Sea Slag-Inspired Modification of Carbon Nanoparticles

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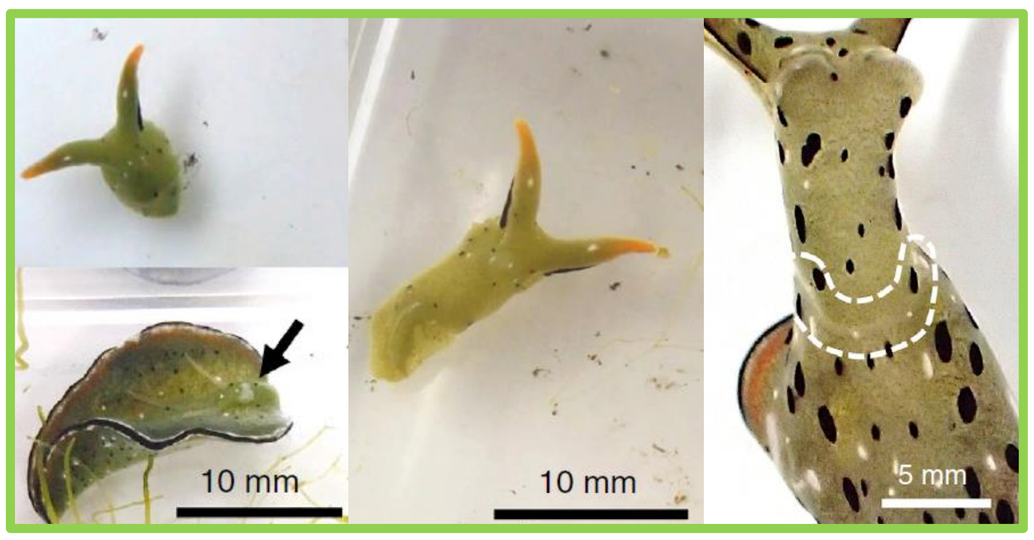
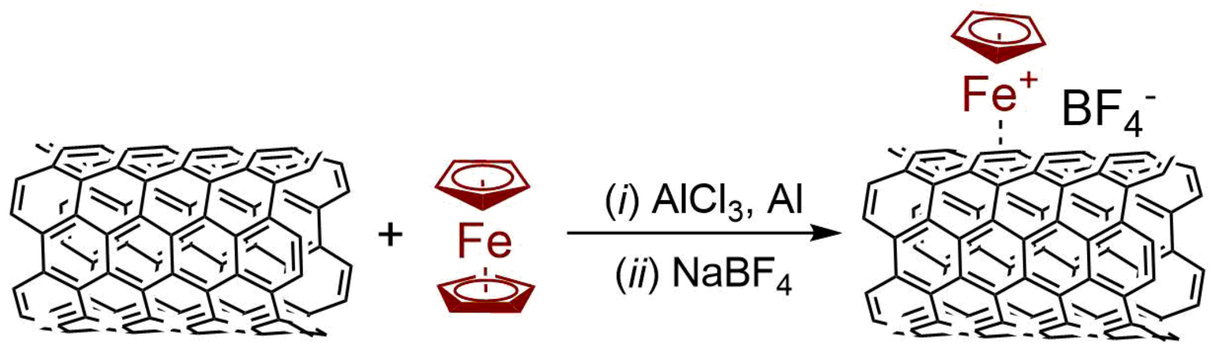
It is well known that some living organisms use different adaptation mechanisms to survive and thrive[1]. One of the outstanding examples of adaptation are marine gastropod mollusks Elysia marginata and Elysia atroviridis (sea slags)[2]. After being decapitated, these living organisms have an ability not only to survive but also to revive and grow again. These invertebrates inspire us to conduct a modification of multi-walled carbon nanotubes (MWCNT) with metallocene-containing siloxanes via ligand exchange reaction[3].

