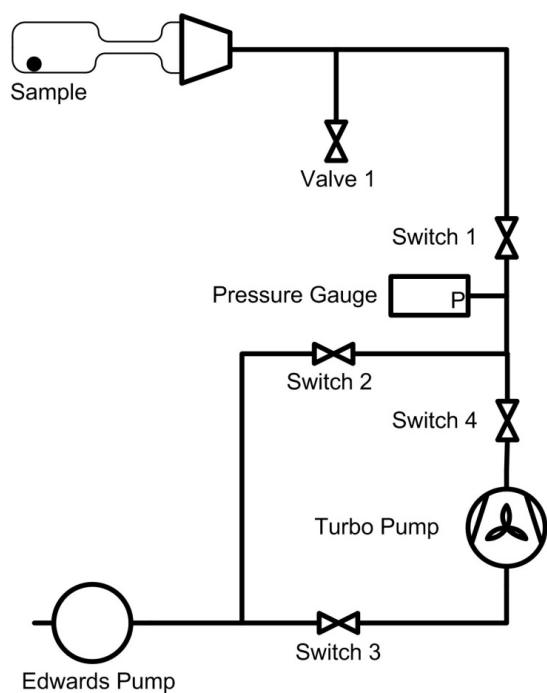


## Supporting Information file

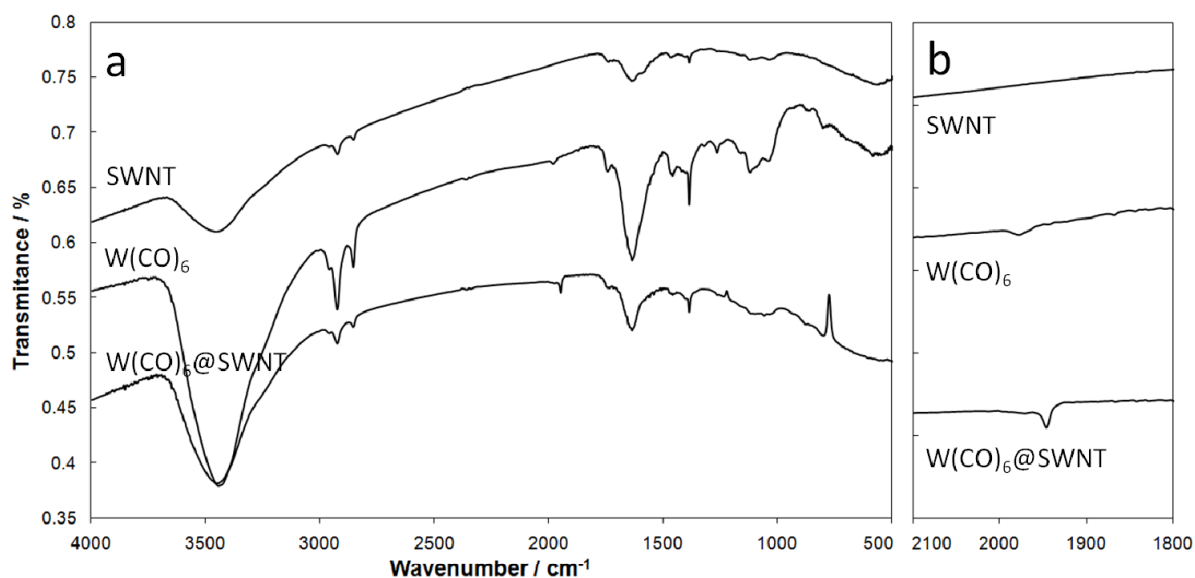
### Formation of uncapped nanometre-sized metal particles by decomposition of metal carbonyls in carbon nanotubes

