Electronic Supplementary Material (ESI) for Materials Advances.

SUPPLEMENTARY MATERIAL

Tuneable polarity and enhanced piezoelectric response of ZnO thin films grown by metal-organic chemical vapour deposition through the flow rate adjustment

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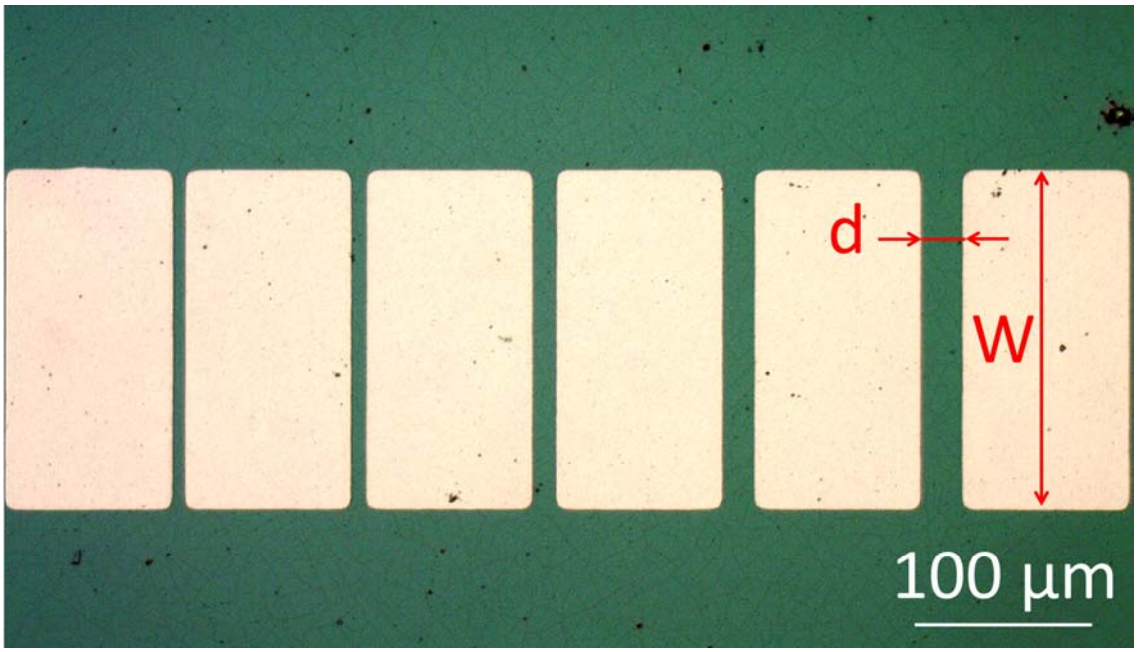

Fig. S1 TLM pattern using Au contacts on the surface of ZnO thin films.

