Supplementary Information

Enhanced Dielectric Properties of Alternative NO-Gas-Based SiO_2 Films via Plasma-Enhanced Chemical Vapor Deposition for High-Performance Indium–Gallium–Zinc Oxide Thin-Film Transistors

Se-Ryong Park[†a], Eun-Ha Kim[†a], Yunhui Jang[b], Youngjin Kang[c], Yong-Hoon Kim *[c], Junsin Yi *[b], and Tae-Jun Ha*[a]

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

[b]Department of Display Engineering, Sungkyunkwan University, Suwon 16419, Republic of Korea.

[c]School of Advanced Materials Science and Engineering, Sungkyunkwan University, Suwon 16419, Republic of Korea.

Corresponding Author E-mail: taejunha0604@gmail.com, junsin@skku.edu, yhkim76@skku.edu

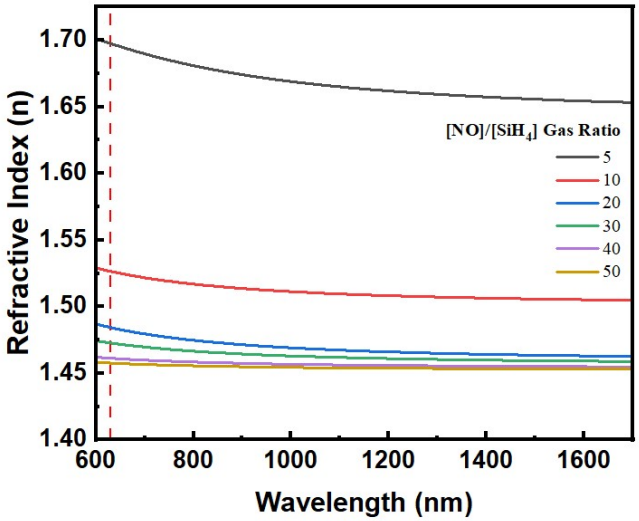

Fig. S1 Refractive index of NO-based SiO_2 films for different [NO]/[SiH_4] gas ratios in the wavelength range of 600 to 1700 nm.

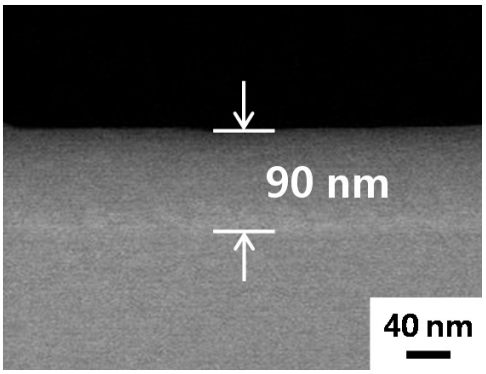

Fig. S2 Cross-sectional SEM image of the N_2O-gas-based SiO_2 film prepared by PECVD.

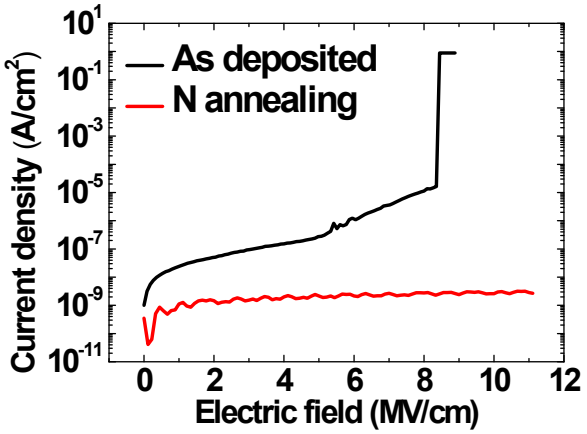

Fig. S3 Dielectric breakdown of NO-based SiO_2 films before and after annealing.

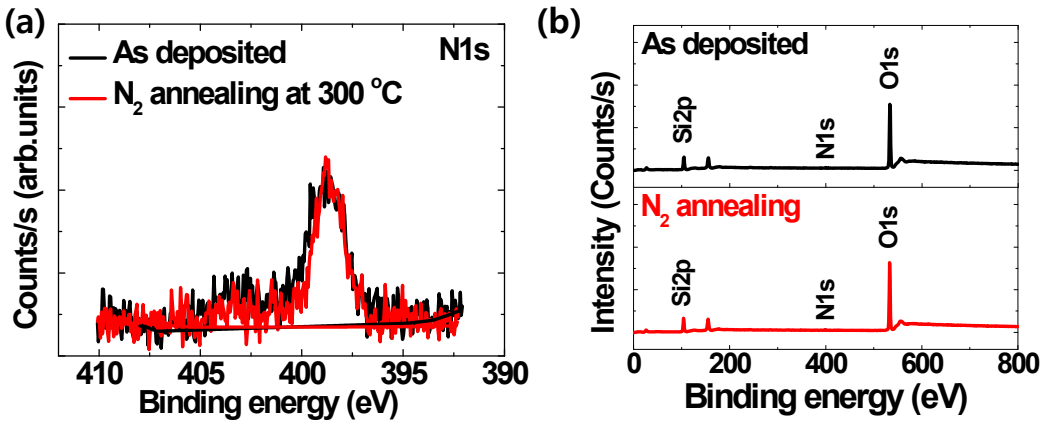

Fig. S4 (a) N1s and (b) wide XPS spectra of NO-based SiO_2 films as deposited and N_2 annealing.

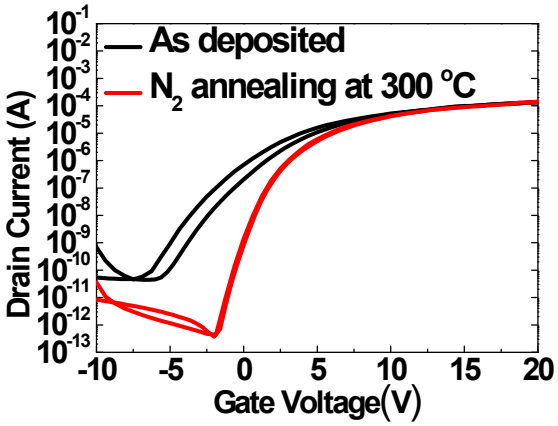

Fig. S5 Hysteresis characteristics of IGZO TFTs with NO-based SiO_2 films as deposited and N_2 annealing.