

Figure Supp. 1: XRD analyses of the top-side (Foam Side) of the hybrid-buckypaper produced by pyrolysis of ferrocene/dichlorobenzene.

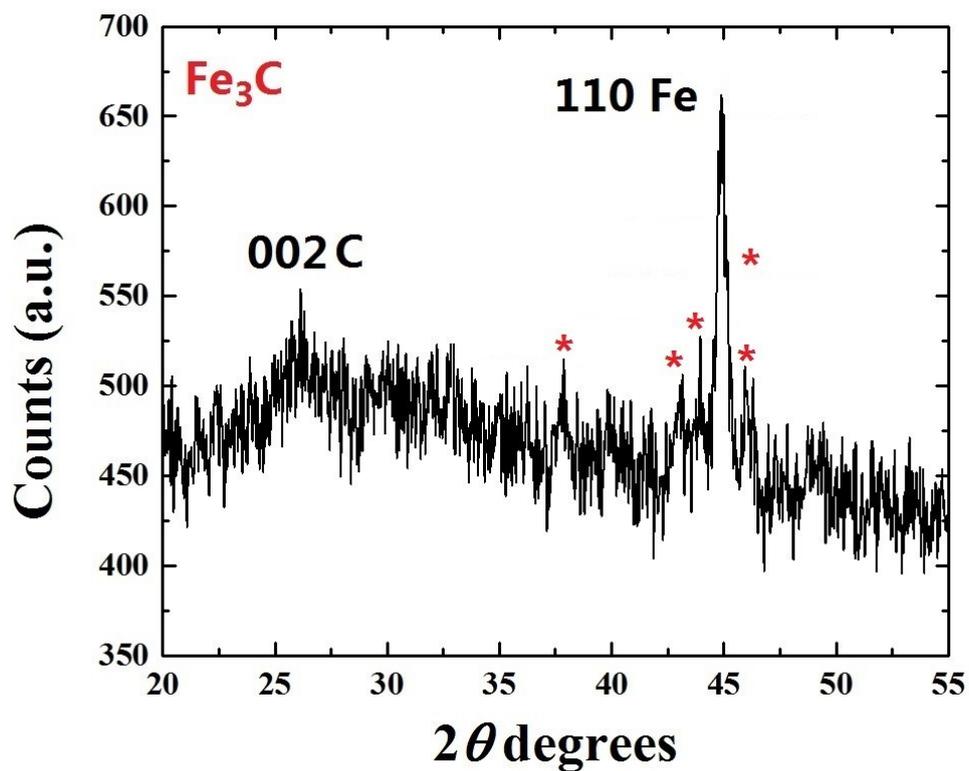


Figure Supp. 2A: XRD analyses of the bottom-side of the hybrid-buckypaper produced by pyrolysis of ferrocene/dichlorobenzene.

