

## Supporting Information

### **Large Scale N-doped GNTs@a-SiO<sub>x(x=1~2)</sub>-NPs: Template-free one-step synthesis, field emission and photoluminescence properties**

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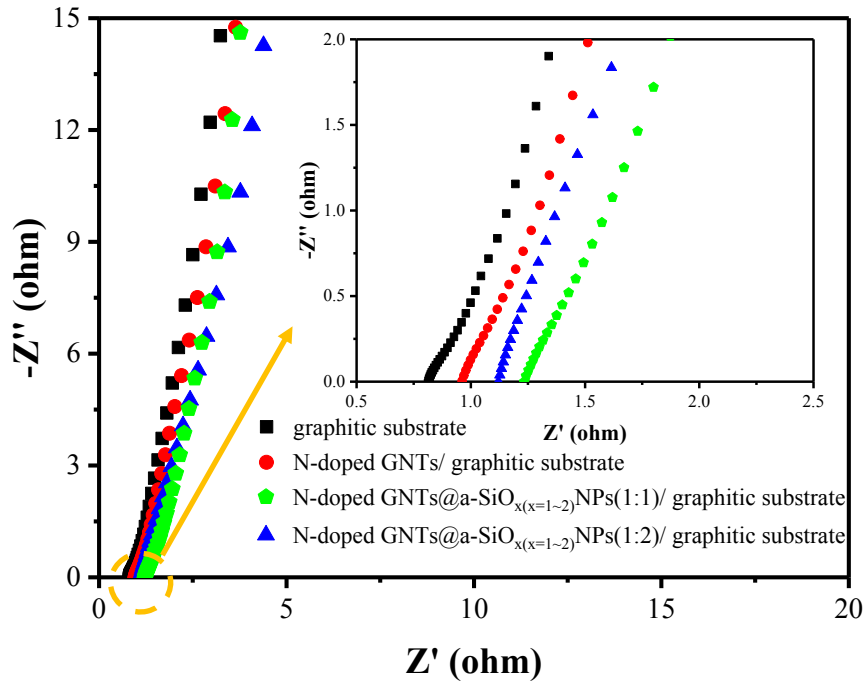
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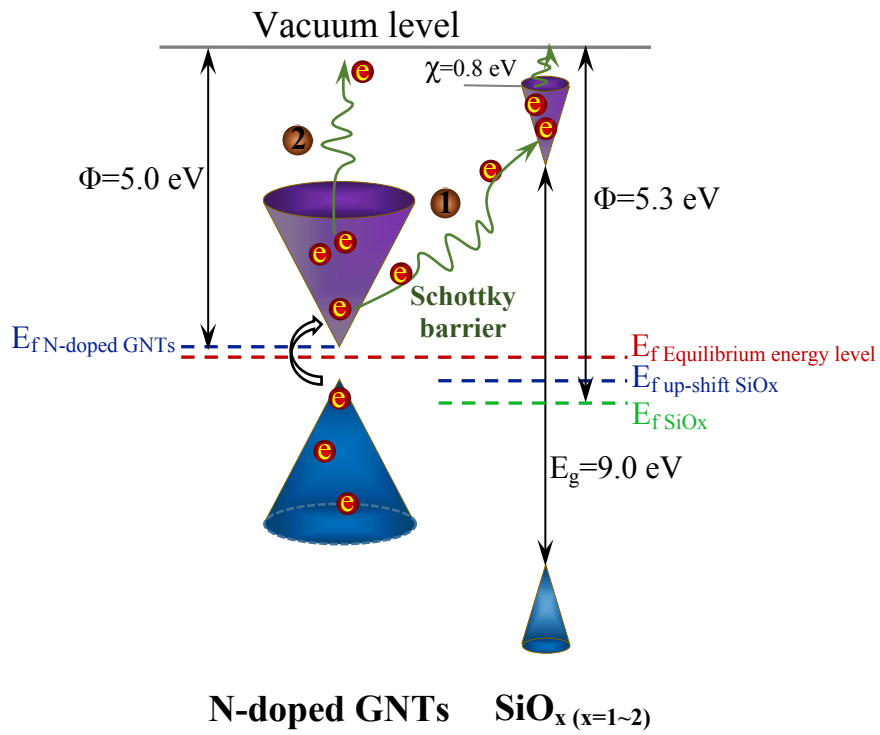
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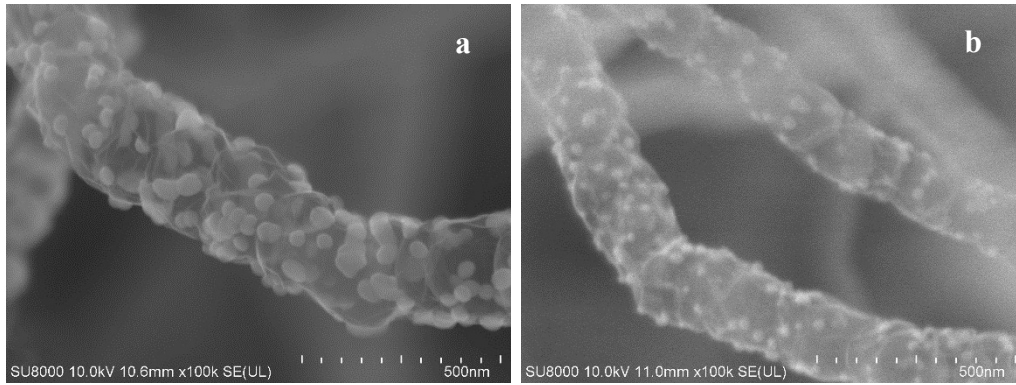
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**Figure S1 Nyquist plots of the N-doped GNTs, N-doped GNTs@a-SiO<sub>x(x=1~2)</sub>NPs (1:1), N-doped GNTs@a-SiO<sub>x(x=1~2)</sub>NPs (1:2) grown on graphitic substrate, and the bare graphitic substrate (Insert shows the enlarged parts of Nyquist plots).**



**Figure S2 Schematic band diagram of field emission for the N-doped GNTs@ $\text{SiO}_x(x=1-2)$ NPs**



**Figure S3 (a) high resolution SEM image of N-doped GNTs@a-SiO<sub>x(x=1~2)</sub>NPs (1:1) after FE studies , (b) high resolution SEM image of N-doped GNTs@a-SiO<sub>x(x=1~2)</sub>NPs (1:2) after FE studies**