

Supporting information

Ultrathin 2D IZO Film Transistor Printed via Liquid InZn Alloy: Insights into the Oxidation Behavior and Enhanced Mobility Properties

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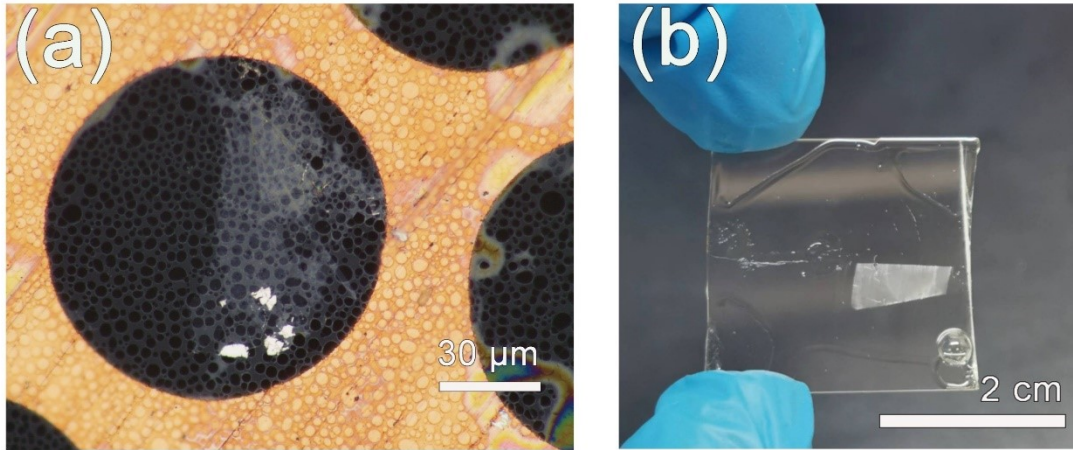


Fig. S1 (a) 2D IZO films on TEM grid, (b) IZO films adhered with photoresist on quartz glass.

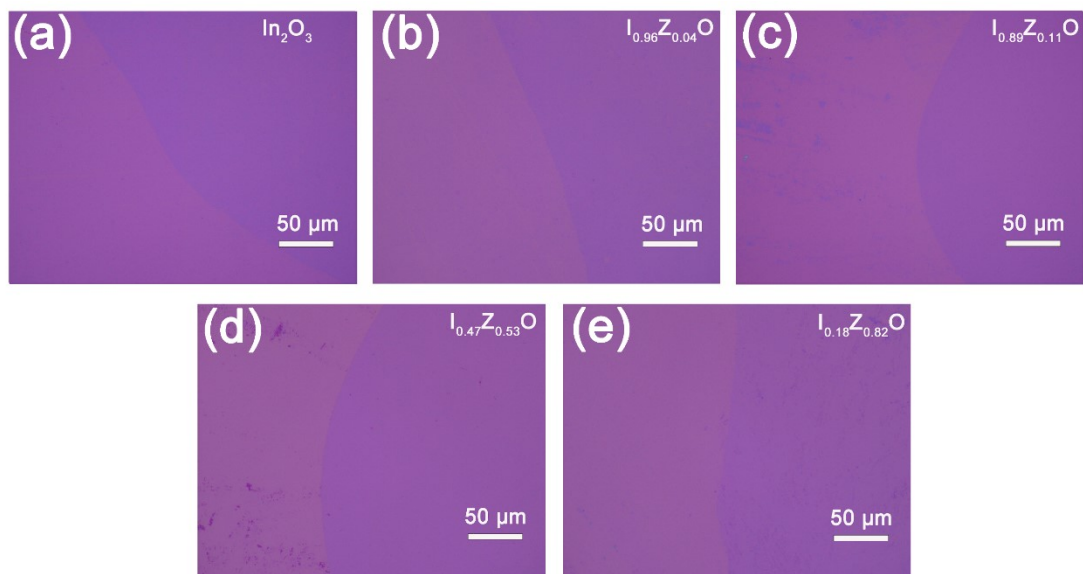


Fig. S2 Optical images of (a) In_2O_3 , (b) $\text{I}_{0.96}\text{Z}_{0.04}\text{O}$, (c) $\text{I}_{0.89}\text{Z}_{0.11}\text{O}$, (d) $\text{I}_{0.47}\text{Z}_{0.53}\text{O}$ and (e) $\text{I}_{0.18}\text{Z}_{0.82}\text{O}$ films.

