Electronic Supplementary Material (ESI) for New Journal of Chemistry.

Supplementary Information (SI)

Fig. S1 (a) Controlled growth of ZnO nanowires in the presence of equimolar HMTA and $ZnNO_3$ precursor salt solution (1:1) for 6 h, (b) 12 h and (c) 24 h reaction at 90˚C.

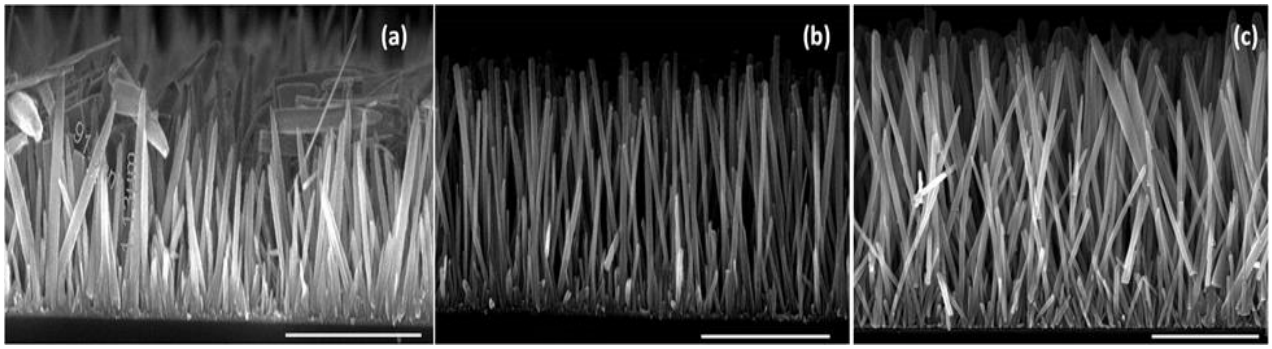


Fig. S2 Time dependent study of ZnO-CuO nanocomposite structure formed by in-situ approach with different copper content (a) $Cu_{0.1}$ after 6 h reaction, (b) $Cu_{0.1}$,12 h reaction, (c) $Cu_{0.1}$, 24h reaction, (d) $Cu_{0.2}$, 6 h reaction, (e) $Cu_{0.2}$, 12 h reaction, (f) $Cu_{0.2}$, 24 h reaction, (g) $Cu_{0.5}$, 6 h reaction, (h) $Cu_{0.5}$, 12 h reaction, (i) $Cu_{0.5}$, 24 h reaction, (j) Cu_1:Zn_1, 6 h reaction, (k) Cu_1:Zn_1, 12 h reaction, and (l) Cu_1:Zn_1, 24 h reaction. The scale in the image is 1 µm.