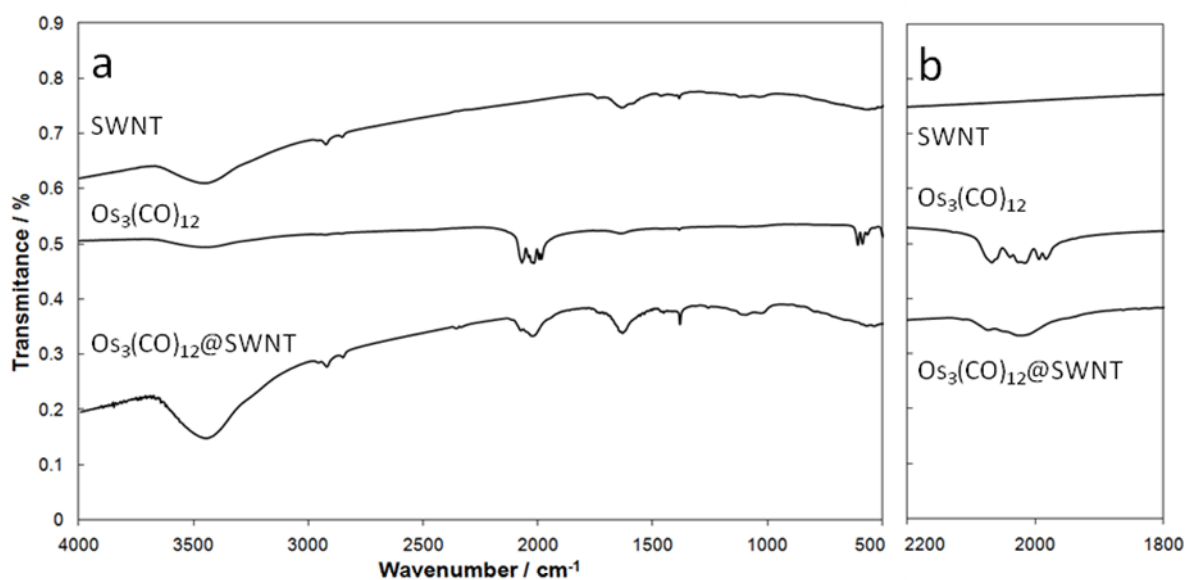
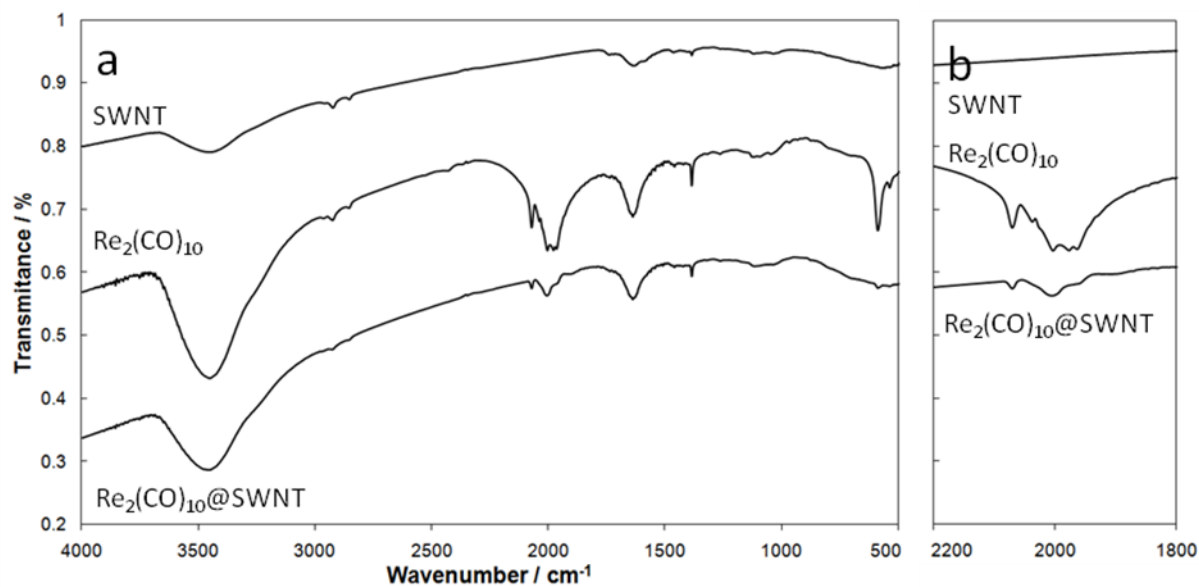
*Thomas W. Chamberlain, Thilo Zoberbier, Johannes Biskupek, Akos Botos, Ute Kaiser, and Andrei N. Khlobystov*

S1. Experimental setup of vacuum system used for insertion of metal carbonyl complexes into nanotubes.