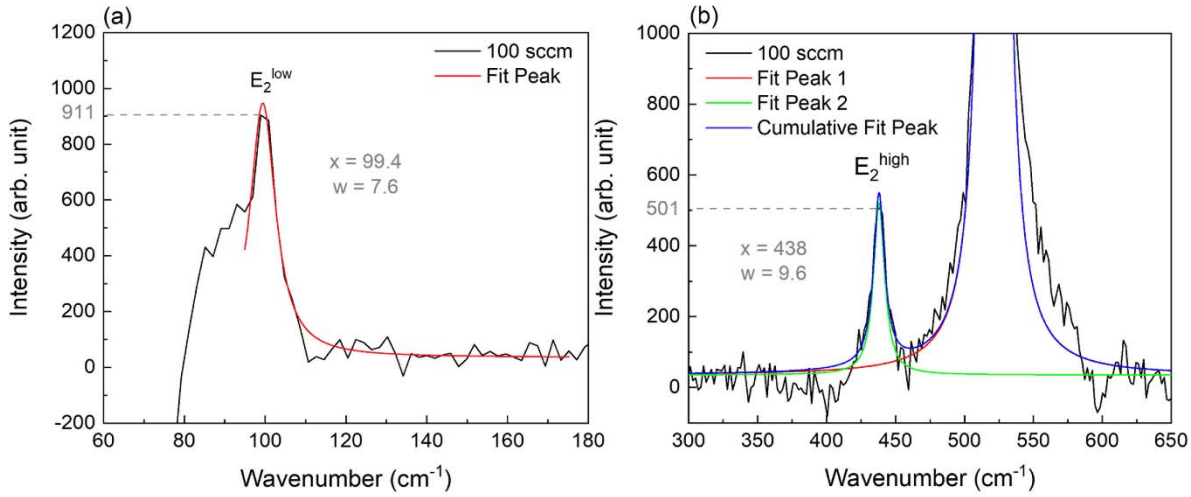

Fig. S2 (a) E_2^{low} and (b) E_2^{high} mode-related Raman line positions and intensities of the ZnO thin film grown with the 100 sccm O_2 gas and 0.5 g/min DEZn solution flow rates. The lines were fitted using a Lorentzian function in Origin 2018b software.

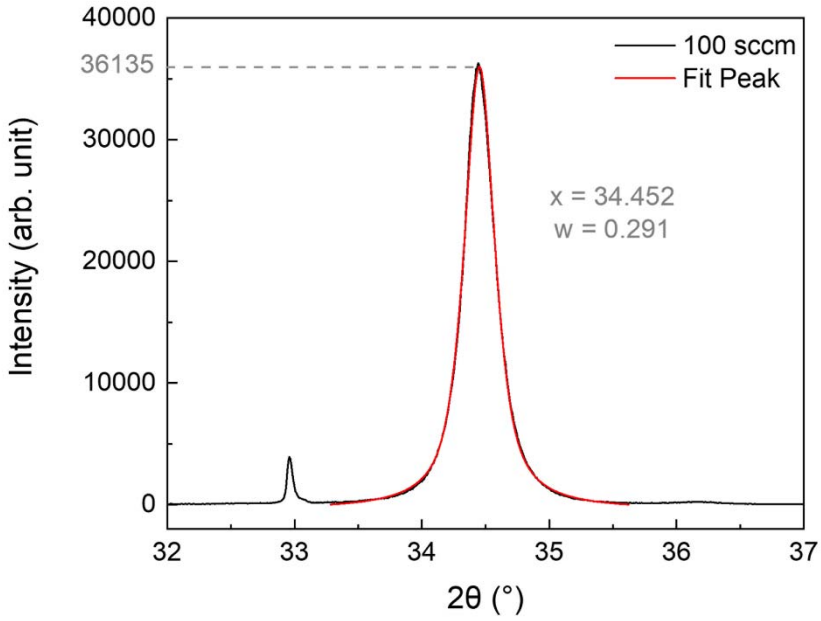

Fig. S3 002 diffraction peak position and FWHM of the ZnO thin film grown with the 100 sccm O_2 gas and 0.5 g/min DEZn solution flow rates. The peak was fitted using a Pseudo-Voigt function in Origin 2018b software.

