The Suporting Information of Polarization-Dependent Surface Plasmon-Driven Catalytic Reaction on a Single Nanowire Monitored By SERS

Ze Li[1†], Yannan Gao[1†], Lisheng Zhang[1], Yan Fang[1] and Peijie Wang[1*]
[1] *The Beijing Key Laboratory for Nano-Photonics and Nano-Structure, Department of Physics, Capital Normal University, Beijing 100048, China;*
[†] *Co-first authors.*
(Dated: September 7, 2018)

PACS numbers:

For the Fig. 4 in the main manuscript, it is noted that all the data is just on different detection places of one nanowire(NW), this experimental design would guarantee the almost same catalytic reaction initial conditions(such as the enhancement of NW; the concentration of the reactant molecules.) with all different polarizing angles. Most of important, this experimental design could remove the accumulation of the product molecules with increasing polarization angles. This is the advantage of our experimental design on ONE NW!

However, it would be much helpful to provide DMAB coverage(calculated by Equ.2 of the main manuscipt) at each detection point on one NW under the same polarization angle. We synthesized again the Ag NW sample. Then we performed the plasmon-driven catalytic reaction on four different NWs with four different polarizing angles. We selected 8 detecting points on each NW for SERS measurement. As shown in Fig. 1, (a-d) are SERS spectrum of 4NBT at eight detecting points on four different NWs at different polarization angles(θ = 0°, 30°, 60°, 90°) at 532 nm excitation wavelength; (e-g) Coverages the 4NBT reactant and the DMAB product at each polarization angles. (h): Average coverages of each detecting points of the 4NBT reactant and the DMAB product at each polarization angles. It is clearly demon- strated that each different detecting point on same NW is very uniform and occurred almost similar plasmon-driven catalytic reactions at each polarizing angle. Secondly, the dimerizing catalytic reaction from 4NBT to DMAB due to SP is increasing with the increasing polarizing angles even the results of the product coverage are compared via different NWs. This robust results further confirmed the catalytic reactions are dependent strongly on the polarizing angles.

* Electronic address: pjwang@cnu.edu.cn

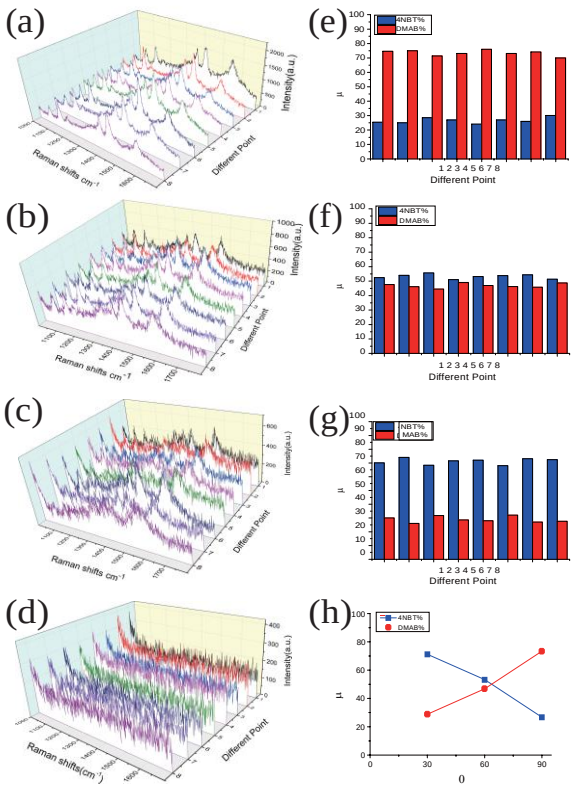

FIG. 1: (a-d) are SERS spectrum of 4NBT on different NWs at different polarization angles(θ = 0°, 30°, 60°, 90°) at 532 nm nm excitation wavelength; (e-g) Coverages the 4NBT re- actant and the DMAB product at each polarization angles; (h): Average coverages of each detecting points of the 4NBT reactant and the DMAB product at each polarization angles. Here, the value of average coverages of 0 polarization angle is neglected due to the corresponding weak SP enhanced SERS signals shown in (d).