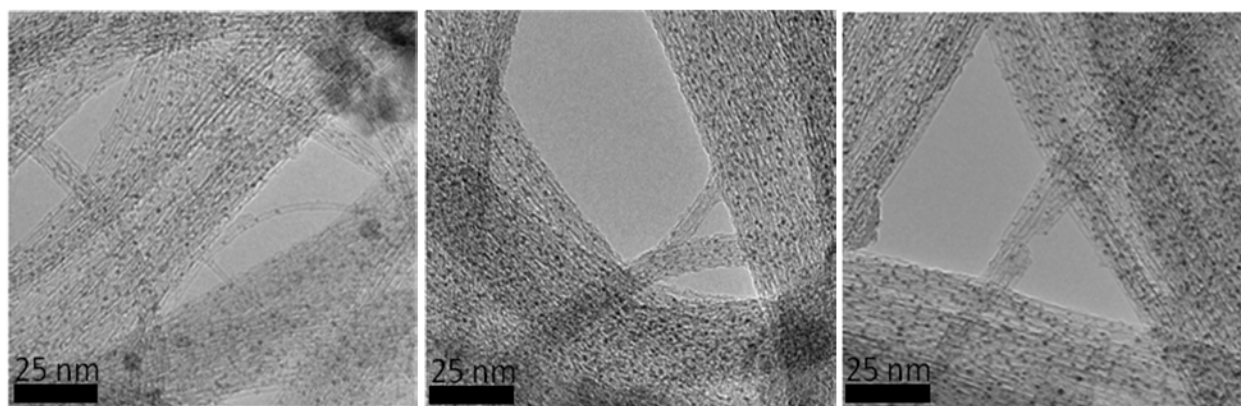
S2. IR spectra of  $W(CO)_6@SWNT$ ,  $Re_2(CO)_{10}@SWNT$  and  $Os_3(CO)_{12}@SWNT$ , their comparison with control samples and a table of values for  $\nu(CO)$ .



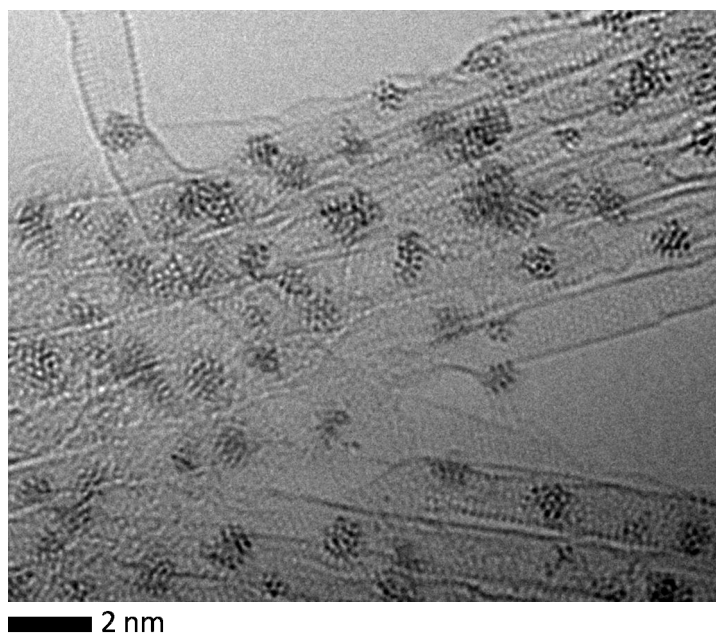


Metal	$\nu(\text{CO})$ band of $\text{M}_x(\text{CO})_y$ / $\text{cm}^{-1}$	$\nu(\text{CO})$ band of $\text{M}_x(\text{CO})_y@\text{SWNT}$ / $\text{cm}^{-1}$	Observed shift / $\text{cm}^{-1}$
W	1984	1950	34
Re	2073, 2038, 2005, 1961, 1956	2073, 2015	-
Os	2071, 2060, 2029, 2019, 2014, 1987	2087, 2032	-

