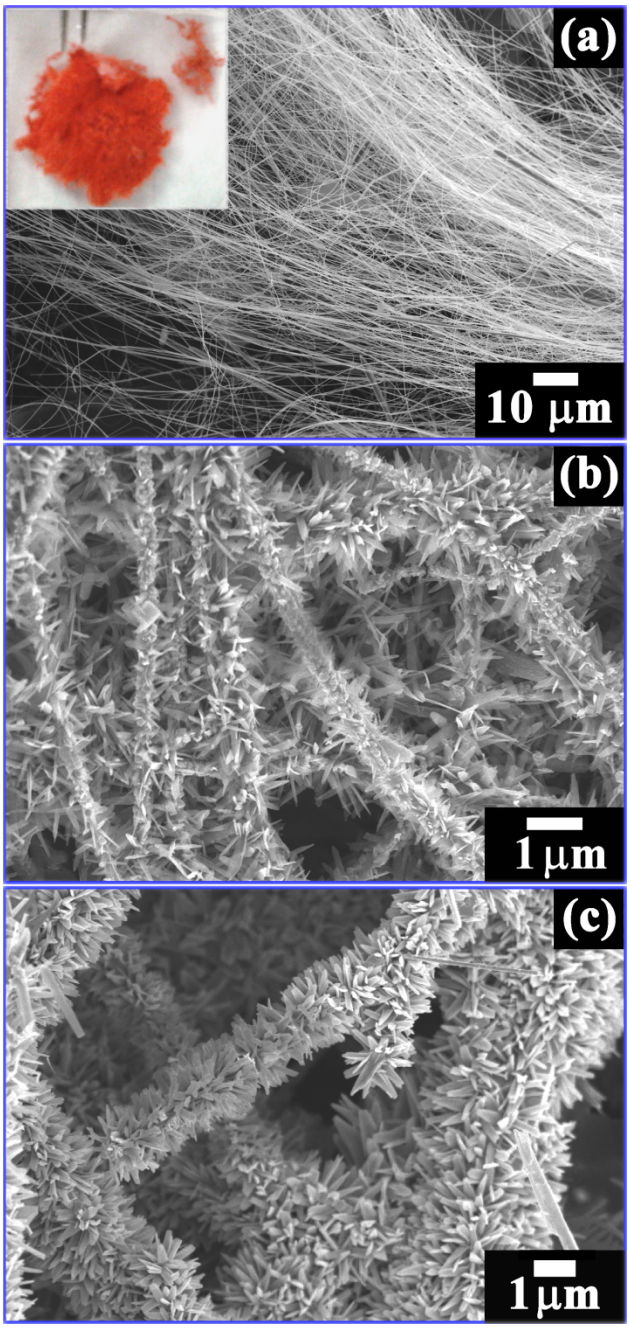
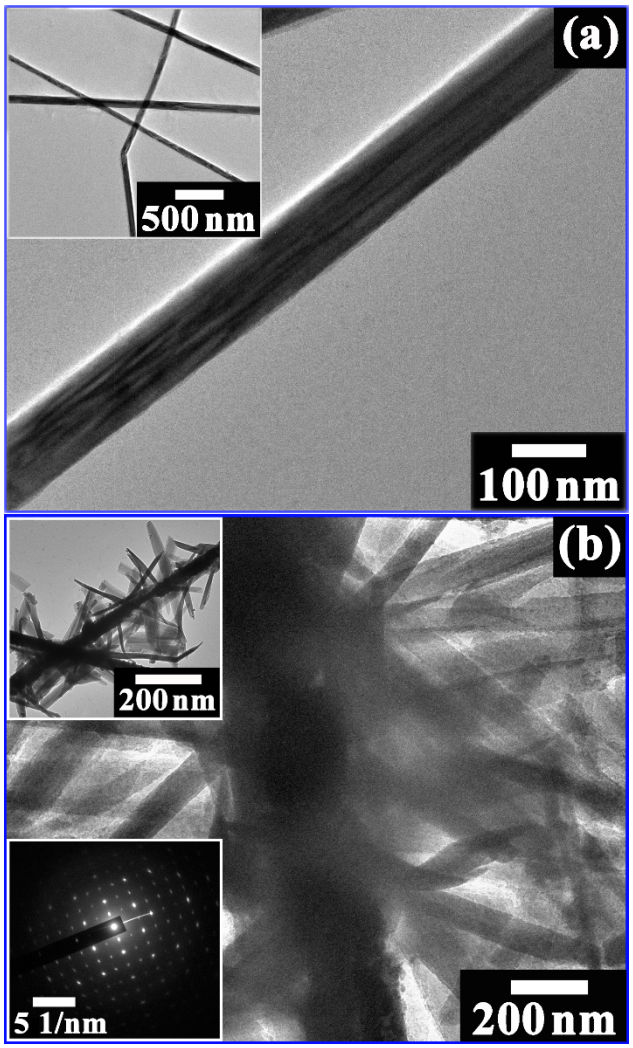
CHARACTERIZATION:

