*Supporting Information*

# The Investigation of Dissociation Mechanism of Single Walled Carbon The Investigation of Dissociation Mechanism of Single Walled Carbon Nanotube on Mature Amyloid-*β* Fibrils at Single Nanotube Level

*Dongdong Lin, †§* Jiangtao Lei, §‡ Shujie Li, §,, Xingfei Zhou, † Gaunghong Wei, § Xinju Yang §**

† Department of Microelectronic Science and Engineering, Department of physics, Ningbo University, 818 Fenghua Road, Ningbo 315211, China

§ State Key Laboratory of Surface Physics and Department of Physics, Fudan University, 220 Handan Road, Shanghai 200433, China

‡ Institute of Space Science and Technology, Nanchang University, Nanchang, Jiangxi Province 330031, China

Dongdong Lin and Jiangtao Lei contributed equally

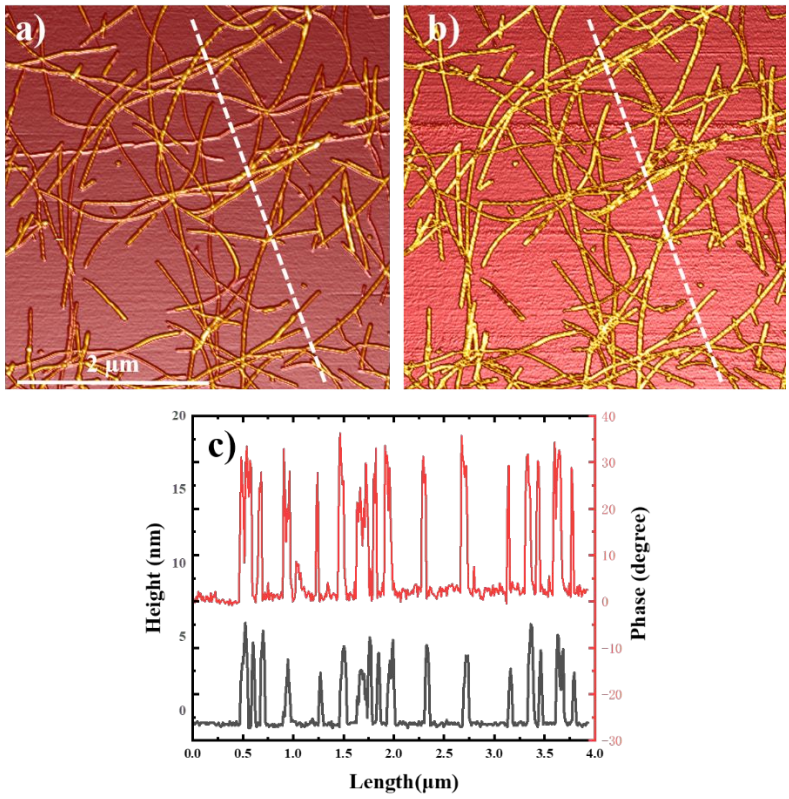


**Figure S1.** AFM topography and phase shift images of $A\beta_{1-42}$ fibrils. (a) AFM topography image of $A\beta_{1-42}$ fibrils incubated for 10 days; (b) AFM phase images corresponding to AFM topography image(a); (c) height and phase shift profiles along the marked dashed lines of topography image (a) and phase image (b).

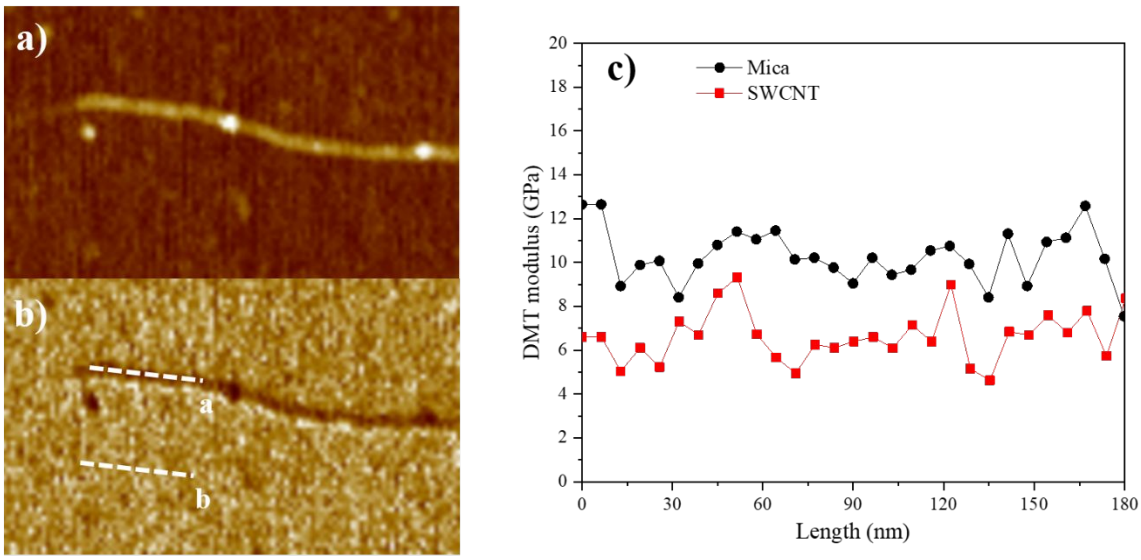


**Figure S2.** AFM height image of SWCNTs (a) and AFM DMT modulus image of SWCNTs (b). The dashed lines mark the positions at which the DMT modulus was analysed (c). Profiles of DMT moduli on Mica (black) and SWCNT (red).