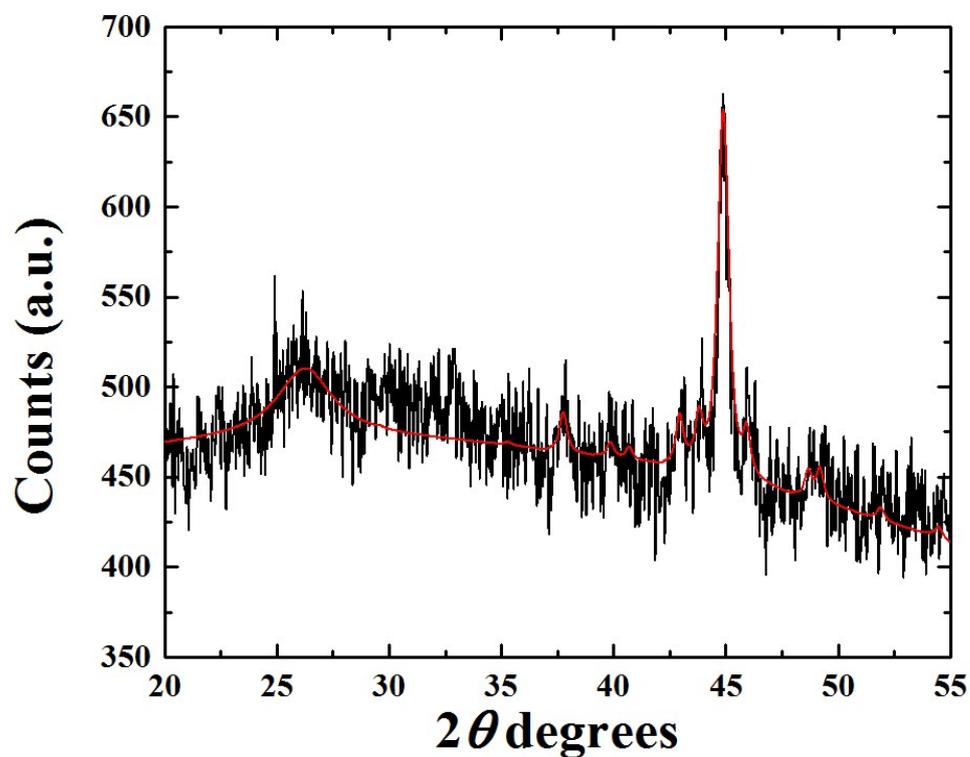


Figure Supp. 2B: Rietveld refinement (red line) and XRD diffractogram (black line) of the bottom side of the hybrid-buckypaper produced by pyrolysis of ferrocene/dichlorobenzene.

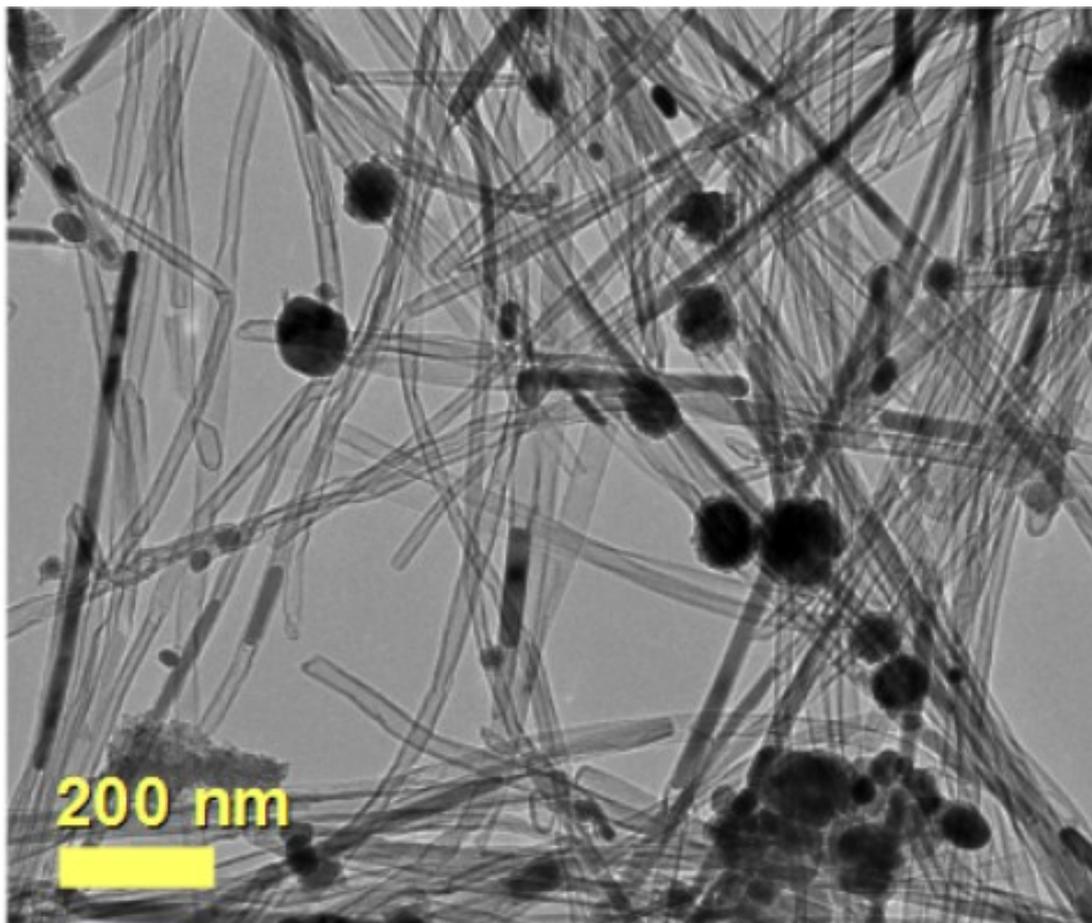


Figure Supp. 3: TEM image showing more example of the filled CNTs comprised in the buckypaper.

