Supporting Information

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

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S1. Y_2O_3 capping results of CNT-TFTs on Si substrate

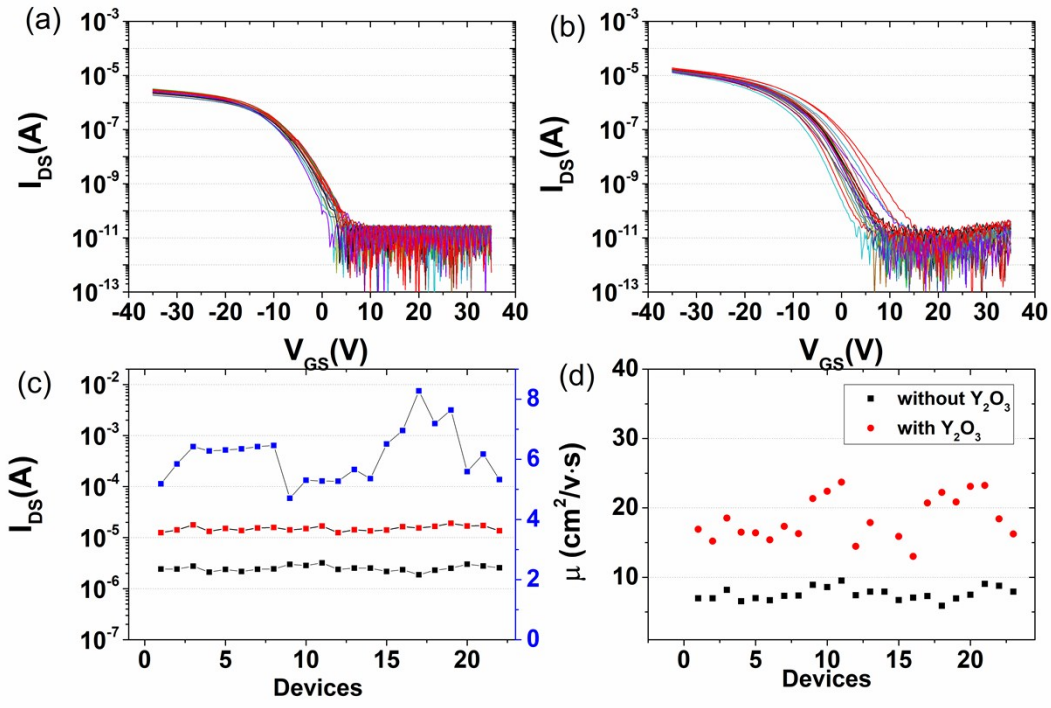


Fig. S1 Transfer characteristics of 22 CNT-TFTs before (a) and after (b) Y_2O_3 capping. These devices, (W, L) = (20μm, 10μm), were measured at V_d = -1V. (c) I_{on} of CNT-TFTs before (black), after (red) Y_2O_3 capping and their ratios, which were measured at Vg = -35V. (blue). (d) Extracted hole mobility correspondingly.

S2. Typical SEM image of deposited CNT thin film. The tube density is ~ 20 tube/μm.

