Supplementary Information

π-Plasmon of Carbon Nanotubes for Selective and Sensitive Detection of Fe^{3+}Ions

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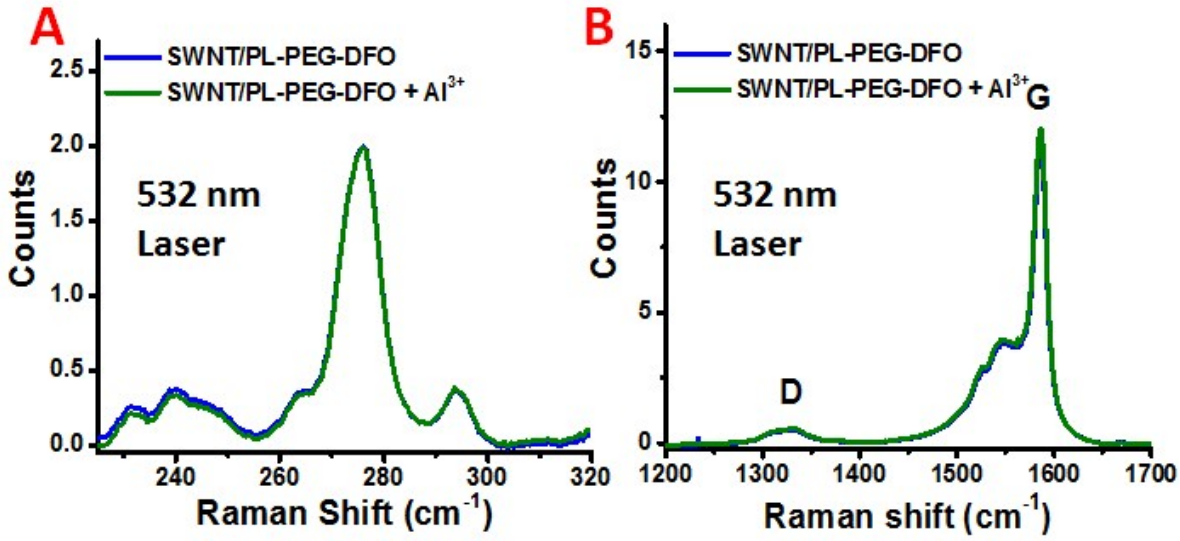

Figure S1. Raman spectroscopy of SWNT/PL-PEG-DFO solution, before and after addition of Al^{3+} using 532 nm laser (A and B).

Proposed Mechanism:

For semiconductor tubes, the intensities of all the Raman peaks decreased slightly upon addition of Al^{3+} into the SWNT/PL-PEG-DFO solution. Similar to the case of Fe^{3+}, no peak shift was observed (Figure 3C and 3D). Since electron transferring is the only possible mechanism for

the observed absorption quenching upon Al^{3+} -DFO complex formation on the tubes, we tended to conclude that electron transferring was also the possible mechanism for the case of Fe^{3+}. For metallic tubes, similar intensity decrease or peak shift was expected based on the electron transferring mechanism. However, we barely distinguished any change in the Raman spectra of SWNT/PL-PEG-DFO solution before and after addition of Al^{3+} solution. This is very different from obvious peak shifts upon Fe^{3+}-DFO formation. These facts made us question the previous conclusion for the semiconductor tubes. Future work is still needed to understand the true mechanism of the observed absorption decrease for the semiconducting tubes.