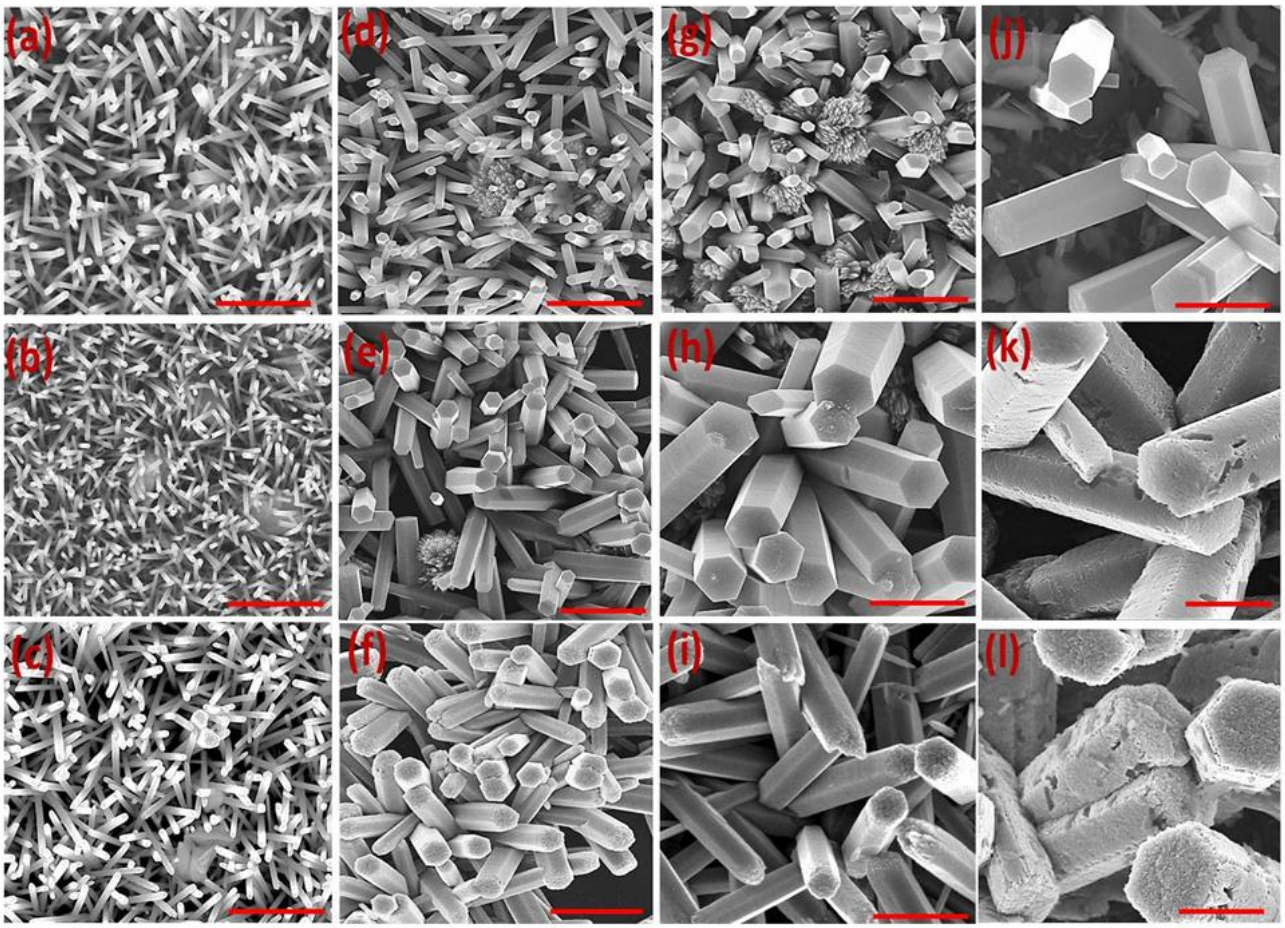


Fig. S3 UV-Vis absorption spectra of CuO-ZnO NCST synthesized by in-situ approach.

