

## Supplementary Materials

### Device Performance Limit and Negative Capacitance of Monolayer GeSe and GeTe Tunneling Field Effect Transistor

Peipei Xu<sup>1</sup>, Jiakun Liang<sup>1</sup>, Hong Li<sup>1,\*</sup>, Fengbin Liu<sup>1</sup>, Jun Tie<sup>1</sup>, Zhiwei Jiao<sup>1</sup>, Jing Luo<sup>4</sup>, and  
Jing Lu<sup>2,3,\*</sup>

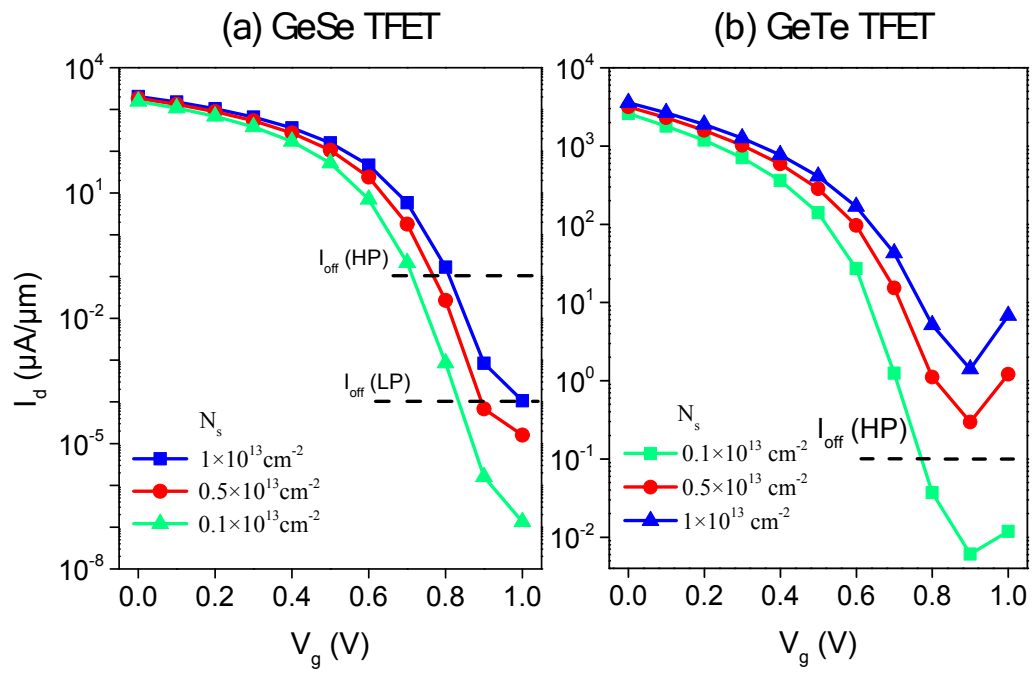
<sup>1</sup> College of Mechanical and Material Engineering, North China University of Technology,  
Beijing 100144, P. R. China

<sup>2</sup> State Key Laboratory of Mesoscopic Physics and Department of Physics, Peking University,  
Beijing 100871, P. R. China

<sup>3</sup> Collaborative Innovation Center of Quantum Matter, Beijing 100871, P. R. China

<sup>4</sup> Beijing Research Institute of Automation for Machinery Industry, Beijing, P. R. China

\*Corresponding author: [jinglu@pku.edu.cn](mailto:jinglu@pku.edu.cn); [lihong@ncut.edu.cn](mailto:lihong@ncut.edu.cn)



**Figure S1.** Transfer characteristics of the ML (a) GeSe and (b) GeTe TFET with the source doping concentration  $N_s$  of 1, 0.5,  $0.1 \times 10^{13} \text{ cm}^{-2}$  at a supply voltage of 0.74 V. The drain doping concentration  $N_D$  is fixed at  $5 \times 10^{13} \text{ cm}^{-2}$ .