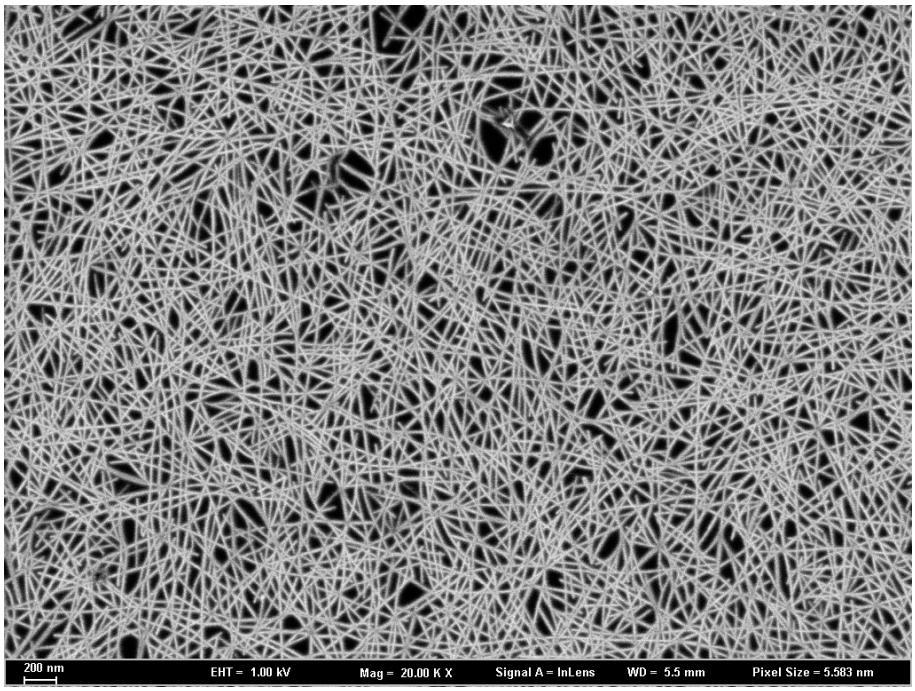


Fig. S2

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

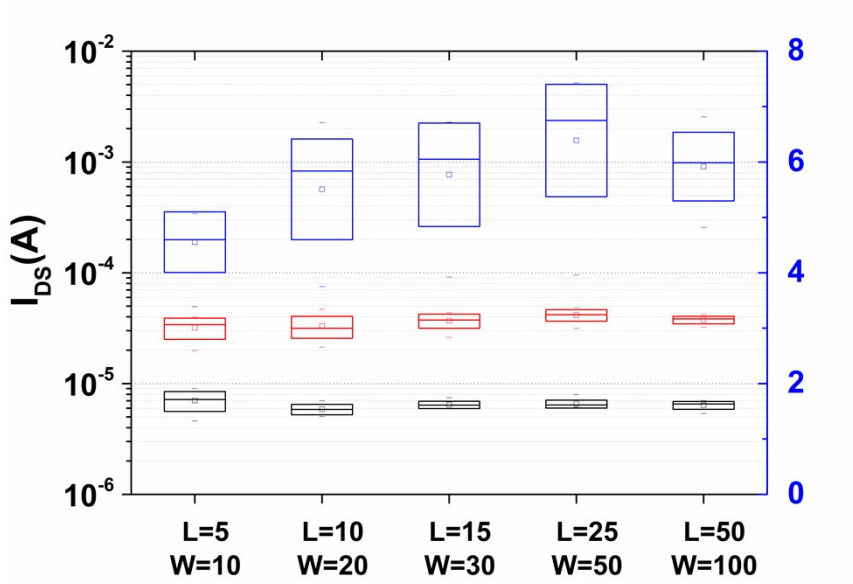
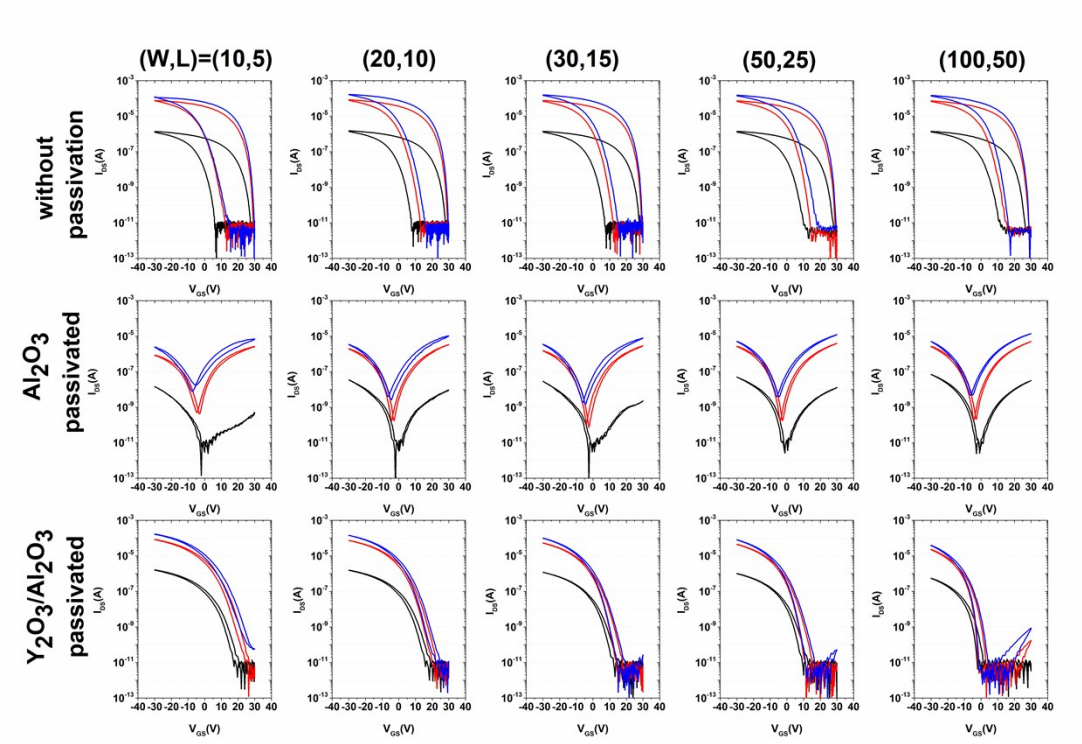
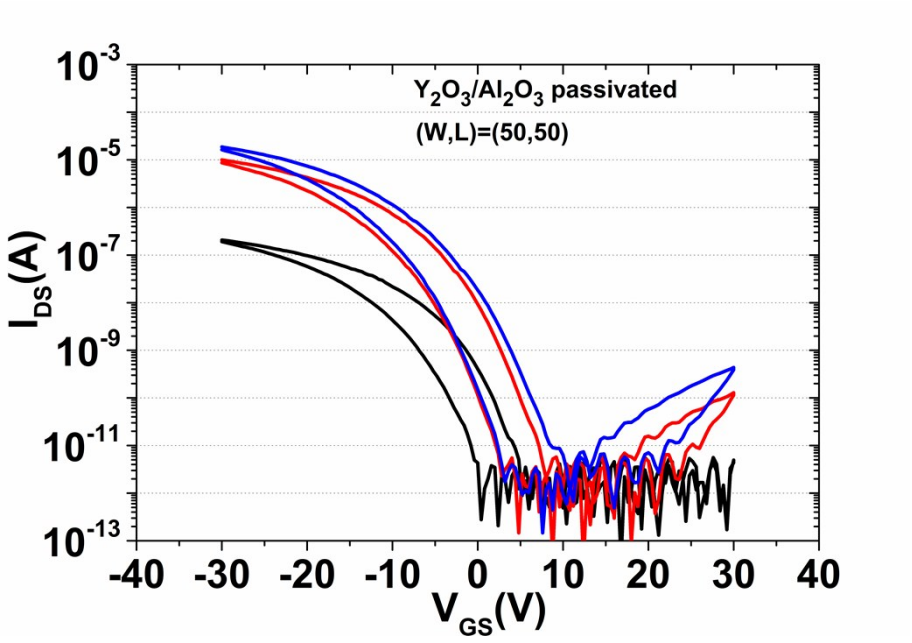


Fig. S3 I_{on} of CNT-TFTs measured at the same gate voltage (V_g = -10V), which are in correspondence with Fig. 2b in the main text. Black: before Y_2O_3 capping, red: after capping, blue: ratio of after to before.

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.