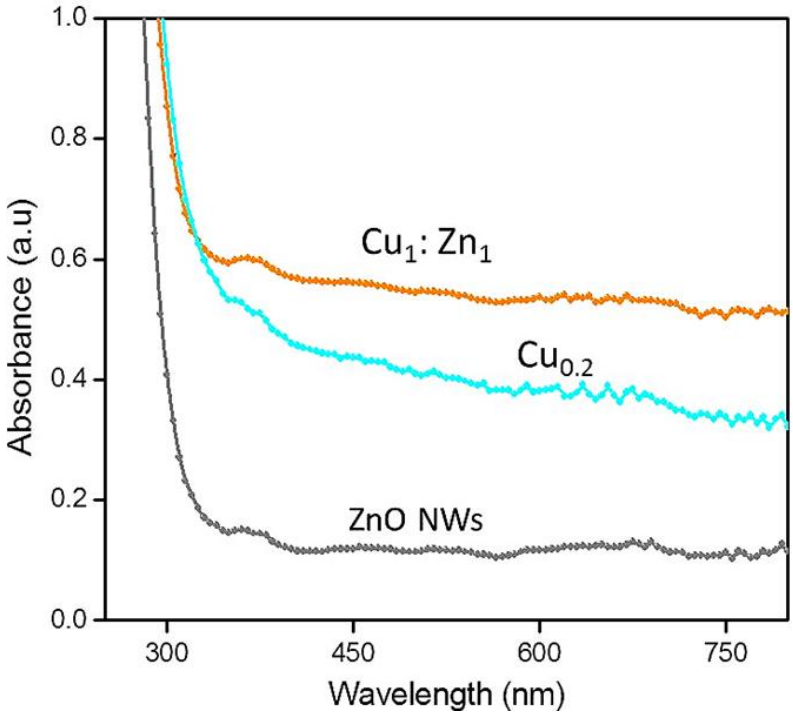


Fig. S4 SEM-EDX images of flower like CuO-ZnO NCS prepared by using molar ratio of 2 [$(Cu(NO_3)_2 : Zn(NO_3)_2)$] : HMTA.

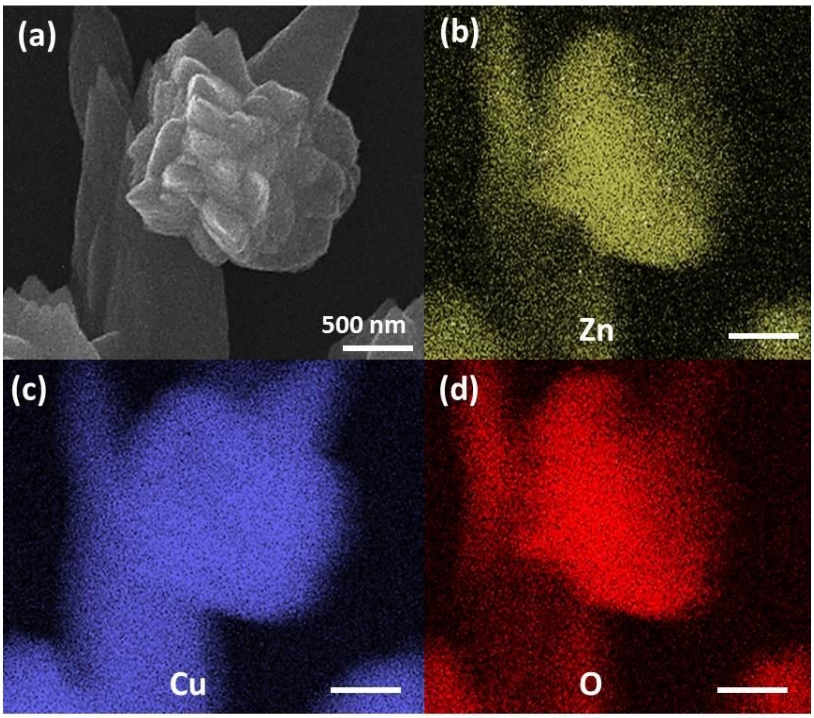


Fig. S5 ZnO-CuO metal mixed oxide nanostructures formed after impregnating ZnO NWs with copper precursor solution in the absence of Zn salt solution.