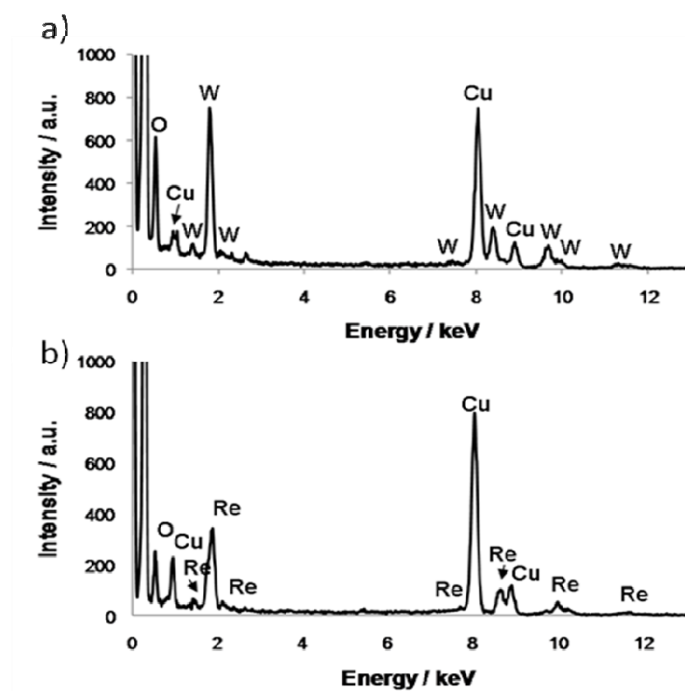
S3. Large field of view of conventional 100kV TEM images of bundles of SWNT filled with W-, Re- and Os-NPs, respectively.



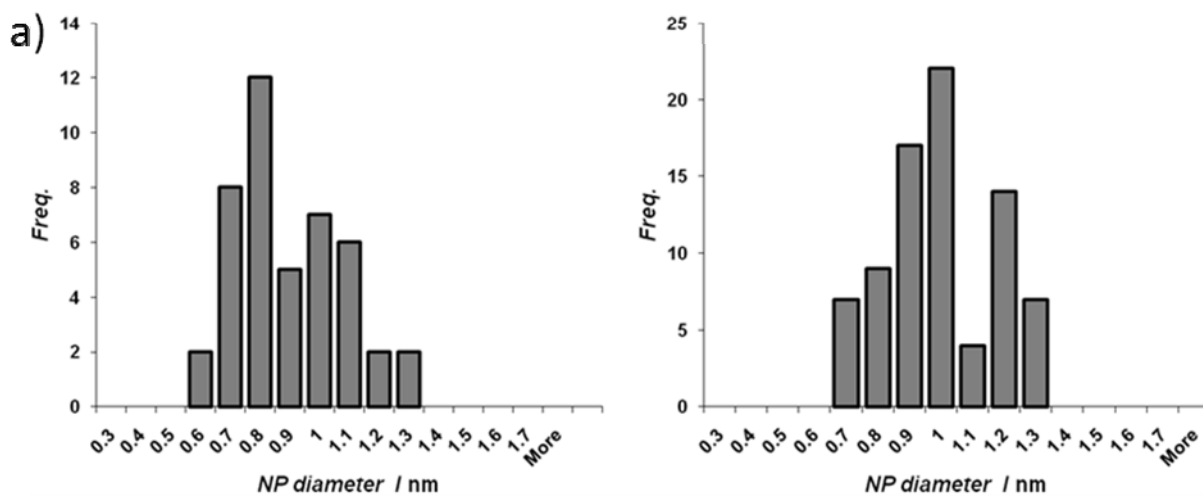
S4. Large field of view of a 80kV AC-HRTEM image of Os-NPs@SWNT