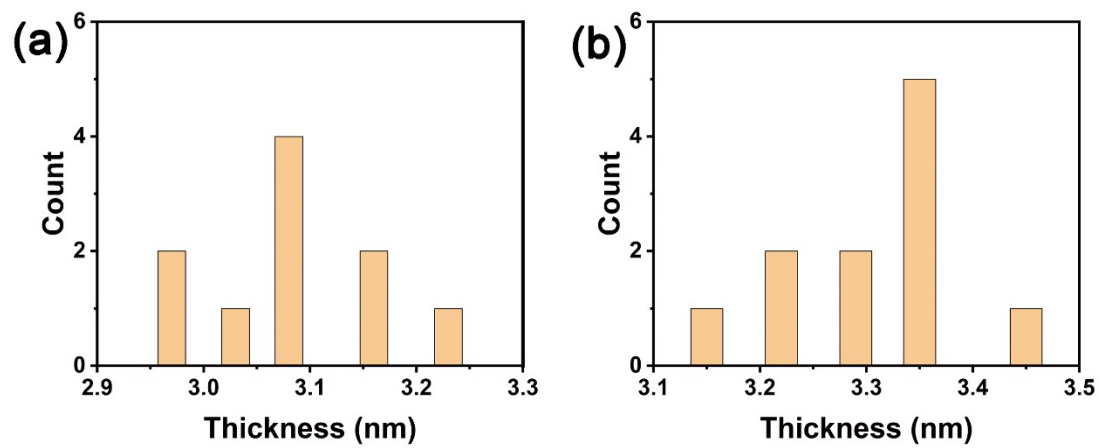


Fig. S3 Statistical distribution of layer thicknesses of In₂O₃ and IZO over ten samples each.