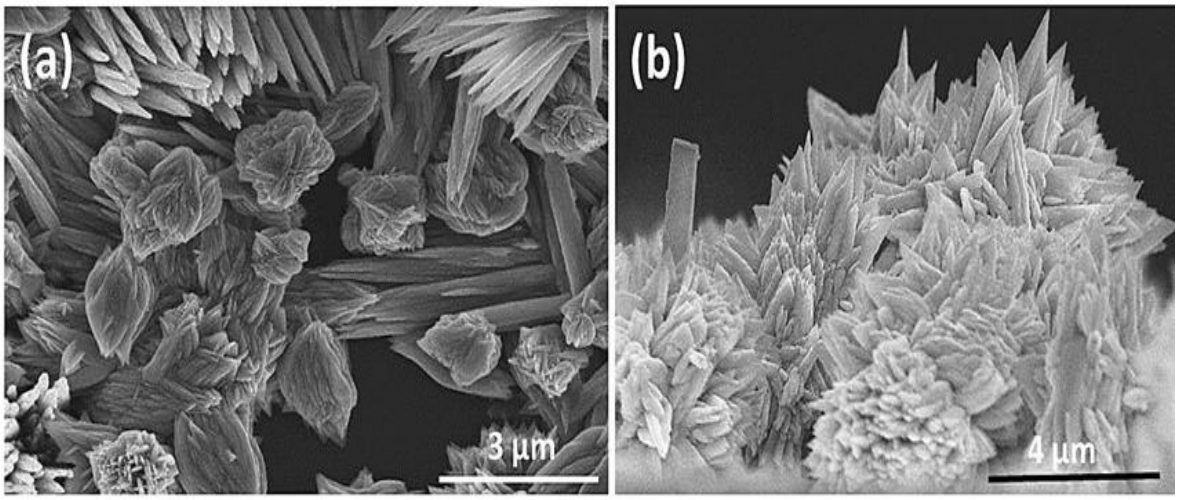
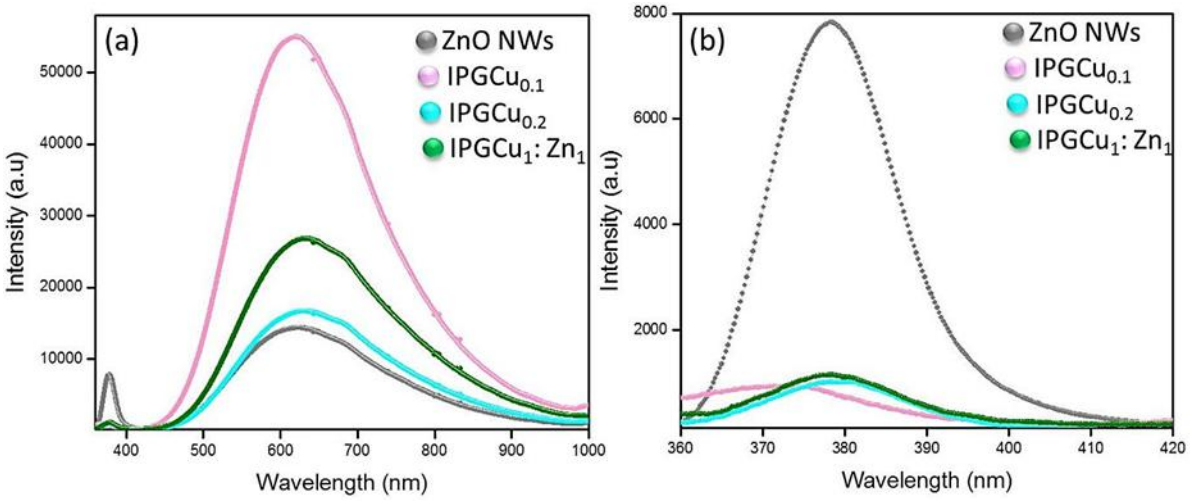


Fig. S6 (a) Photoluminescence spectra of ZnO NWs and CuO-ZnO nanocomposites formed after impregnation and (b) near band edge emission with impregnation growth process does not displaying appreciable shift.



SI Table 1 Parameters consider for the synthesis of CuO-ZnO nanostructures by in-situ approach.

S. No.	Ratio	Molar ratio	Reaction time	Resultant structure
1.	0.2 : 0.8 : 1	_	6 − 24 h	_
2.	0.5 : 0.5 : 1	0.5	6 − 24 h	Very rough CuO-ZnO PIL-NCST, etched tips
3.	1 : 1 : 1	1	6 − 24 h	CuO-ZnO PIL-NCST with CuO as outgrowths
4.	1 : 1 : 2	0.5	6 − 24 h	Rough CuO-ZnO PIL-NCST, etched tips
5.	1 : 1 : 4	0.25	6 − 24 h	CuO-ZnO PIL-NCST with CuO on the tips
6.	1 : 1 : 0.5	2	6 − 24 h	Flower like structure