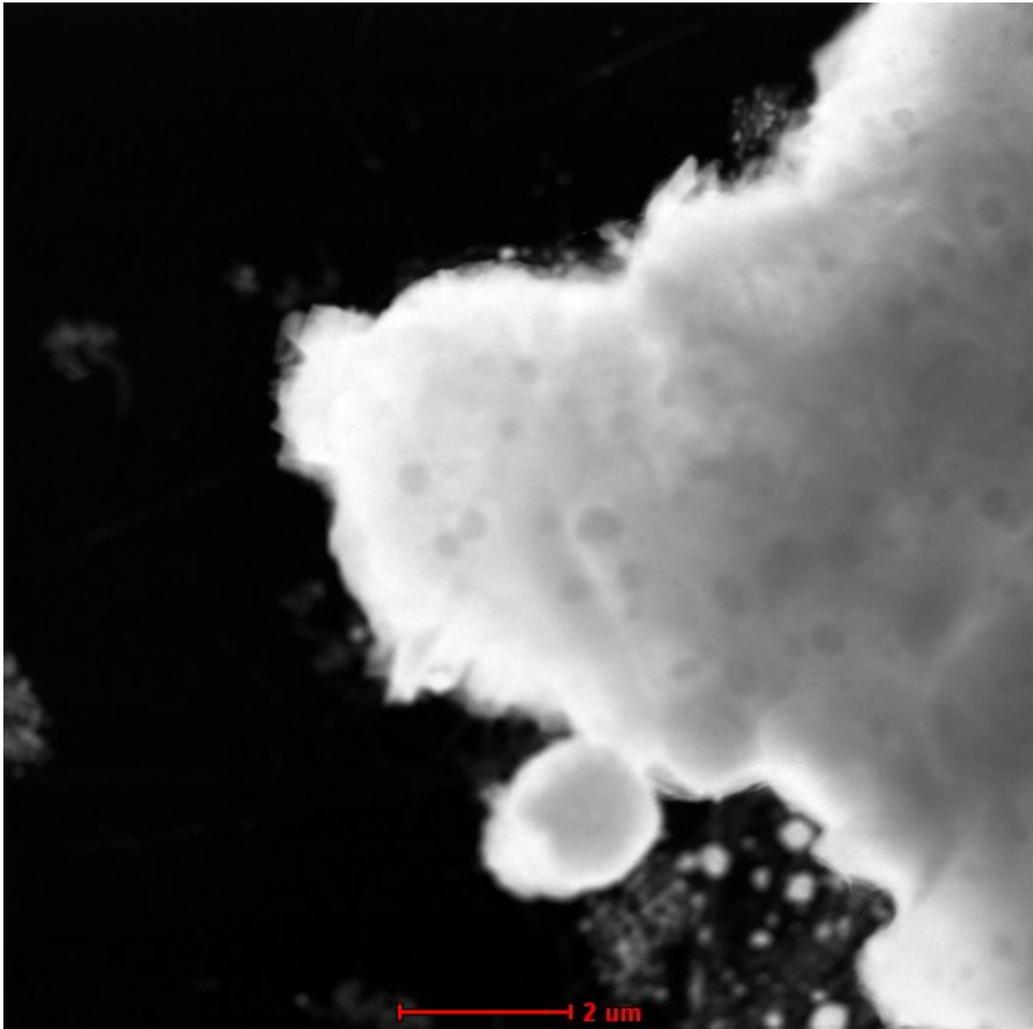


Figure Supp. 4: STEM image showing the atomic cross-sectional contrast of the carbon foam. The bright area refers to the Fe-filling of the foam.

