Electronic Supplementary Information

High-quality indium-gallium-zinc oxide films synthesized by atomic layer deposition using a single cocktail precursor based on a liquid-delivery system and their applications for transistors and inverters

Sang-Joon Park[a], Se-Ryong Park[a], Woo-Seok Jeon[b], Jong Mu Na[c], Jun Hyung Lim[b], Sukhun Ham[c], Yung-Bin Chung*[b] and Tae-Jun Ha*[a]

[a] *Department of Electronic Materials Engineering, Kwangwoon University, Seoul 01897, Republic of Korea*

[b] *Samsung Display Co., LTD., Gyeonggi-Do 17113, Republic of Korea*

[c] *JI-Tech Co., Ltd., Jeollabuk-do 54002, Republic of Korea*

**Corresponding author E-mail address: taejunha0604@gmail.com, yungbin.chung@samsung.com*

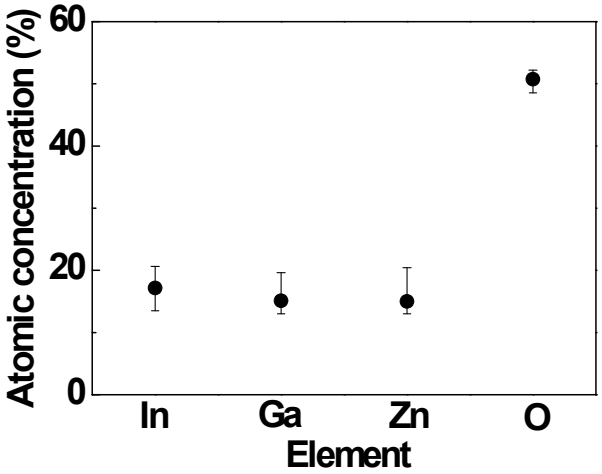

Fig. S1 Atomic concentration of In, Ga, Zn, and O in 20 ALD-derived IGZO films, extracted from XPS spectra.

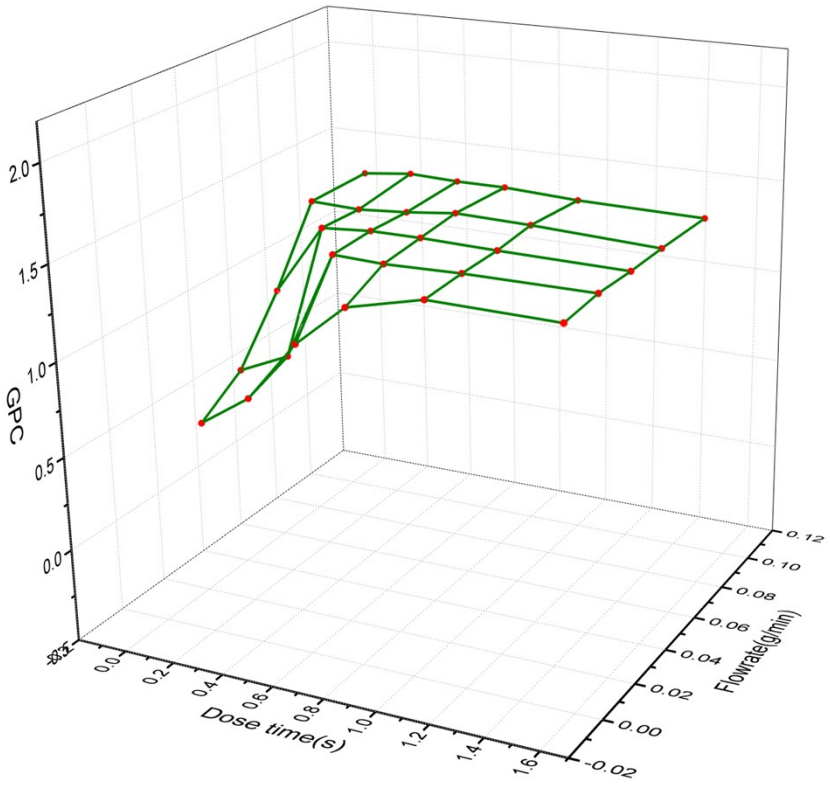

Fig. S2. GPC as a function of dose time and flow rate.

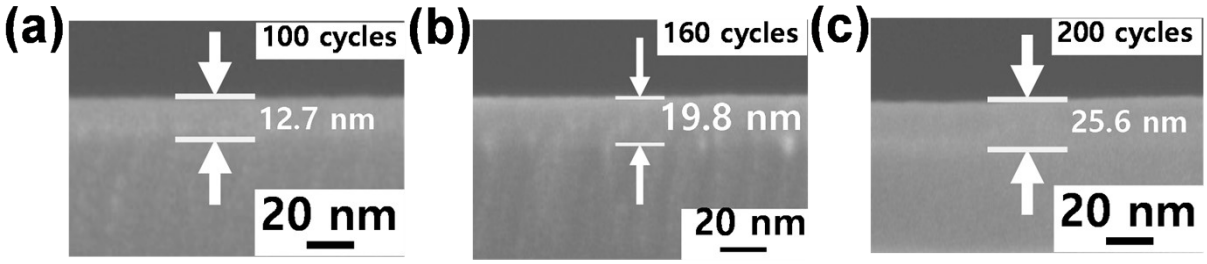

Fig. S3. Cross-sectional SEM images of the ALD-derived IGZO films synthesized with (a) 100, (b) 160, and (c) 200 deposition cycles.