†Electronic Supplementary Information (ESI) available:

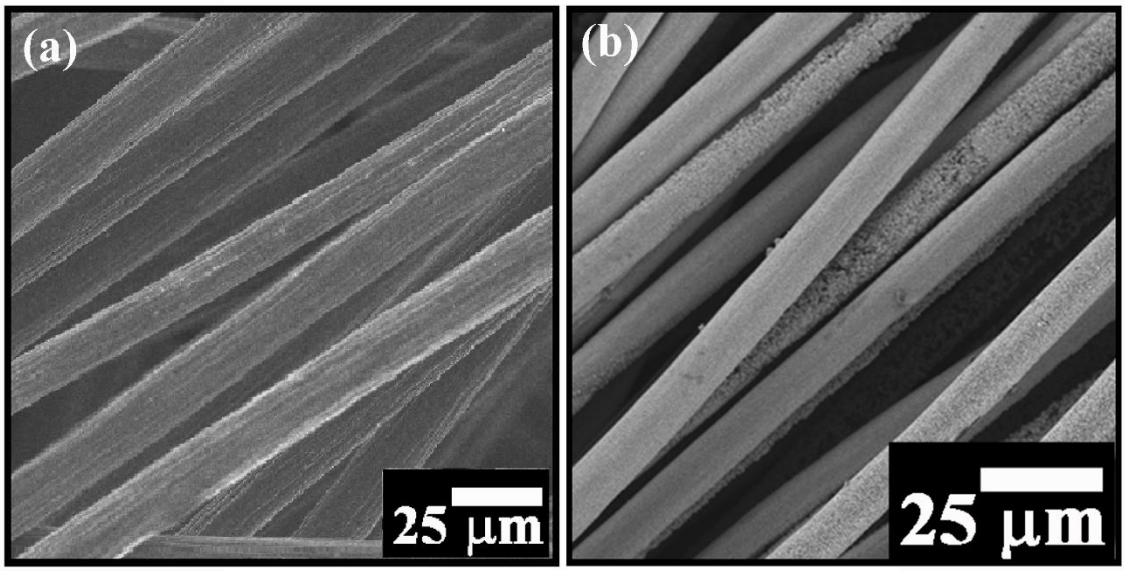

Figure S1: FESEM images of the carbon fabric before (a) and after (b) the growth of copper oxide nanostructures on its surface. Uniform coating of the CuO nanostructure over the carbon fabrics is clearly visible from the figures.

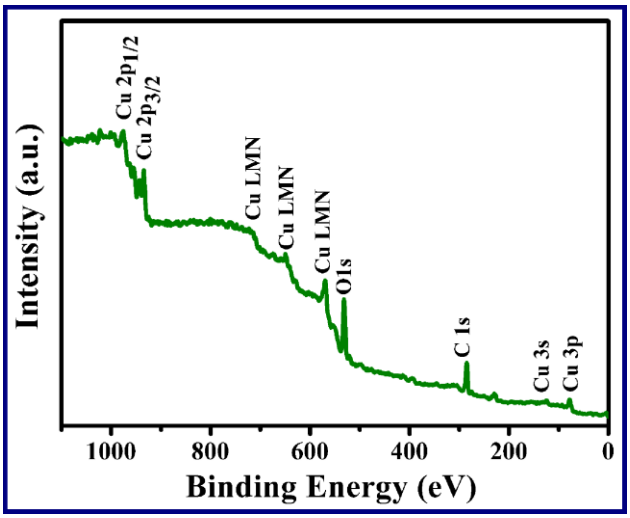

Figure S2: Presence of the constituent elements in the CuO nanostructures is displayed by the survey scan of the XPS analysis shown in the figure. Complete indexing of all the peaks in the

spectra strongly discards any possibility regarding the presence of impurity agents in the derived nanostructures.