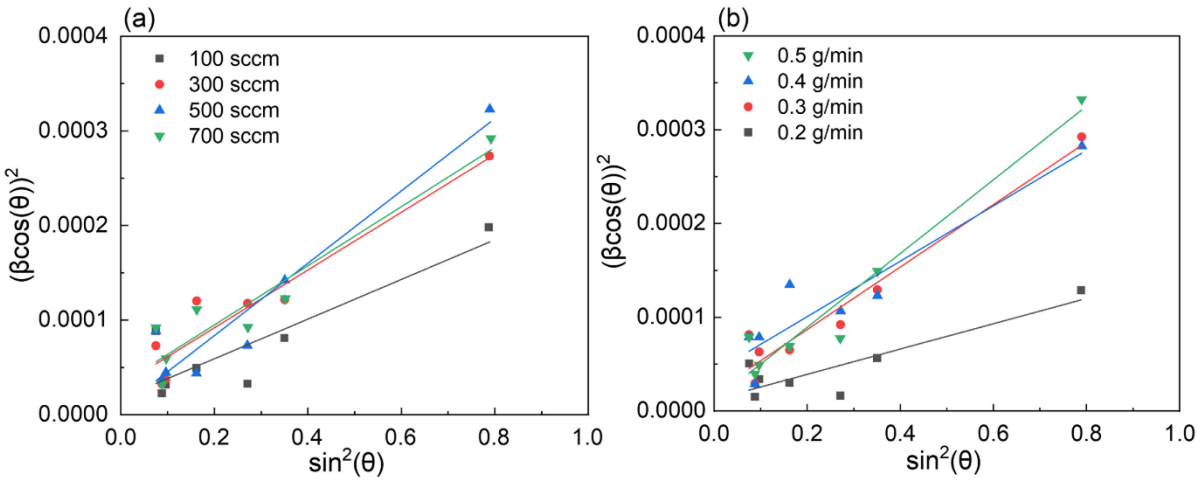

Fig. S4 Williamson-Hall plots of ZnO thin films as a function of the (a) O_2 gas and (b) DEZn solution flow rates.

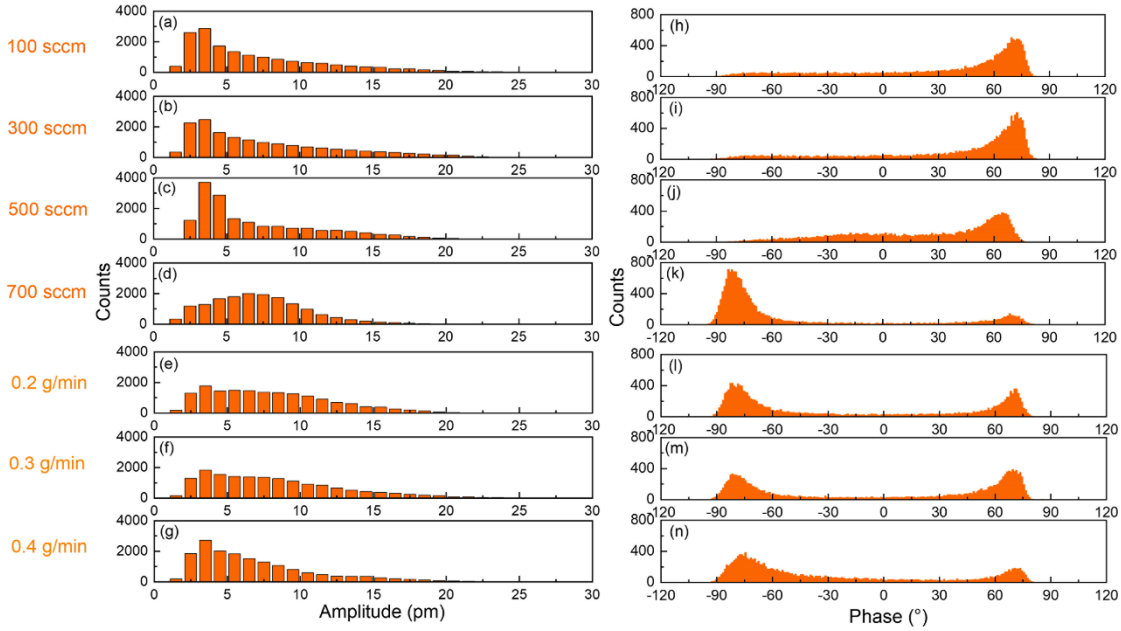

Fig. S5 (a-g) Raw amplitude and (h-n) phase histograms of ZnO thin films deduced from PFM measurements.