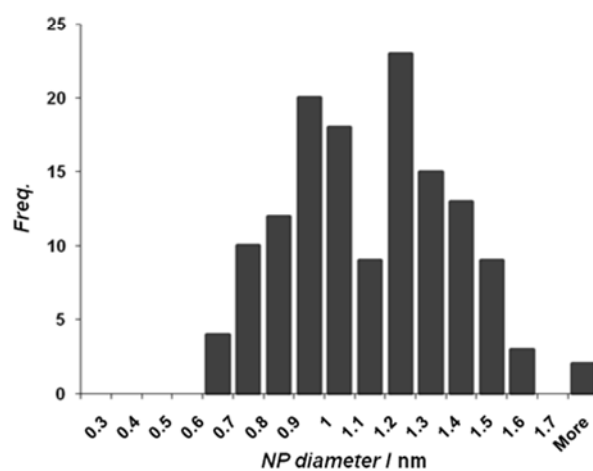
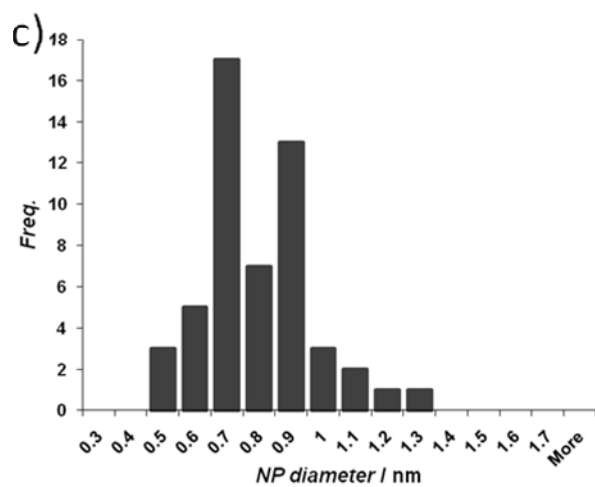
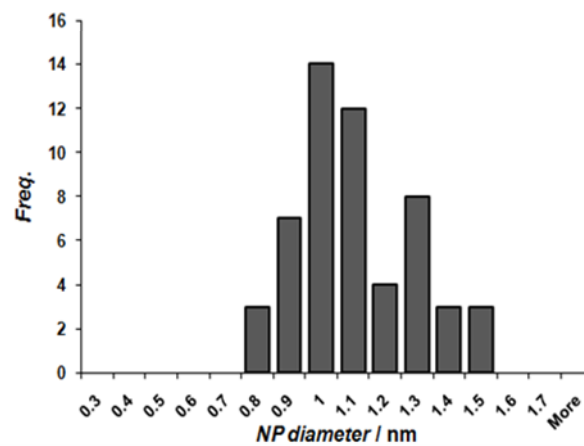
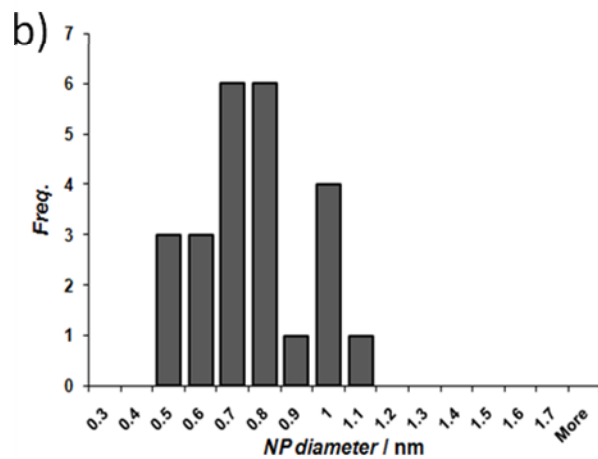


S5. EDX spectra for 9a) W-NPs@SWNT and (b) Re-NPs@SWNT



S6. Sizing histograms of M-NPs in SWNT for (a) W, (b) Re and (c) Os samples generated by thermal treatment (left) and e-beam irradiation (right).





S7. Movie of the MNPs exhibiting rapid translational motion in nanotubes during the first few seconds of nanoparticle formation.