Supporting Information

Performance enhancement of carbon nanotube thin film transistor
by yttrium oxide capping

Jiye Xia¹, Jie Zhao¹, Hu Meng², Qi Huang¹, Guodong Dong¹, Han Zhang¹, Fang Liu,
Defeng Mao², Xuelei Liang¹,* , Lianmao Peng¹,*
¹Key Laboratory for the Physics and Chemistry of Nanodevices and Department of Electronics,
Peking University, Beijing 100871, P. R. China;
²BOE Technology Group Co., Ltd., Beijing 100176, P. R. China

S1. Y₂O₃ capping results of CNT-TFTs on Si substrate

Fig. S1 Transfer characteristics of 22 CNT-TFTs before (a) and after (b) Y₂O₃ capping. These devices, (W, L) = (20μm, 10μm), were measured at V_d = -1V. (c) I_on of CNT-TFTs before (black), after (red) Y₂O₃ capping and their ratios, which were measured at V_g = -35V. (blue). (d) Extracted hole mobility correspondingly.
S2. Typical SEM image of deposited CNT thin film. The tube density is ~ 20 tube/μm.

Fig. S2

S3. $I_{on}$ of CNT-TFTs measured at the same gate voltage

Fig. S3 $I_{on}$ of CNT-TFTs measured at the same gate voltage ($V_g = -10V$), which are in correspondence with Fig. 2b in the main text. Black: before $Y_2O_3$ capping, red: after capping, blue: ratio of after to before.
S4 Typical results of $Y_2O_3/Al_2O_3$ passivated CNT-TFTs with various channel geometries.

S5 Typical results of $Y_2O_3/Al_2O_3$ passivated CNT-TFTs on glass substrates.

The device geometry is the same as those in Fig. 1 of the main text.