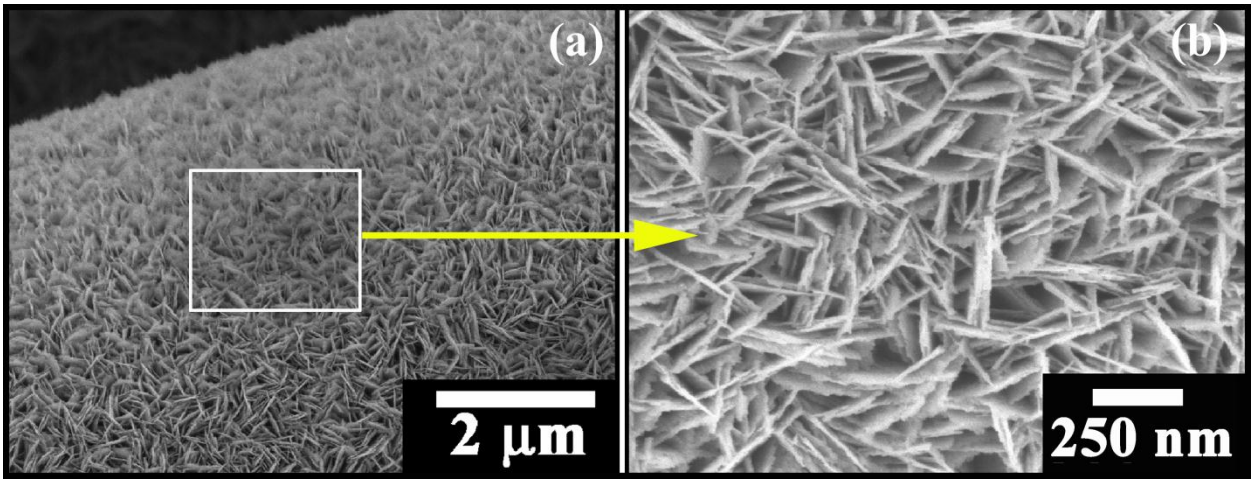

Figure S3: FESEM images of copper oxide nanostructures without soft polymer, left-inset (a) shows the low-magnification FESEM image and right-inset (b) demonstrates the high-magnification FESEM image of the same CuO nanostructures on CF. It can be observed that each of the CF is uniformly covered with a flaky nanostructures array. The average width of the copper oxide nanostructures range from 10 to 20 nm and their lengths are around 250 nm

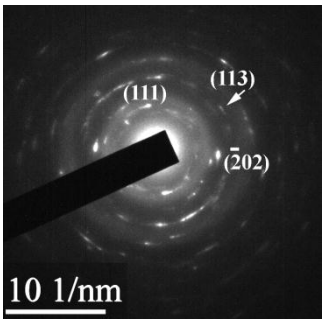

Figure S4: Figure shows the selected area electron diffraction (SAED) pattern of the CuO nanostructure which suggests its polycrystalline nature.

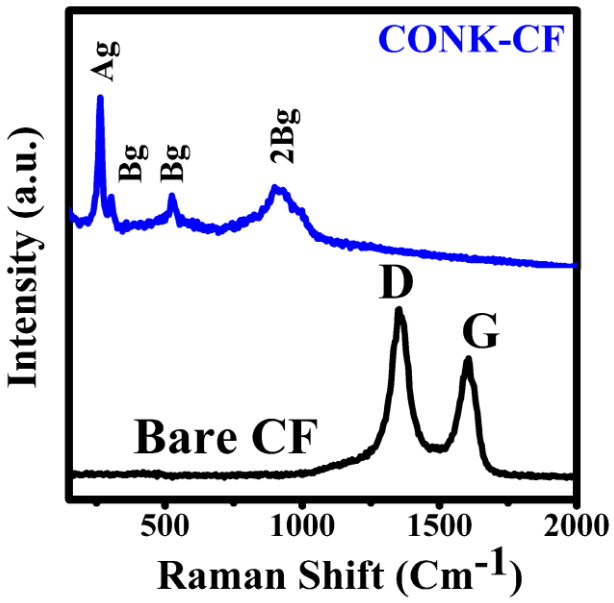

Figure S5 shows the Raman spectra of the bare CF as well as CONK on CF. The bare CF consists two sharp peaks around 1363 and 1593 cm^{-1} corresponding to the well-known D and G band of carbon materials, respectively [1]. Belonging to the monoclinic structures, CuO has three Raman active modes (A_g+2B_g) all of which are present in our samples. The peak at 282 cm^{-1} is assigned to A_g modes, while both 345 cm^{-1} and 626 cm^{-1} are assigned to B_g modes, respectively [2]. In addition to these main three modes, one broadened peak is observed at 1114 cm^{-1} which also belongs to B_g symmetry and is assigned due to multi-phonon transition. The multiphonon band arises due to the anharmonic coupling between phonons in polar solid and indicates the electronic movement along the anisotropic CONK structure [3]. Absence of any C peak in CONK-CF structure clearly indicates the uniform growth of CuO nanostructures over the entire fabric

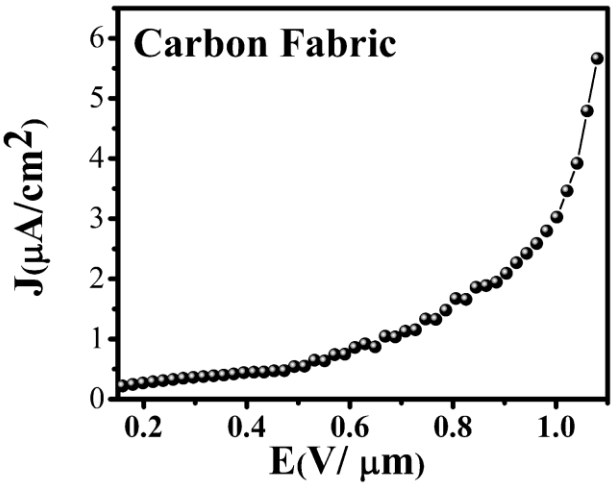

Figure S6: Demonstration of almost negligible field emission characteristics from bare carbon fabric substrate.

References:

1. S. Maiti, U. N. Maiti, S. Pal and K. K. Chattopadhyay, *Nanotechnology*, 2013, **24**, 465601

2. D. Gao, G. Yang, J. Li, J. Zhang, J. Zhang, and D. Xue, *J. Phys. Chem. C*, 2010, **114**, 18347

3. W. Wang, Q. Zhou, X. Fei, Y. He, P. Zhang, G. Zhang, L. Peng and W. Xie, *CrystEngComm*, 2010, **12**, 2232