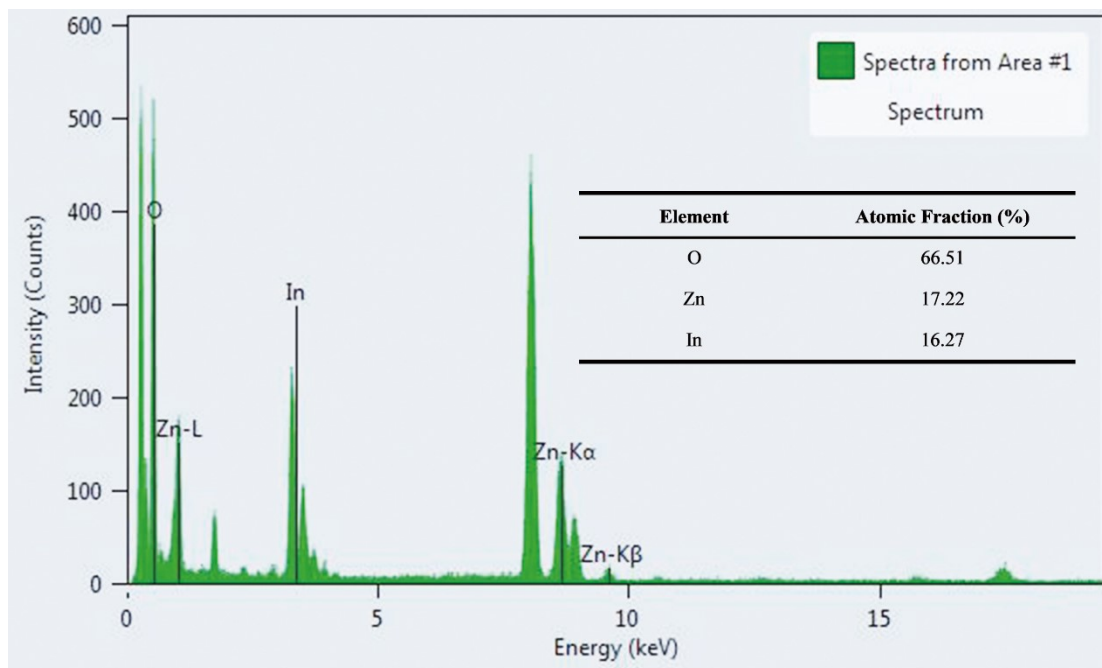


Fig. S4 TEM-EDS spectrum of $I_{0.47}Z_{0.53}O$.

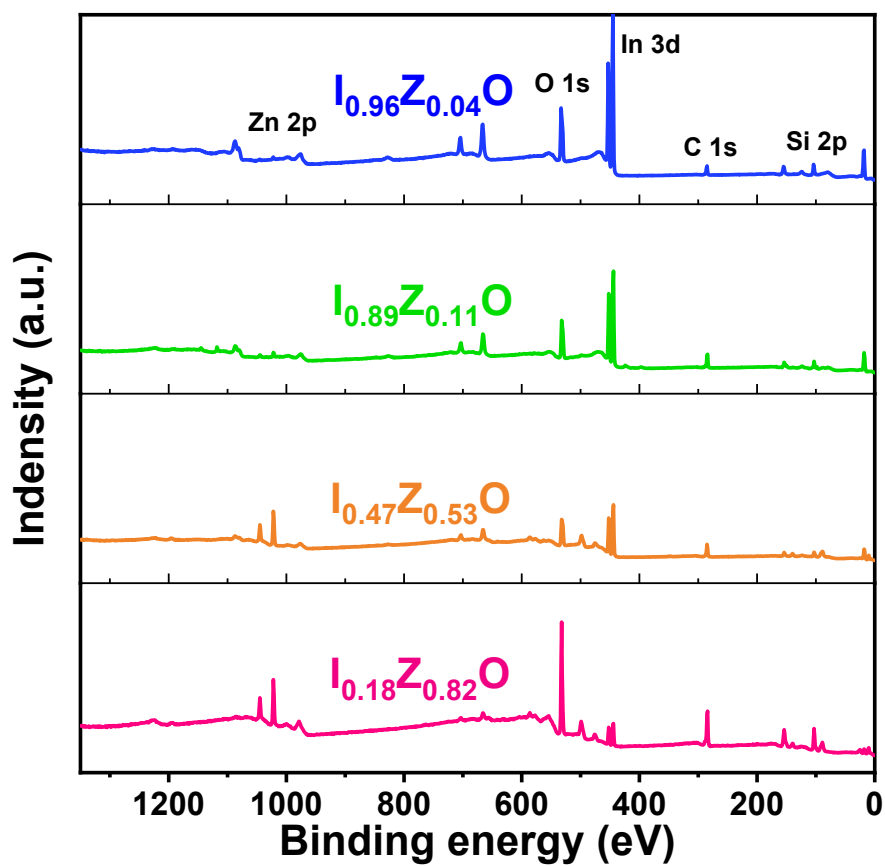


Fig. S5 XPS survey spectra of 2D IZO films with different content of Zn.

