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Supplementary information

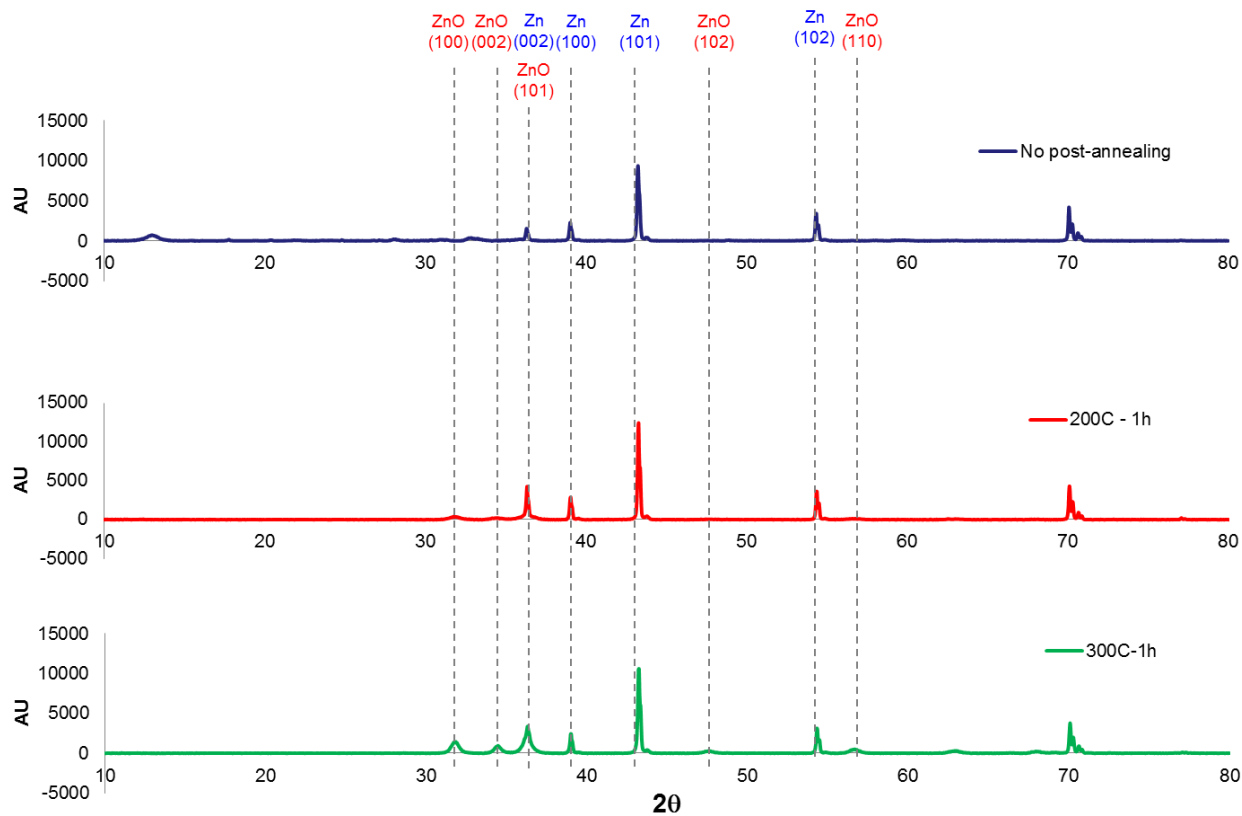


Fig S1. XRD pattern of non-annealed (a) and post annealed (b,c) ZnO nanostructured films produced with  $\text{KHCO}_3$  (0.1M)

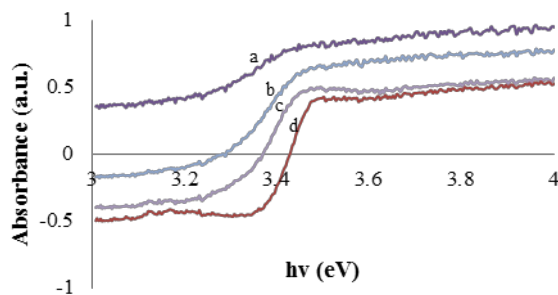


Fig S2. UV/Vis absorbance intensity spectra of ZnO films produced using 0.1 M sodium hydroxide as the electrolyte and different anodization conditions: a) 40 V, 1 h, 10 °C; b) 40 V, 1 h, 0 °C; c) 1 V, 1 h, 10 °C; d) 40 V, 1 min, 10 °C.

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**Table S1.** Detailed effects on morphology for each parameter combination. Green colour represents the anodization conditions where specific nanostructures can be obtained.

Anodization conditions \ Nanostructures	Low pH	Low pH	Low pH	Low pH	Neutral pH	Neutral pH	Neutral pH	Neutral pH	High pH	High pH	High pH	High pH
	Low V Short t	Low V Long t	High V Short t	High V long t	Low V Short t	Low V Long t	High V Short t	High V long t	Low V Short t	Low V Long t	High V Short t	High V long t
No nanostructure												
Pitting - corrosion												
1D aligned arrays - Hydrophobic												
1D aligned arrays - Hydrophilic												
2D arrays - Hydrophobic												
2D arrays - Hydrophilic												
3D arrays - Hydrophobic												
3D arrays - Hydrophilic												

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