Remarkable Productivity and Performance of Flexible Indium Zinc Oxide Thin Film Transistors through Composition Engineering via Atmospheric Pressure Spatial Atomic Layer Deposition

Chi-Hoon Lee[1], Kwang Su Yoo[1], Dong-Gyu Kim[1], Chang-Kyun Park[2], Jin-Seong Park[1]*

[a]Division of Materials Science and Engineering, Hanyang University, 222 Wangsimni-ro, Seongdong-gu, Seoul 04763, Republic of Korea

[2] Nano Convergence Leader Program for Materials, Parts, and Equipments, Hanyang University, 222 Wangsimni-ro, Seongdong-gu, Seoul, 04763, Republic of Korea.

(*corresponding author: jsparklime@hanyang.ac.kr)

Supplemental Document

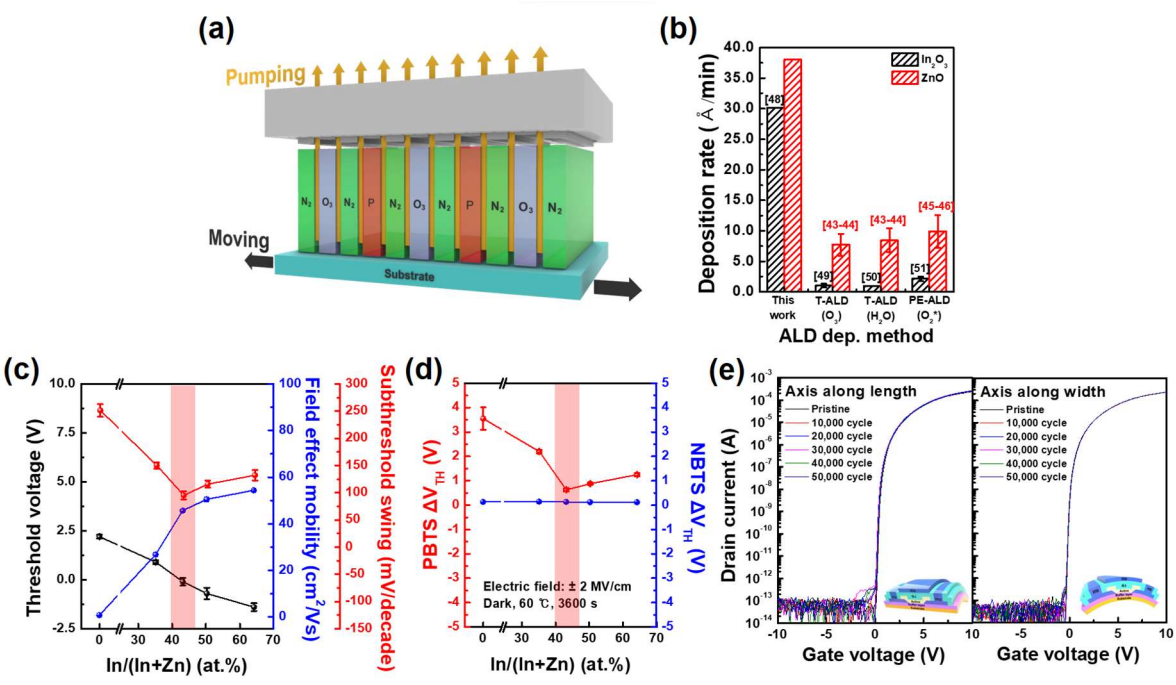

Figure 1 Illustrative schematic of the (a) AP S-ALD system. (b) The deposition rates for In_2O_3 and ZnO films, grown by AP S-ALD are documented, including films using O_3, H_2O, and O_2 plasma as reactants for reference. Variation in the (c) electrical properties and (d) reliability (PBTS, NBTS) of devices depending on the metal cation composition. (e)

Confirmation of the stable device performance maintained even after a total of 50,000 bi-axial bending cycles.