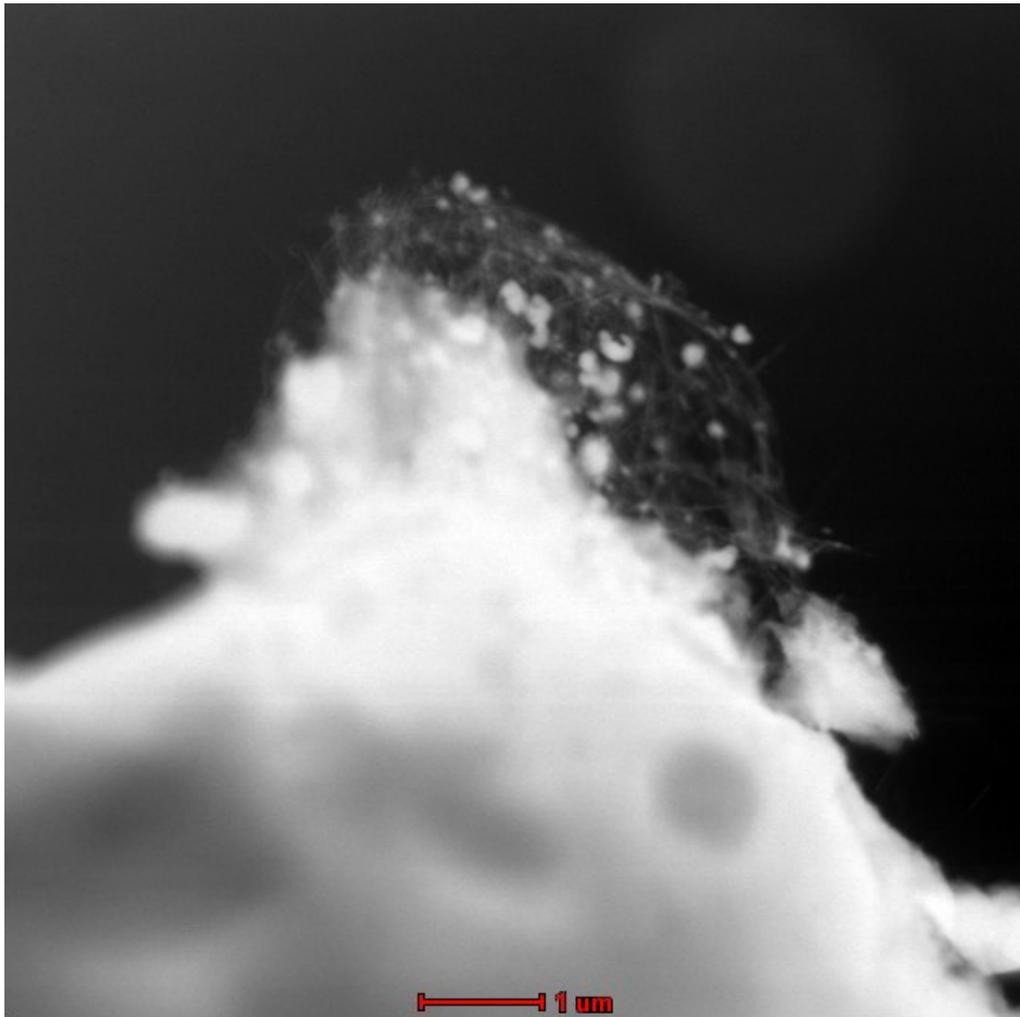


Figure Supp. 5: STEM image showing the atomic cross-sectional contrast of the carbon foam. On the top part of the image a direct connection between filled CNTs and foam is found. The bright area refers to the Fe-filling of the foam. Due to the high thickness the direct TEM imaging of the foam could not be performed.

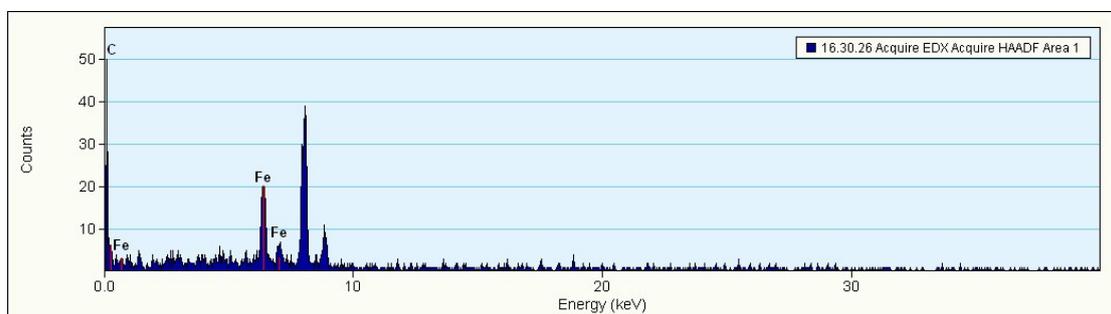


Figure Supp. 6: EDX analysis of the carbon foam showing the presence of large quantities of Fe and small quantities of C. Note that no oxygen is present. This means that the amorphous carbon surrounding the foam protects the Fe-filling from oxidation. The unlabeled peaks correspond to the Cu signal; this is excluded since is due to the TEM grid.