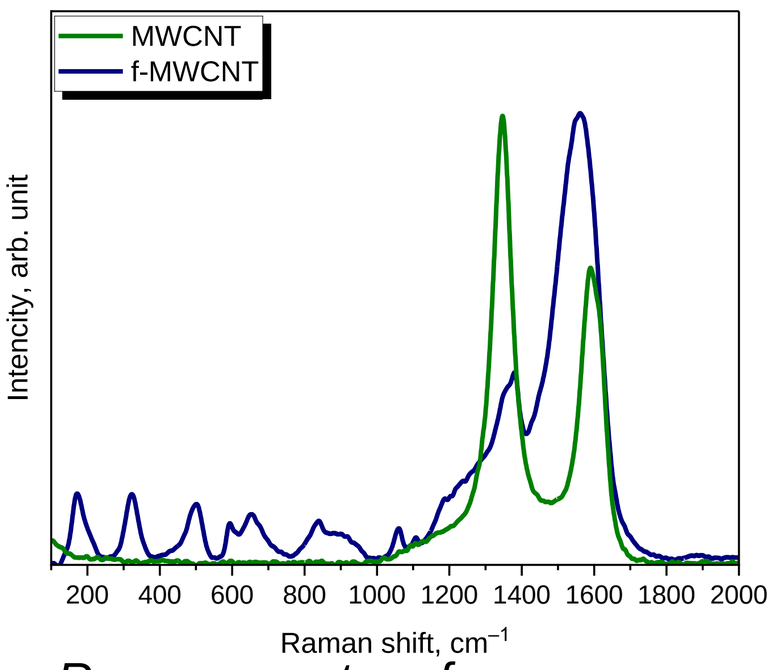


Photographs of Elysia marginata from ref. 2

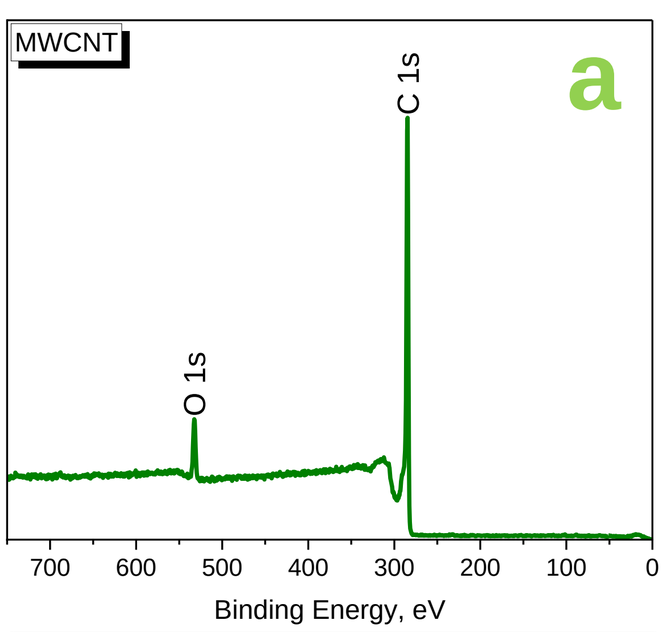


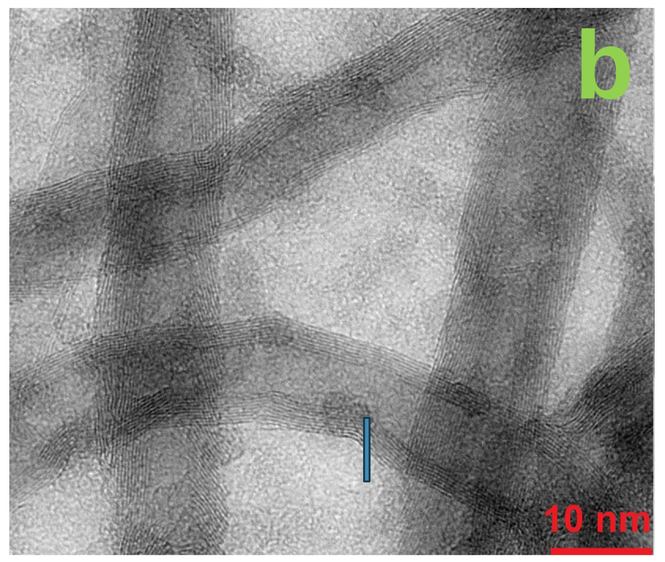
Scheme of ligand exchange reaction from ref. 3

