

High Defect Nanoscale ZnO Films with Polar Facets for Enhanced Photocatalytic Performance

Premrudee Promdet^a, Raul Quesada-Cabrera^a, Sanjayan Sathasivam^a, Jianwei Li^a, Arreerat Jiamprasertboon^{a,b}, Jian Guo^a, Alaric Taylor^c, Claire J. Carmalt^a and Ivan P. Parkin^{a*}

^a Materials Chemistry Centre, Department of Chemistry, University College London, 20 Gordon Street, London WC1H 0AJ, UK

Fax: (+44) 20-7679-7463

E-mail: i.p.parkin@ucl.ac.uk

^b School of Chemistry, Institute of Science, Suranaree University of Technology, 111 University Avenue, Muang, Nakhon Ratchasima, 30000, Thailand

^c Department of Electronic & Electrical Engineering, University College London, Torrington Place, London WC1E 7JE, UK

Supporting Information

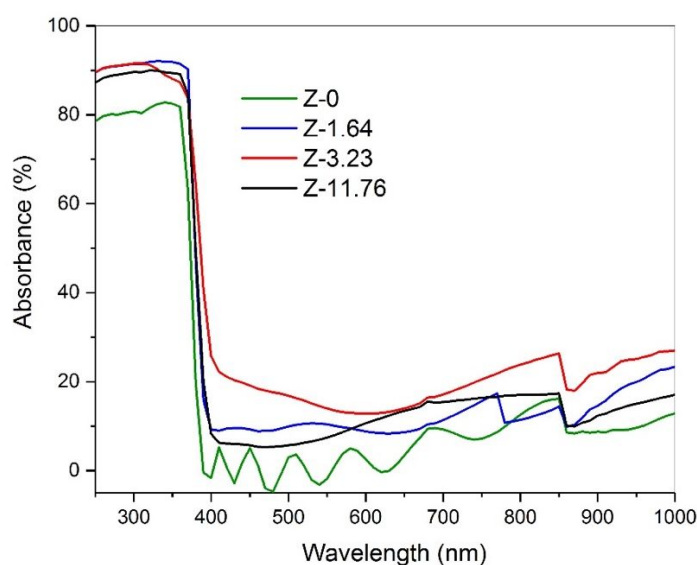


Fig. S1. Diffuse reflection absorbance of ZnO thin films prepared with different mixtures of methanol and acetic acid with additional volumes of acetic acid into the precursor mixtures being 0 mL (0 %vol, Z-0); 1 mL (1.64 %vol, Z-1.64); 2 mL (3.23 %vol, Z-3.23); and 8 mL (11.76 %vol, Z-11.76).

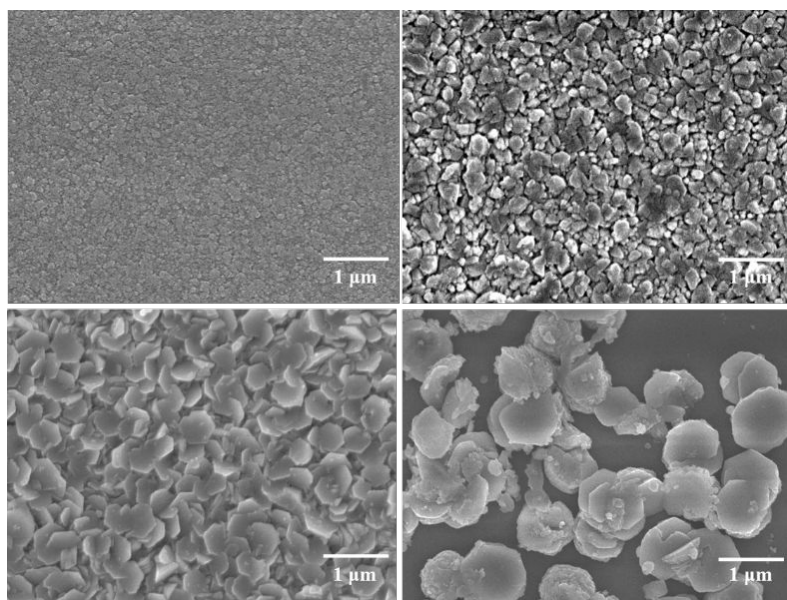


Fig. S2. Scanning electron microscopy (SEM) images showing the impact of annealing on the microstructure of the ZnO films with the additional volumes of acetic acid being : (a) 0 mL (0 %vol); (b) 1 mL (1.64 %vol); (c) 2 mL (3.23 %vol); and (d) 8 mL (11.76 %vol).

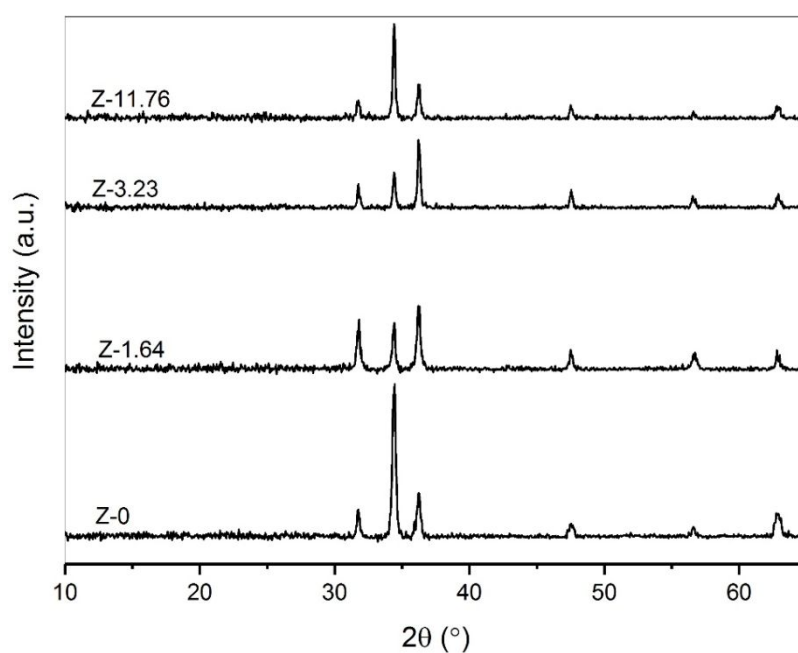


Fig. S3. (a) X-ray diffraction analysis of annealed ZnO films prepared with different mixtures of methanol and acetic acid. The additional volumes of acetic acid into the precursor mixtures were (a) 0 mL (0 %vol), Z-0; (b) 1 mL (1.64 %vol), Z-1.64; (c) 2 mL (3.23 %vol), Z-3.23; and (d) 8 mL (11.76 %vol), Z-11.76.