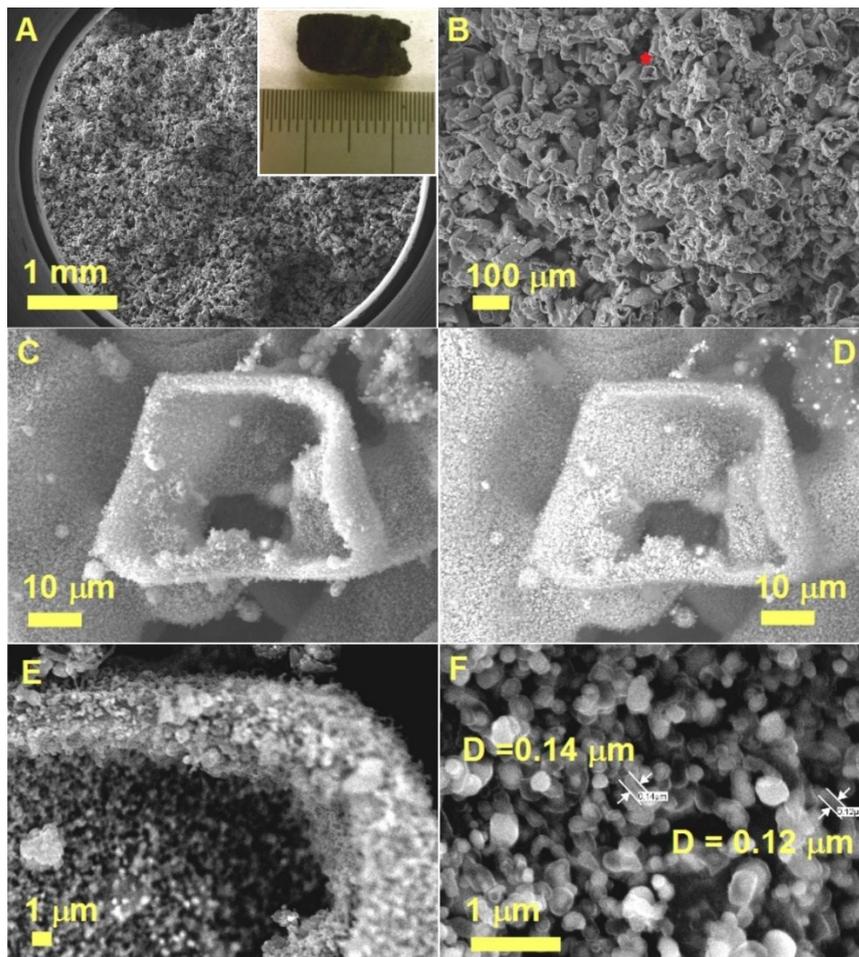


Figure Supp. 7: A-F: SEM micrographs showing the morphology of the as grown foam-film filled with Ni particles with an increasing level of detail. In D the atomic contrast of the film is shown in backscattered electron mode. The bright features in D represent the encapsulated Ni particles (high atomic number). The inset in A shows a typical photograph of the cm-scale film obtained after pyrolysis of nickelocene used for the SEM analyses.

