Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

Nanocube In_2O_3@RGO heterostructure based gas sensor for acetone and formaldehyde detection

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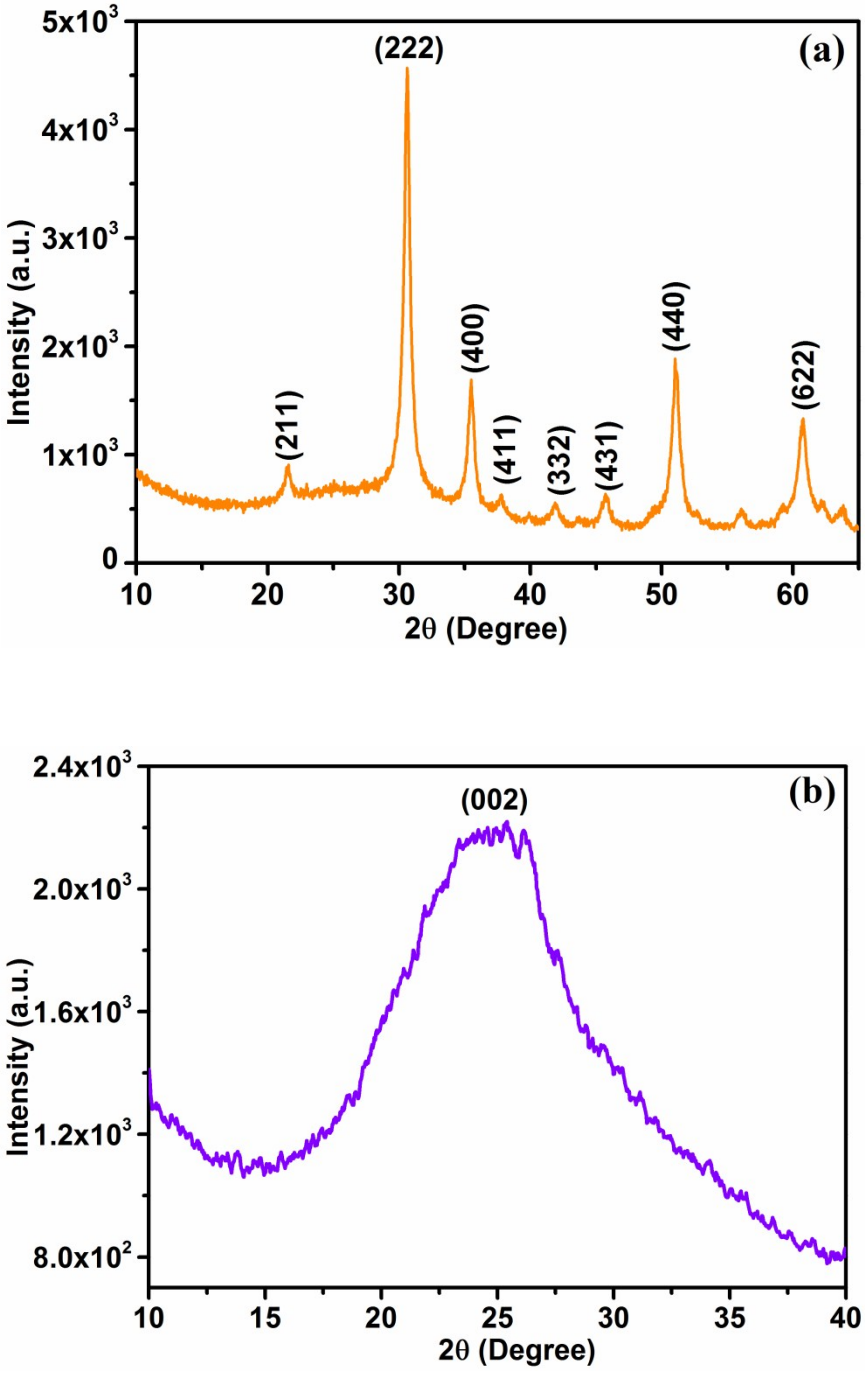


Fig. S1: XRD spectra of the as synthesized In_2O_3 nanocubes (a) and RGO (b).

