

Supplementary Information

Insights into Metal Oxide and Zero-Valent Metal Nanocrystal Formation on Multiwalled Carbon Nanotube Surfaces During Sol-gel Hybridization

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Table S1: Standard Electrode potential of different metal species: Reactions and values¹

NH	Reaction	Standard Electrode Potential (V)
MWNT-Al ₂ O ₃	Al ³⁺ + 3e ⁻ ↔ Al (s)	-1.662
MWNT-CeO ₂	Ce ³⁺ + 3e ⁻ ↔ Ce (s)	-2.336
MWNT-CoO ₃	Co ²⁺ + 2e ⁻ ↔ Co (s)	-0.28
MWNT-Cu ₂ O	Cu ²⁺ + 2e ⁻ ↔ Cu (s)	+0.345
MWNT-Er ₂ O ₃	Er ³⁺ + 3e ⁻ ↔ Er (s)	-2.331
MWNT-Eu ₂ O ₃	Eu ³⁺ + 3e ⁻ ↔ Eu (s)	-1.991
MWNT-Fe _x O _y	Fe ²⁺ + 2e ⁻ ↔ Fe (s)	-0.44
MWNT-HfO ₂	Hf ⁴⁺ + 4e ⁻ ↔ Hf (s)	-1.55
MWNT-MgO	Mg ²⁺ + 2e ⁻ ↔ Mg (s)	-2.372
MWNT-MnO	Mn ²⁺ + 2e ⁻ ↔ Mn (s)	-1.185
MWNT-MoO ₂	Mo ³⁺ + 3e ⁻ ↔ Mo (s)	-0.200
MWNT-NiO	Ni ²⁺ + 2e ⁻ ↔ Ni (s)	-0.25
MWNT-Pr ₆ O ₁₁	Pr ³⁺ + 3e ⁻ ↔ Pr (s)	-2.353
MWNT-SiO ₂	--	
MWNT-SnO ₂	Sn ²⁺ + 2e ⁻ ↔ Sn (s)	-0.1375
MWNT-TiO ₂	Ti ²⁺ + 2e ⁻ ↔ Ti (s)	-1.63
MWNT-V _x O _y	V ²⁺ + 2e ⁻ ↔ Pr (s)	-1.13
MWNT-WO ₃	W ³⁺ + 3e ⁻ ↔ W (s)	+0.1
MWNT-ZnO	Zn ²⁺ + 2e ⁻ ↔ Zn (s)	-0.7628
MWNT-ZrO ₂	Zr ⁴⁺ + 4e ⁻ ↔ Zr (s)	-1.45
MWNT-Ag	Ag ⁺ + e ⁻ ↔ Ag (s)	+0.7996
MWNT-Au	Au ³⁺ + 3e ⁻ ↔ Au (s)	+1.498
MWNT-Pd	Pd ²⁺ + 2e ⁻ ↔ Pd (s)	+0.951
MWNT-Pt	Pt ²⁺ + 3e ⁻ ↔ Pt (s)	+1.18

¹Vanysek, P., Electrochemical series. *CRC handbook of chemistry and physics* **1998**, 87

Table S2 Atomic percentages and molar ratio of carbon:metal estimated from the XPS spectra using CasaXPS software.

Sample	%C	%Metal
MWNT-ZnO	78.5±1.0	6.2±0.5
MWNT-Ag	89.4±0.9	8.3±0.5
MWNT-Cu/Cu ₂ O	79.2±1.2	5.2±0.4