Remarkable Productivity and Performance of OLED Encapsulation through Growth dynamics control via Atmospheric Pressure Spatial Atomic Layer Deposition

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Supplemental Document

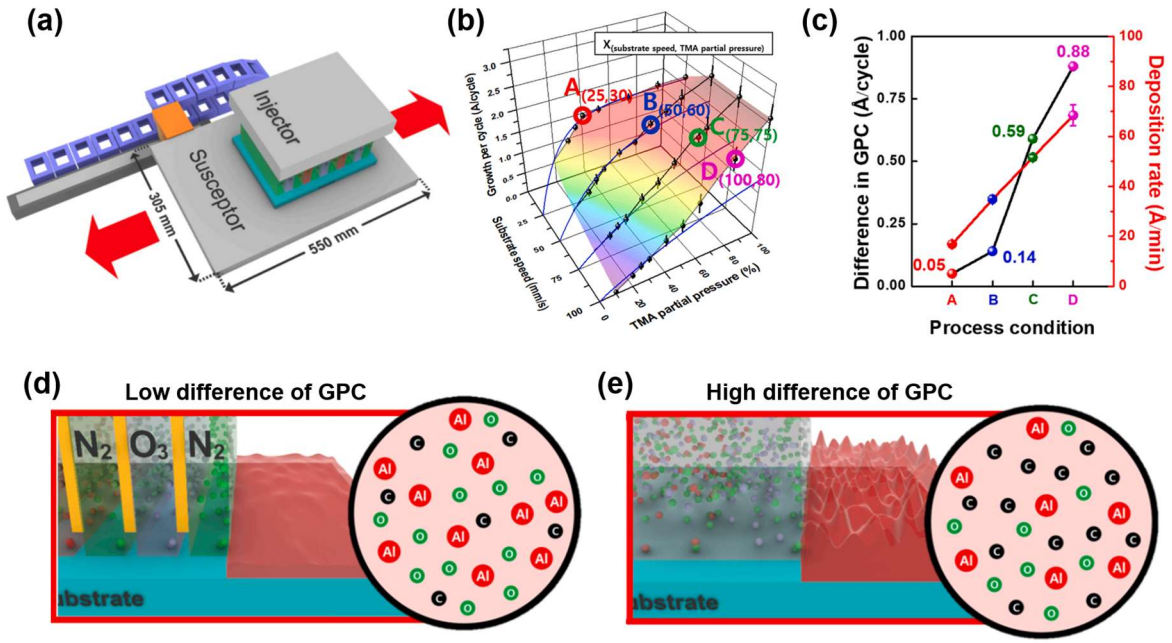

Figure 1. (a) A schematic representation of the AP S-ALD system. (b) Establishment of four

process conditions with similar GPC values based on the evaluation of Al_2O_3 growth behavior influenced by two factors affecting TMA exposure: substrate speed and TMA partial pressure. (c) The differences between the GPC of the four process conditions and the calculated GPC based on the Langmuir adsorption model, as well as the deposition rate. (d, e) Conceptual depiction of the differences in C-related impurity content within Al_2O_3 and surface roughness, corresponding to the variations in GPC.

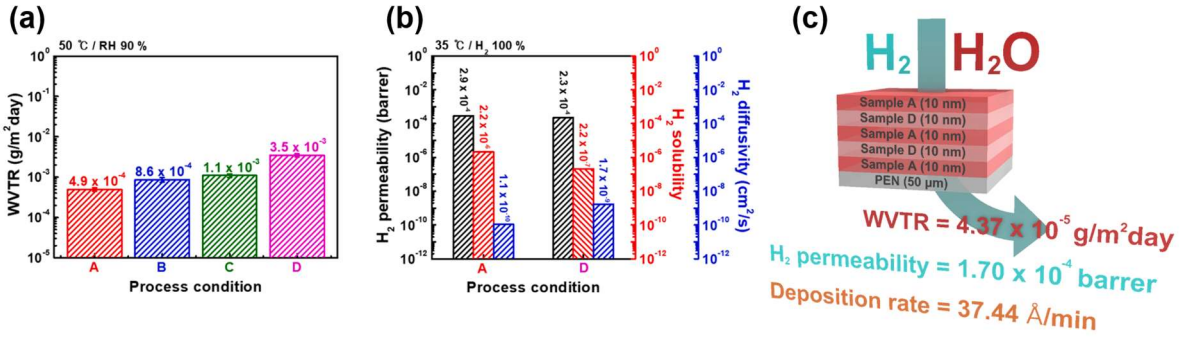

Figure 2. Evaluation results of Al_2O_3 thin films grown under the four process conditions with varying differences in GPC for (a) water vapor transmission rate and (b) H_2 permeability. Barrier performance and deposition rate of Al_2O_3 thin films grown using a hybrid process consisted with process conditions A and D.

Acknowledgements

This research was supported by LG Display (or LG Display Incubation Center Program) (C2022006834) and the National Research Foundation of Korea, South Korea (NRF) grant funded by the Korea government (MSIT) (No. RS-2023-00260527).