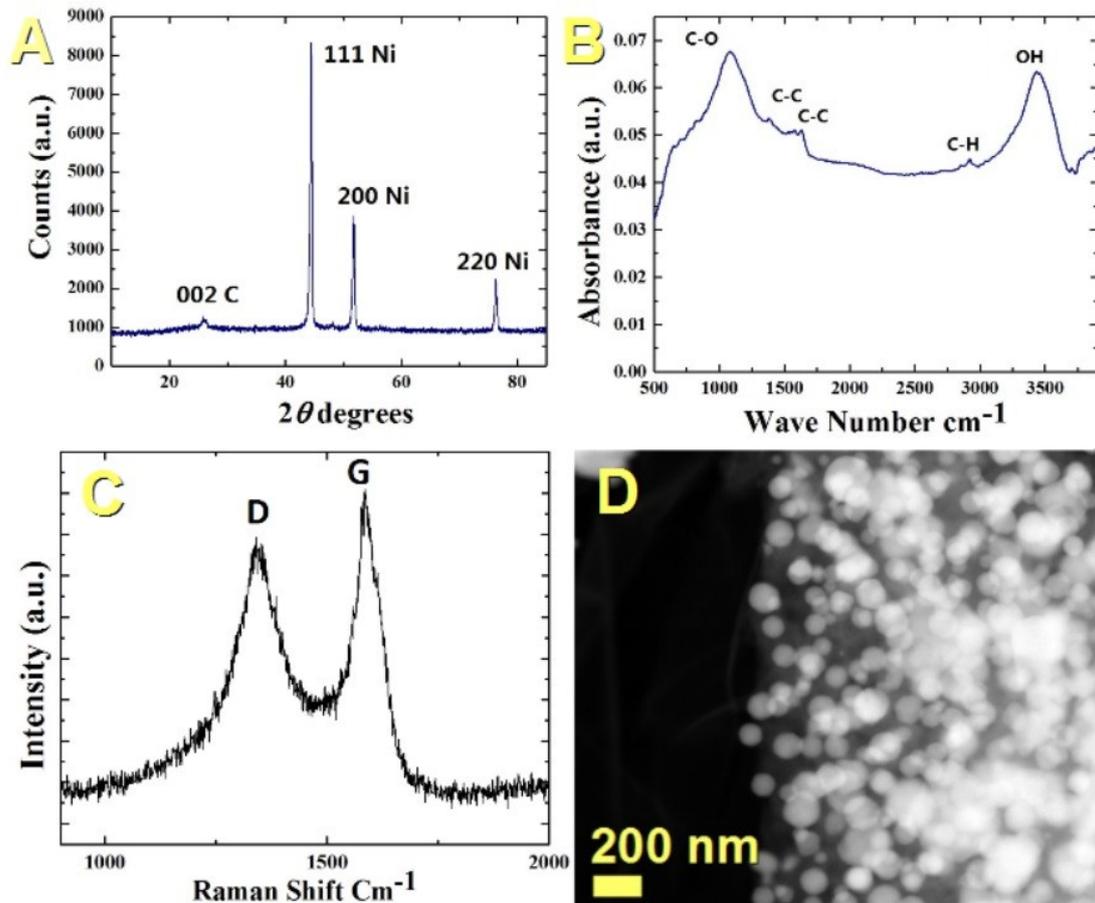


Figure Supp. 8: From A to D, XRD, FT-IR, Raman and scanning TEM (STEM) analyses of the foam-film. The STEM analyses clearly show the presence of a high metal-Ni content (bright regions) in the foam.

