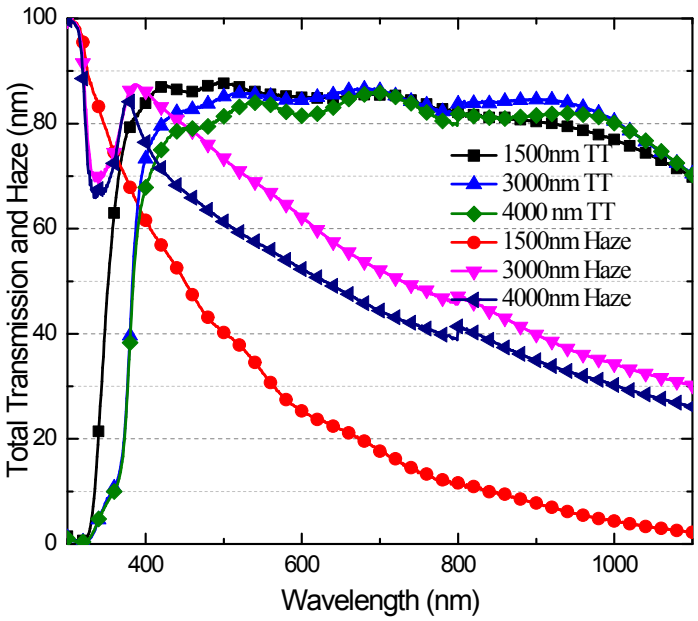


Figure S2. Spectra of the TT and the haze factor for periodically textured ZnO fabricated with different diameters of PS sphere

The absorption spectra of the periodically double-layer HZO/AZO TCFEs fabricated with different etching times are also shown in Figure S3.

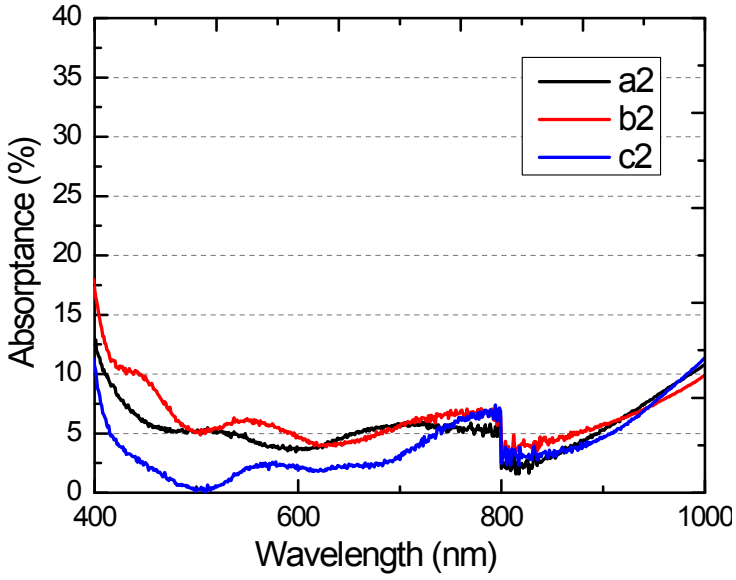


Figure S3. The absorption spectra of the periodically double-layer HZO/AZO TCFEs fabricated with different etching times.