

Supporting Information

High-Performance Ultra-Low-Voltage Organic Field-effect Transistor Based on
Anodized TiO_x Dielectric and Solution-sheared Organic Single Crystal

Bowen Geng¹, Feng Zhang¹, Xiaohai Ding¹, Lei Liu¹, Yan Chen¹, Shuming Duan^{2*}, Xiaochen
Ren^{1*} and Wenping Hu^{1*}

¹ Tianjin Key Laboratory of Molecular Optoelectronic Sciences, Department of Chemistry, School of
Science, Tianjin University & Collaborative Innovation Center of Chemical Science and Engineering
(Tianjin), Tianjin, 300072

² Joint School of National University of Singapore and Tianjin University, International Campus of
Tianjin University, Binhai New City, Fuzhou, 350207, China

* Corresponding author (email: smduan@tjufz.org.cn, renxiaochen@tju.edu.cn, huwp@tju.edu.cn)

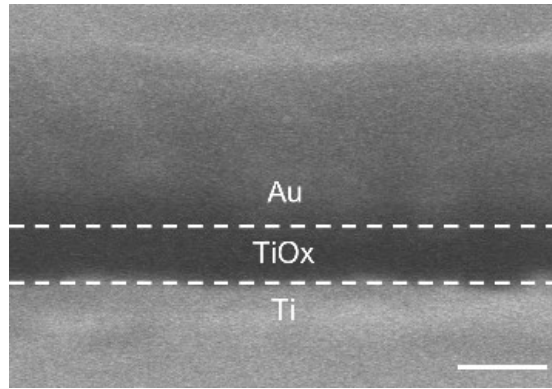


Figure S1 Cross-sectional scanning electron microscope (SEM) image of Au/TiO_x/Ti, scale bar is 50 nm.

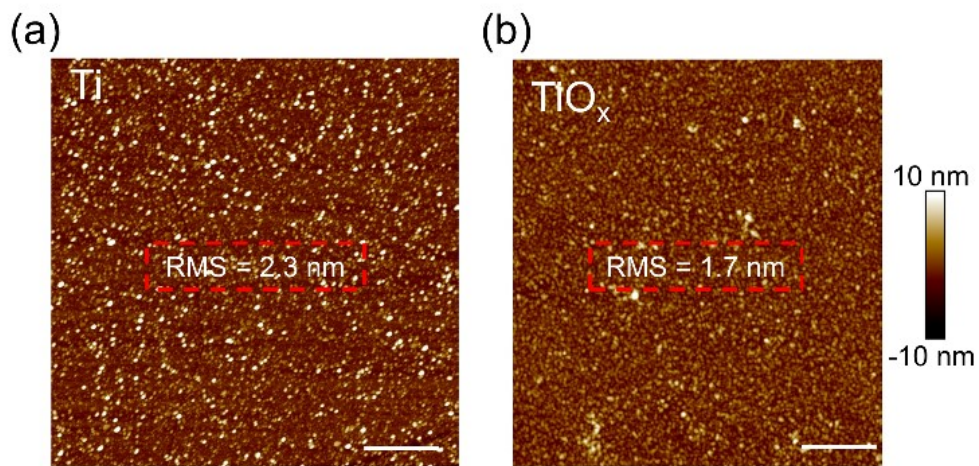


Figure S2 (a), (b) AFM image of the surface morphology of Ti thin film and TiO_x thin film, scale bar is 1 μ m.

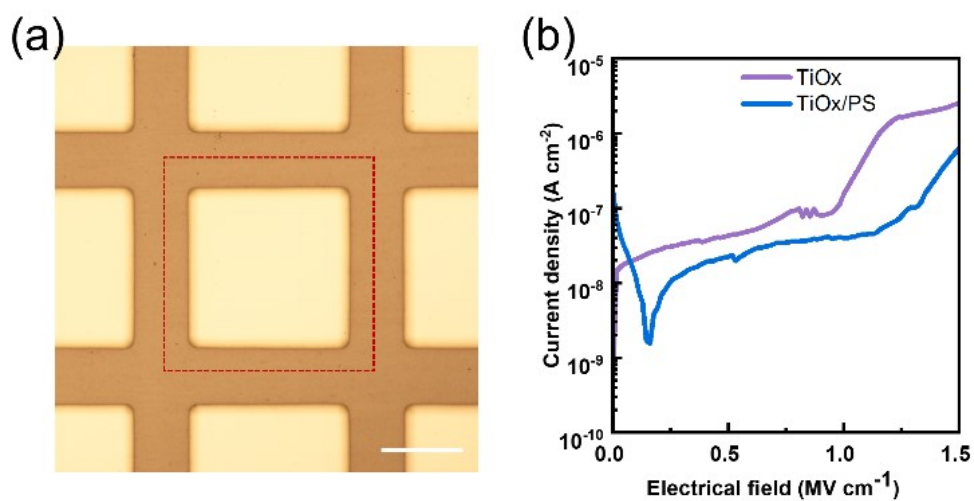


Figure S3 (a) Optical image of the Ag/TiO_x/Ti capacitive device, areal area of top Ag electrode is 0.04 mm², scale bar is 100 μm. (b) Leakage current density of pure TiO_x dielectric and TiO_x/PS dual dielectrics.