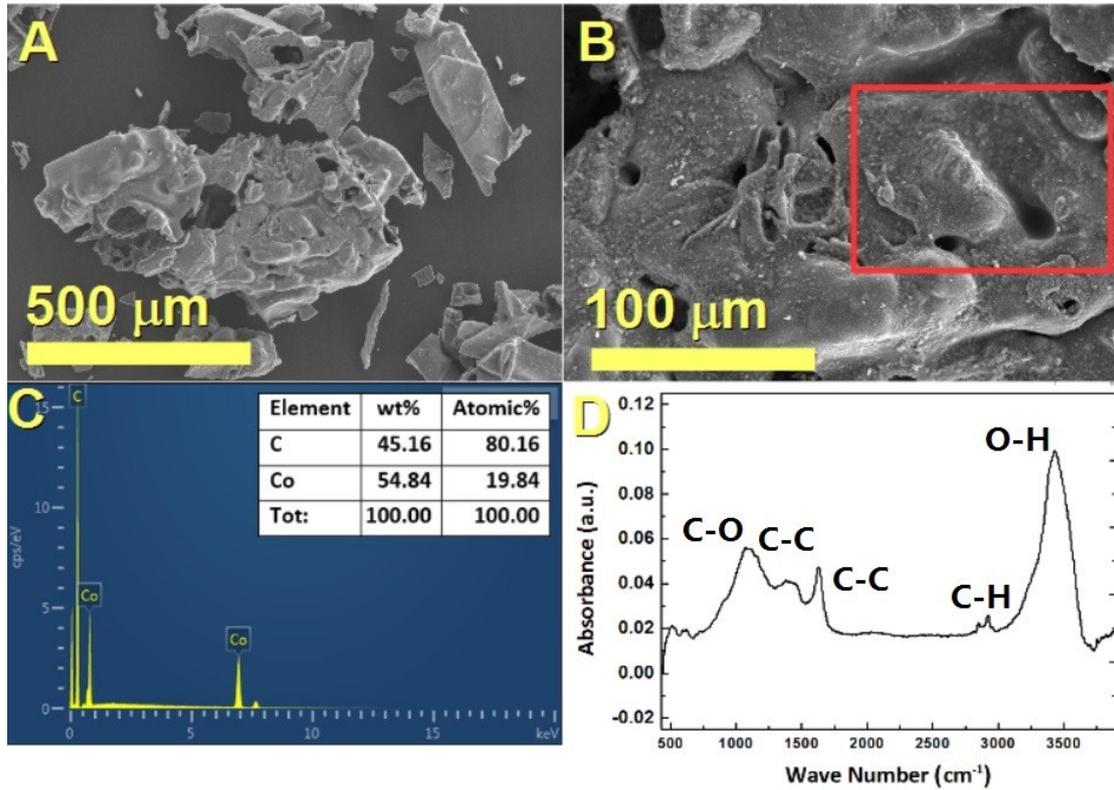


Figure Supp.9: SEM in A-B, EDX in C and FTIR in D of the carbon foam sample prepared by pyrolysis of cobaltocene.

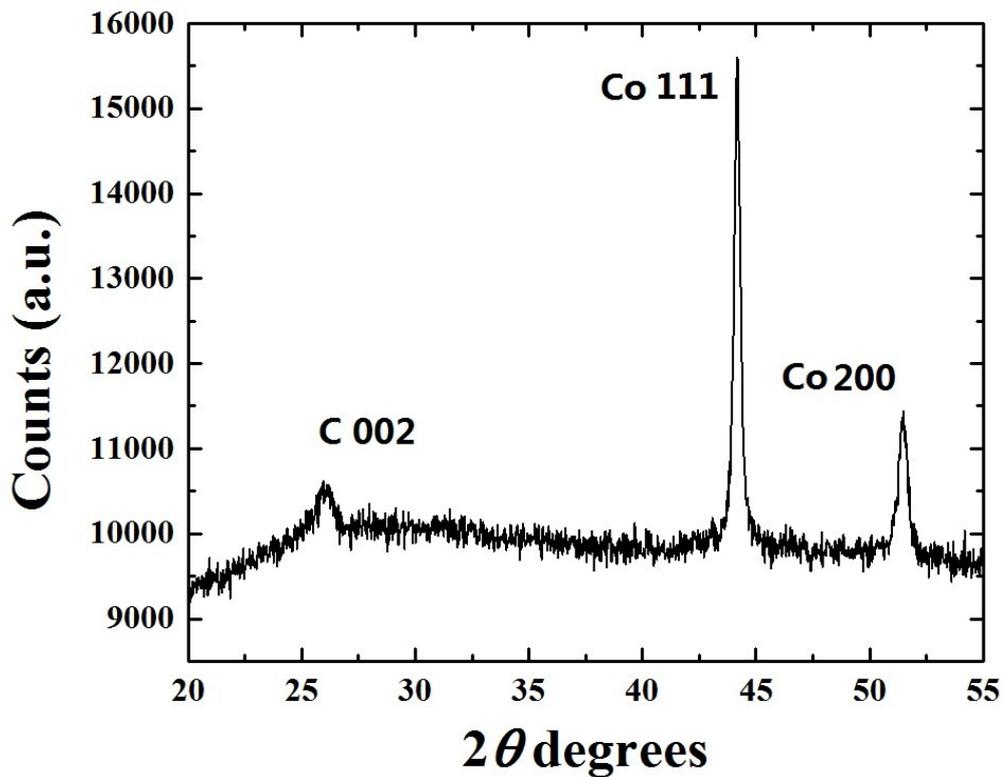


Figure Supp. 10: XRD analysis of the carbon foam sample prepared by pyrolysis of cobaltocene showing the presence of a graphitic peak in the region of 26 degrees  $2\theta$

and the presence of fcc cobalt with 111 and 200 peak reflections.