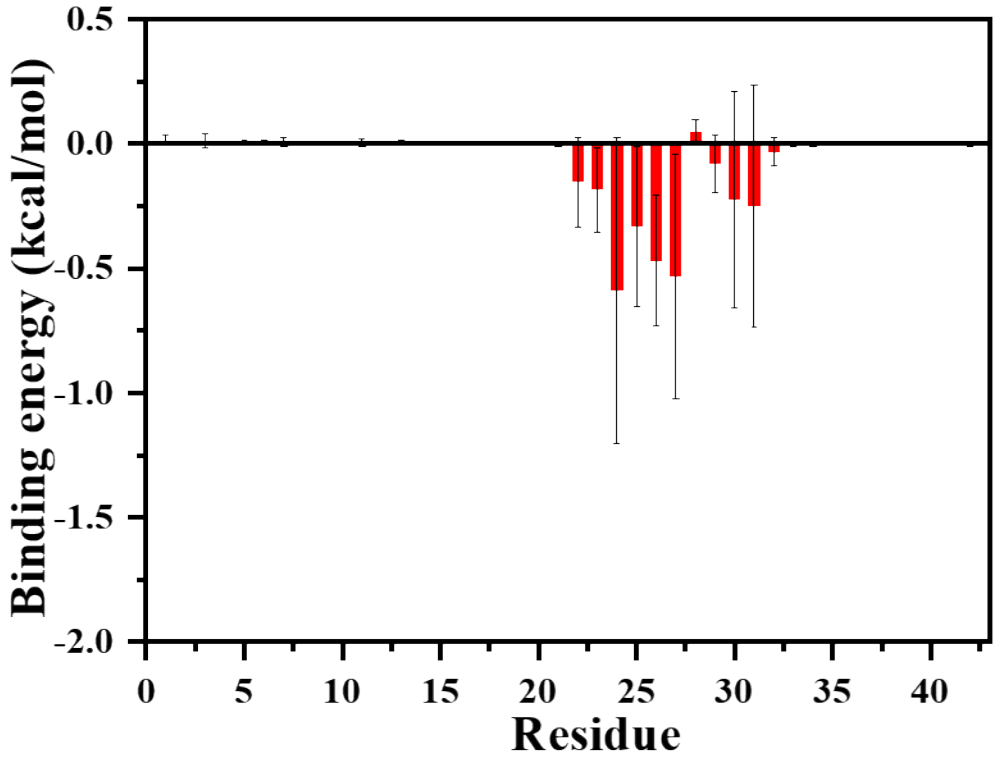


**Figure S3.** Average residue-based binding free energy (in kcal/mol) of $A\beta_{1-42}$-SWCNTs conjugates in loop region.

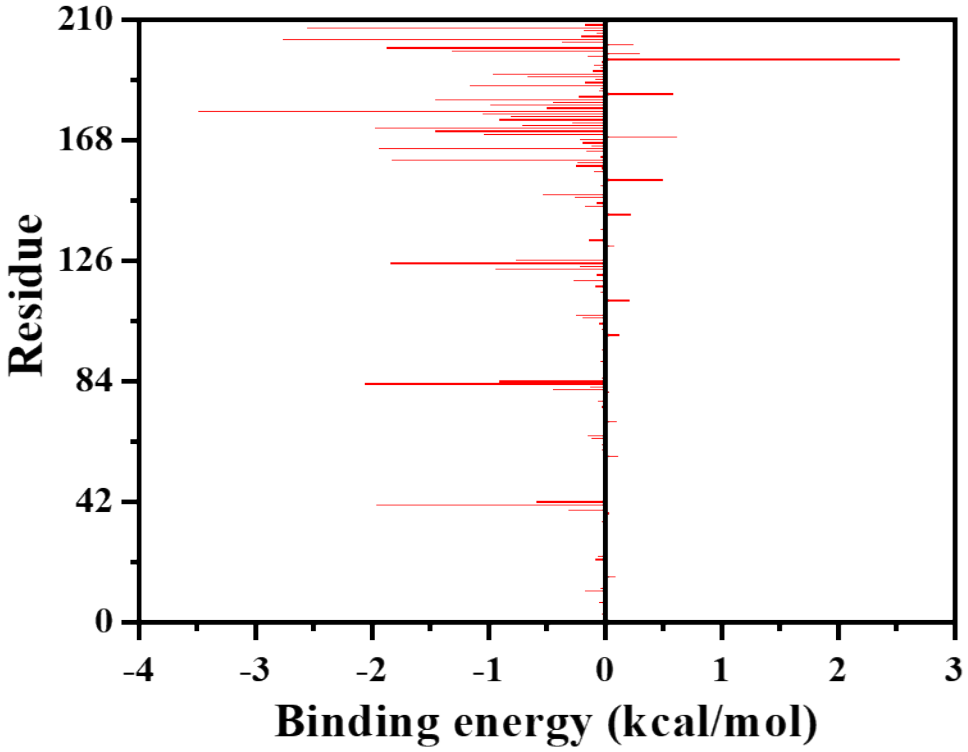


**Figure S4.** Residue-based binding free energy (in KJ/mol) of $A\beta_{1-42}$-SWCNTs in longitudinal side region