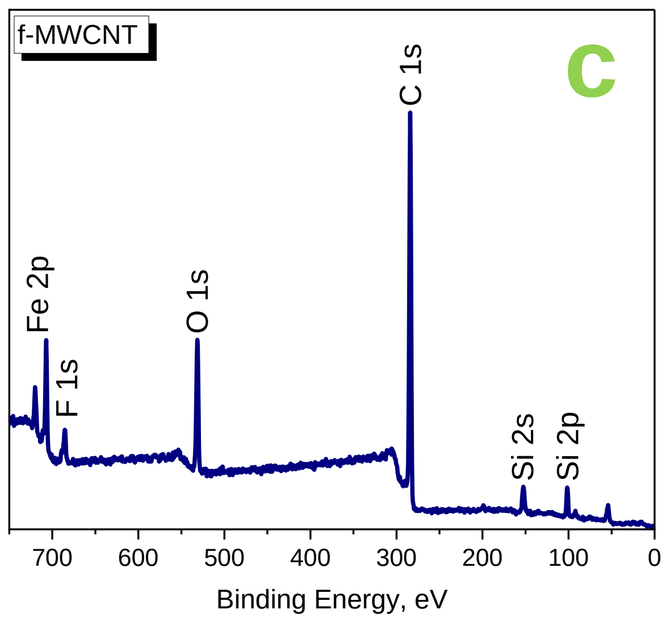
The successful modification of CNT with metallocene-containing siloxanes was confirmed by Raman and X-Ray photoelectron spectroscopies and transmission electron microscopy.

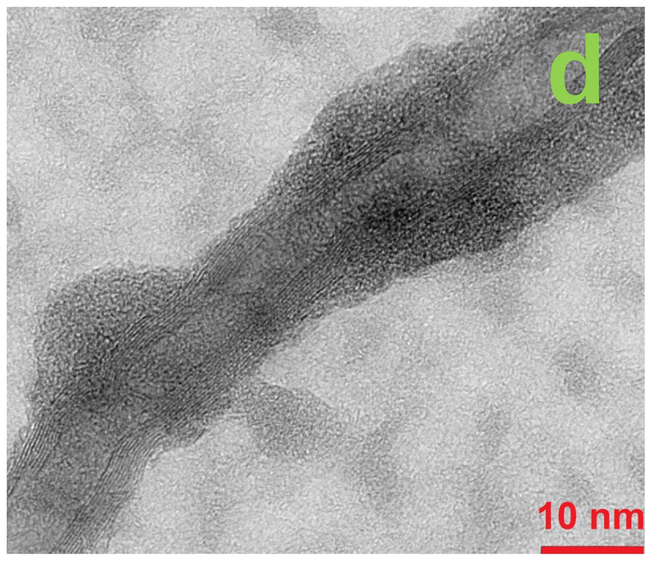


Raman spectra of MWCNT and f-MWCNT









XPS survey spectra and TEM images of pristine MWCNT (a,b) and modified f-MWCNT (c,d)

References

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3. *Golovenko, E. A., Pankin, D. V., Deriabin, K. V., Volkov, A. I., Kirichenko, S. O., Levin, O. V., Islamova, R. M., Ligand Exchange Reaction between Ferrocene and Multiwalled Carbon Nanotubes: A Contemporary Approach, 2024, 40(13), 6909-6917.*

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