Supporting Information for

Wafer-scale and Patternable Synthesis of NbS_2 for Electrodes of Organic Transistors and Logic Gates

Yongsuk Choi,[#a] Hunyoung Bark,[#a] Boseok Kang,[a,b] Myeongjae Lee,[d] BongSoo Kim,[e] Sungjoo Lee,[a,b] Changgu Lee,*[a,c] Jeong Ho Cho*[f]

[a]SKKU Advanced Institute of Nanotechnology (SAINT), [b]Department of Nano Engineering, [c]School of Mechanical Engineering, Sungkyunkwan University, Suwon 440-746, Republic of Korea.
[d]Department of Chemistry, Research Institute for Natural Sciences, Korea University, Seoul 02841, Republic of Korea.
[e]Department of Chemistry, Ulsan National Institute of Science and Technology (UNIST), Ulsan 44919, Republic of Korea
[f]Department of Chemical and Biomolecular Engineering, Yonsei University, Seoul 03722, Republic of Korea.

*Corresponding authors: C. Lee (peterlee@skku.edu) and J. H. Cho (jhcho94@yonsei.ac.kr)
[#]Y. Choi and H. Bark contributed equally to this work.

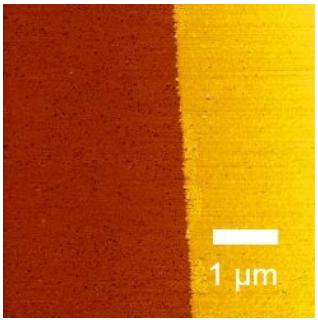

Figure S1. AFM image of NbS_2 film synthesized onto the SiO_2/Si substrate was taken over 5 x 5 μm^2.

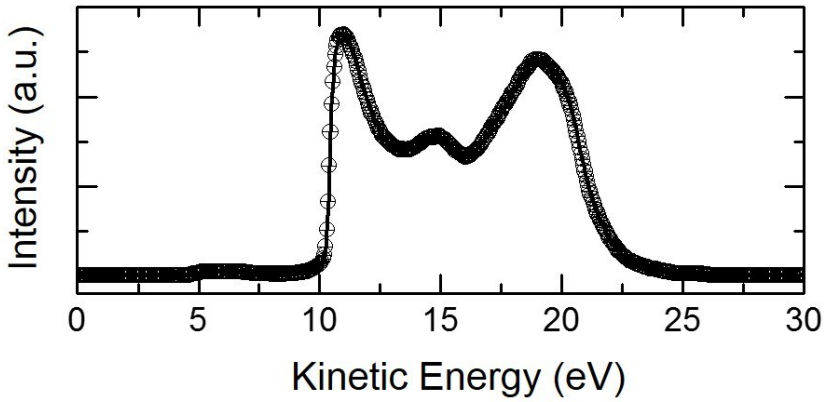

Figure S2. Ultraviolet photoelectron spectra of synthesized NbS_2 film. The work function was found to be 4.9 eV.

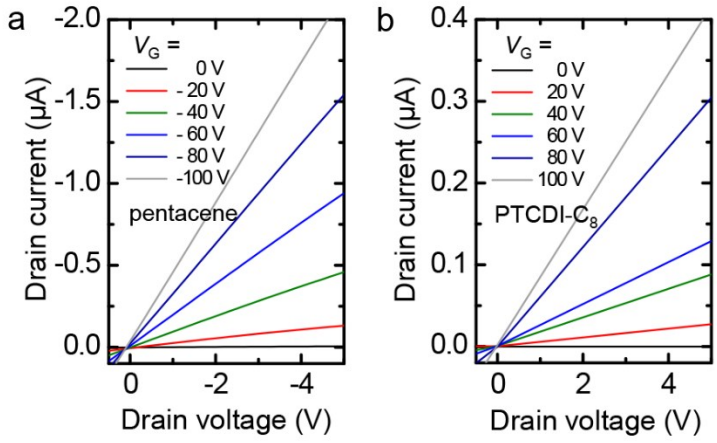

Figure S3. Linear plots of output curves of (a) pentacene and (b) PTCDI-C_8 OFETs with NbS_2.

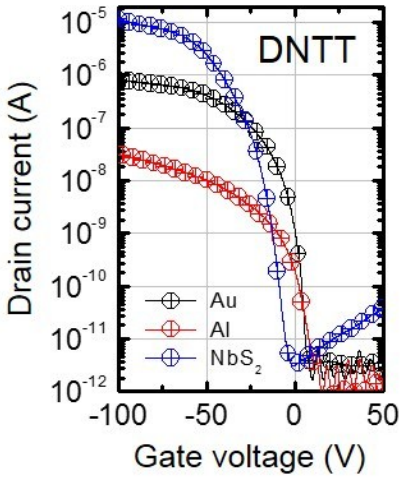

Figure S4. Comparison of transfer characteristics for DNTT FETs with Au, Al, and NbS_2 electrodes.

