Figure Supp.1: Raman Spectrum of the Cu/Cu$_2$O-filled CNOs showing the presence of a small peak ascribed to copper oxide and other peaks which could be ascribed to the D, G and 2D bands.

Figure Supp.2: Raman Spectrum of the region of the sample containing Cu$_2$O-filled CNOs showing the presence of a small peak ascribed to copper oxide and other small peak-features which could be ascribed to the D and G bands.
Figure Supp.3: Rietveld refinement of the diffractogram shown in the manuscript, Fig.10. By excluding the carbon contribution the ratio between Cu and Cu$_2$O could be extracted as follows: Cu 94%, Cu$_2$O 6%.

Figure Supp.4: XPS analyses of the Cu/Cu$_2$O filled CNOs.