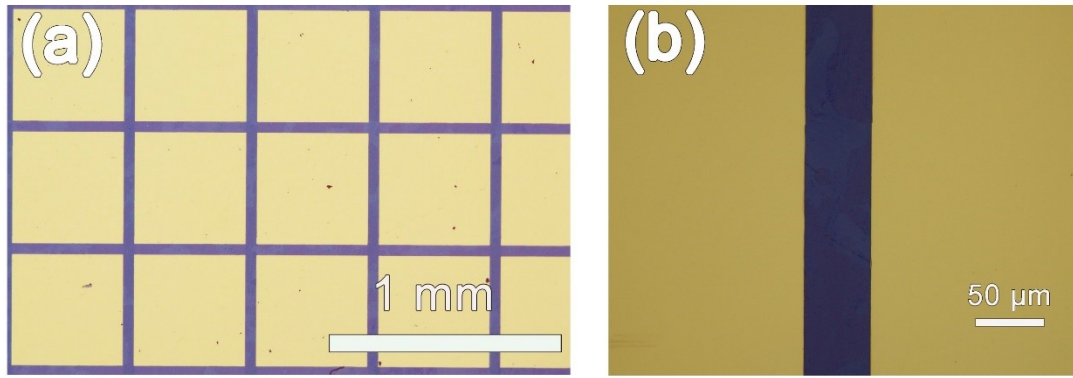


Fig. S6 Periodic rectangular patterns of two-dimensional IZO films prepared by pulsed laser deposition on SiO_2 substrates.

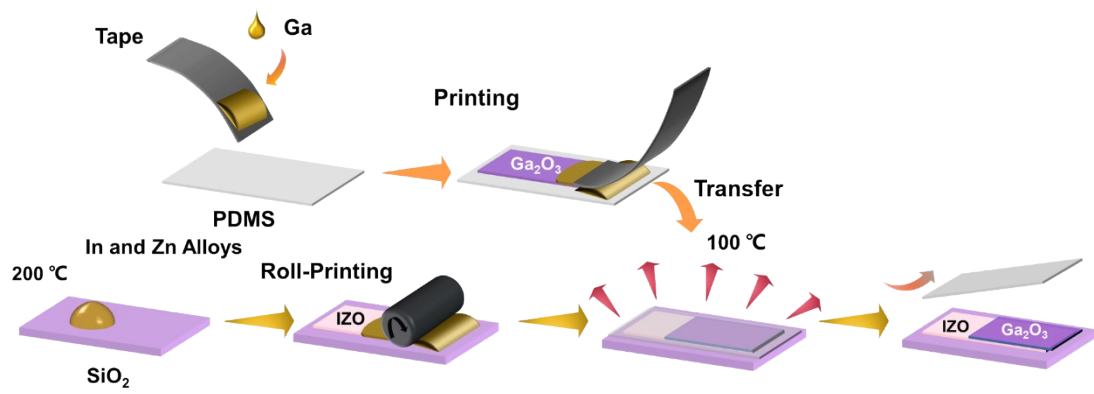


Fig. S7 Detailed process schematic for preparing IZO/Ga₂O₃ thin films using liquid In-Zn alloy and liquid Ga.

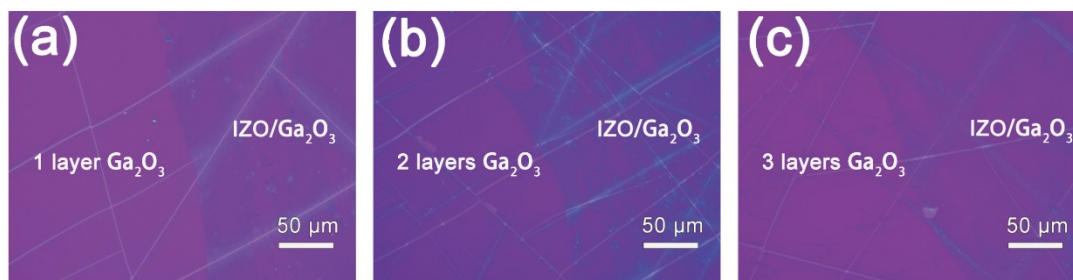


Fig. 8 (a-c) Optical images of Ga₂O₃ layers with different numbers of layers covering IZO.

Table S1 The XPS O1s peak fitting results of $\text{I}_{0.18}\text{Z}_{0.82}\text{O}$ and $\text{I}_{0.18}\text{Z}_{0.82}\text{O}/\text{Ga}_2\text{O}_3$.

Materials	M-O (Stoichiometric) (%)	M-O (Oxygen Deficient) (%)
$\text{I}_{0.18}\text{Z}_{0.82}\text{O}$	51	49
$\text{I}_{0.18}\text{Z}_{0.82}\text{O}/\text{Ga}_2\text{O}_3$	38	62