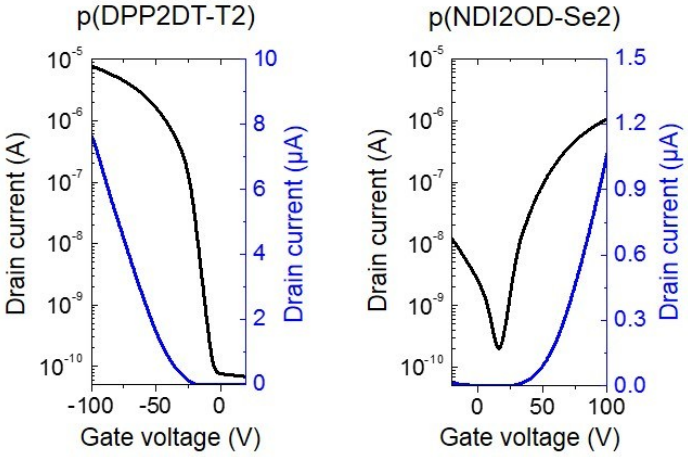

Figure S5. Transfer characteristics for p(DPP2DT-T2) FETs (left) and p(NDI2OD-Se2) FETs (right) with NbS_2 electrodes. The calculated carrier mobility was 0.087 Cm^2/Vs for p(DPP2DT-T2) FETs and 0.013 Cm^2/Vs for p(NDI2OD-Se2) FETs, respectively.

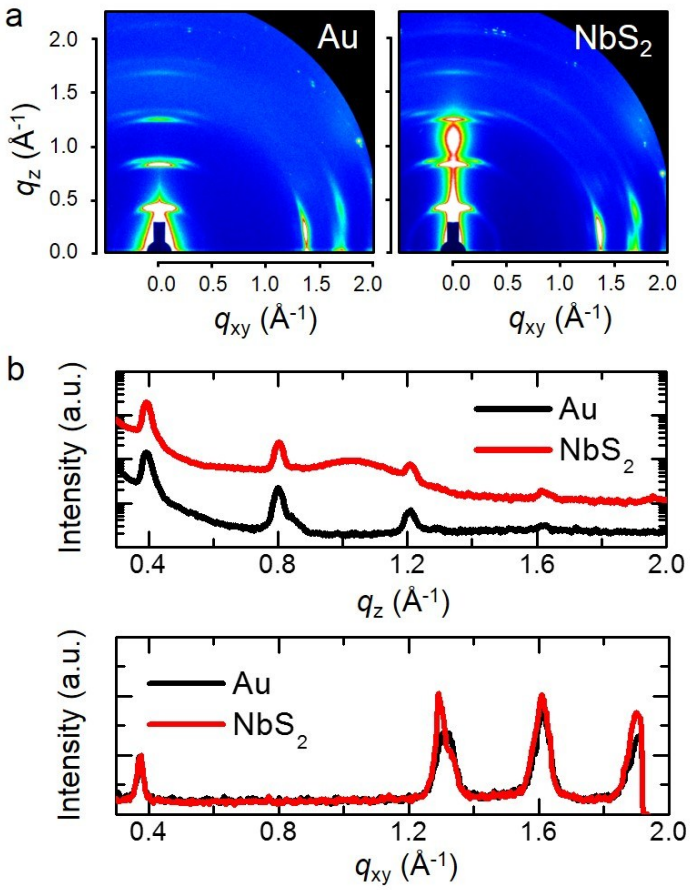

Figure S6. (a) 2D-GIXD patterns of DNTT films deposited on Au and NbS_2. (b) 2D-GIXD line cuts of DNTT films deposited on Au (black line) and NbS_2 (red line). Cuts along the q_z direction (top) represent out-of-plane scattering, while the scattering in q_{xy} direction (bottom) comes from in-plane scattering.

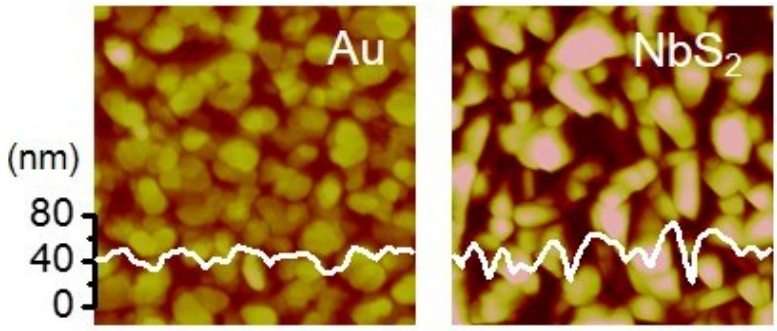

Figure S7. AFM images and cross-sectional profiles of DNTT films deposited on Au (left) and NbS_2 (right).