Morphology of the synthesized products was inspected by field emission scanning electron microscope (HITACHI S-4800). Crystallinity and phase of the samples were examined by x-ray diffractometer (XRD, D8 Advanced Bruker). Compositional analysis of the hierarchy sample was investigated by X-ray photoelectron spectroscopy (XPS) using SPECS HSA-3500 hemispherical analyzer with monochromatic Mg Kα x-ray source. Phase purity of the samples was further characterized by Fourier transform infrared (FTIR) spectroscopy (Shimadzu FTIR spectrometer (IR Prestige)) and Raman spectroscopy (WITec alpha 300RA Raman confocal microscope with 532 nm diode laser). The field emission performance was investigated in a high vacuum system under vacuum ~2×10^{-6} mbar with a parallel plate configuration where CuTCNQ hierarchical samples on conducting carbon tape pasted on steel slab served as the cathode and a conically shaped stainless steel electrode as the anode having tip diameter ~1.5 mm.



S1: FESEM images of (a) Cu nanowires (inset showing digital image); (b) CuTCNQ nano-hierarchy (T2) and (c) CuTCNQ nano-garland (T5) showing scalability.



S2: TEM images of (a) Cu nanowire (inset shows the low magnification image); (b) T5 (upper inset for T2) and SAED of T5 in the lower inset.

TABLE S1: Comparison of the reported field emission data

Nanostructures	Turn-on field (V/μm)	Threshold Filed (V/μm)	Field enhancement factor (β)	Ref.
CuTCNQ nanowires AgTCNQ nanowires on carbon fiber	2.56 (10 μA) 1.72 (10 μA)	6.33 (1 mA) 4.21 (1 Ma)	2559 1165	1
ZnO nanowires	8.0–10.0	……..	860	2
CuTCNQF4 NWs AgTCNQF4 NWs	5.48 (10 μA) 5.21(10 μA)	7.43(1 mA) 13.4(1 mA)	……..	3
CuTCNQ nanorod	7.1 (10μA)	13.8 (10 mA)	463	4
Ag-TCNQ nanowires	13.5,9.3 and 11.5 (10 μA)	……..	100	5
SWCNT	1.5–4.5 (10 μA)	3.9–7.8 (10 mA)	2500–10000	6
MWCNT	2.44	……..	9250	7
AgTCNQ nanowires CuTCNQ nanowires	2.58 (10 μA) 3.13 (10 μA)	……..	……..	8
ZnO nanowire array	4.5 (10 μA)	9 (1 mA)	2670	9
NbS_2 nanowires	2.5	……..	……..	10
CuTCNQ nanotube arrays	4.49 (10 μA)	----	699	11
CuO nanowires	3.0-3.6(10μA)	……..	……..	12
In_2O_3 nanowires	7 (1 μA)	11.3 (1mA)	……..	13
GaN nanowires	8.5 (0.1 μA)	……..	1170	14
CuTCPQ nanorods	2.70 (10μA)	5.05 (1mA)	……..	15
WO3 nanowires	4.8 (10μA)	……..	……..	16
Si nanowires	7.3 (10μA)	……..	424	17
ITO/Ag/Ag(TCNQ) ITO/Cu/Cu(TCNQ)	6 (10μA) 2.2 (10μA)	……..	……..	18
TiO2 nanowires	5.7(10μA)	6.7(10mA)	3896 and 1650	19
CuTCNQ nano-hierarchy	2.69 (10μA)	6.11 (10 mA)	2366	This work

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