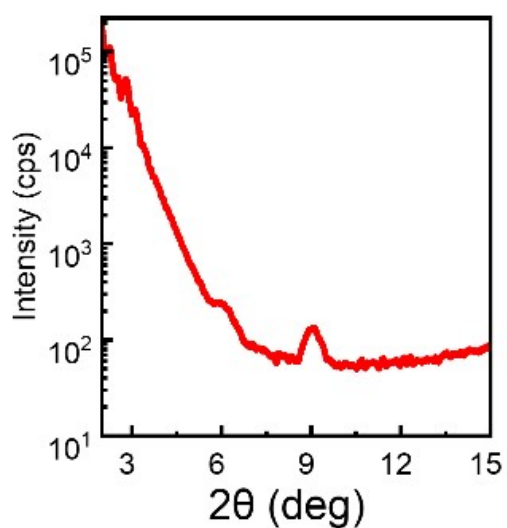


Figure S4 Out-of-plane X-ray diffraction of C₈-BTBT crystal on TiO_x/PS substrate.

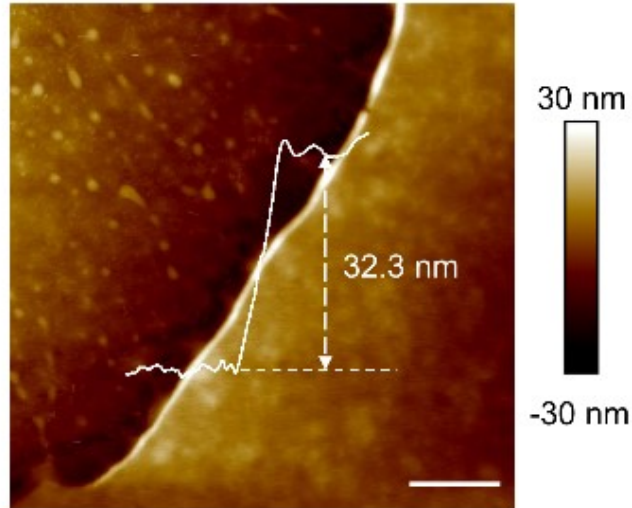


Figure S5 AFM image of C₈-BTBT crystal with the thickness estimated at 32.3 nm, scale bar is 1 μm .

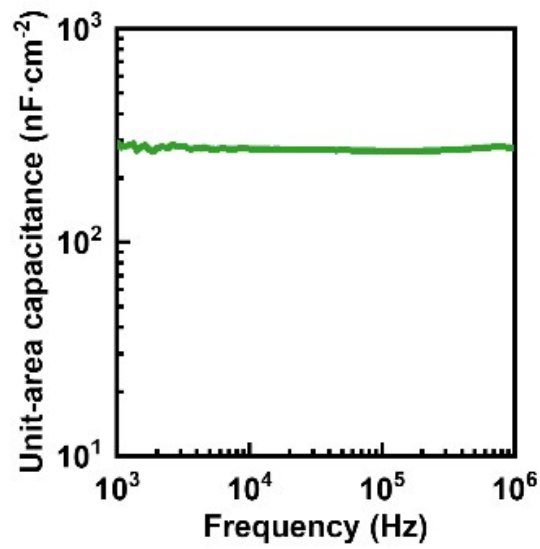


Figure S6 Unit-area capacitance of AlO_x/PS dual dielectrics which using the same process of TiO_x/PS dielectrics.

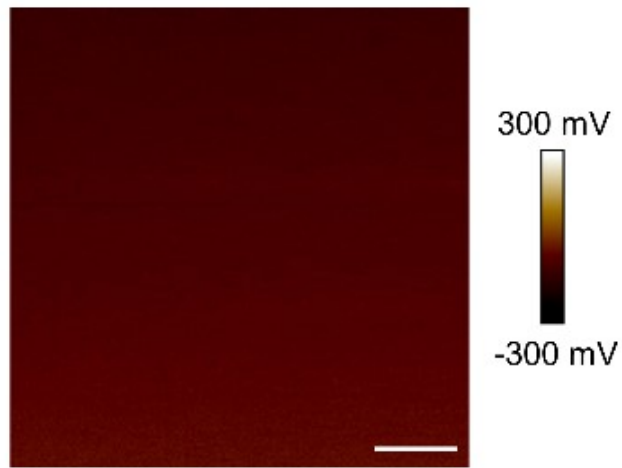


Figure S7 Surface potential map of evaporated titanium measured by KPFM, scale bar is 1 μm .