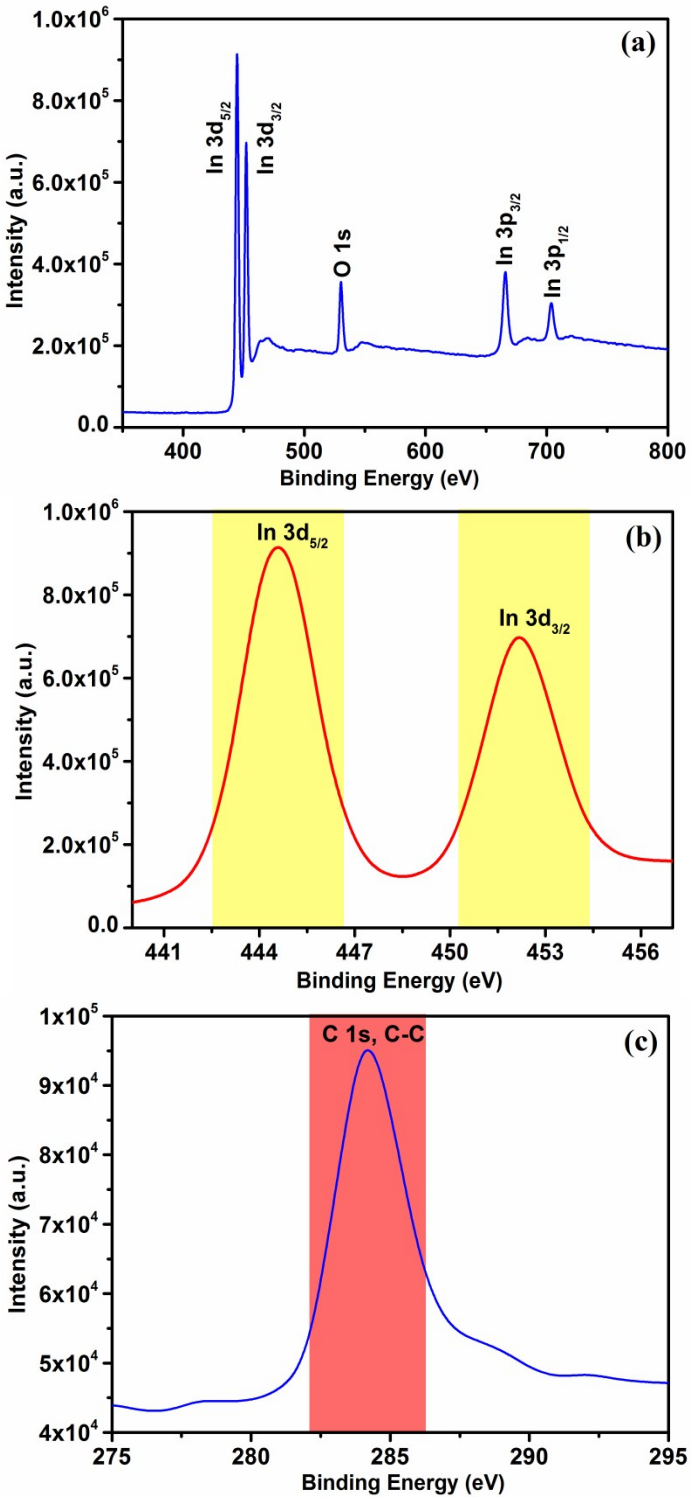
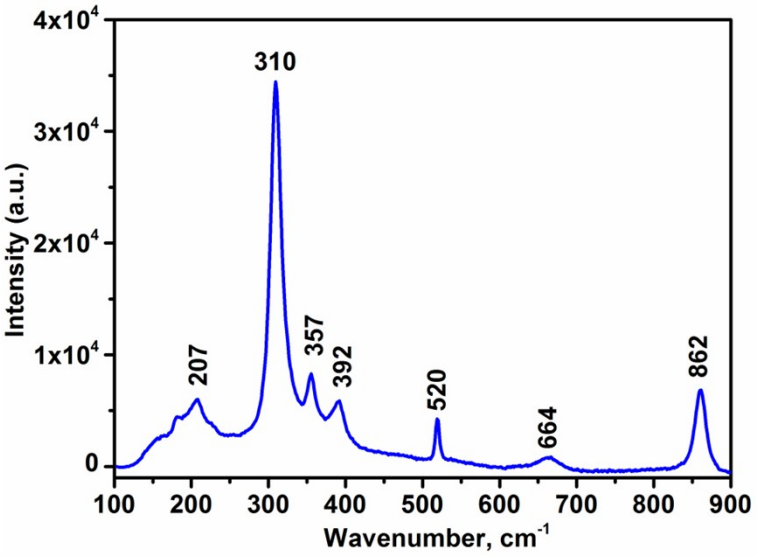
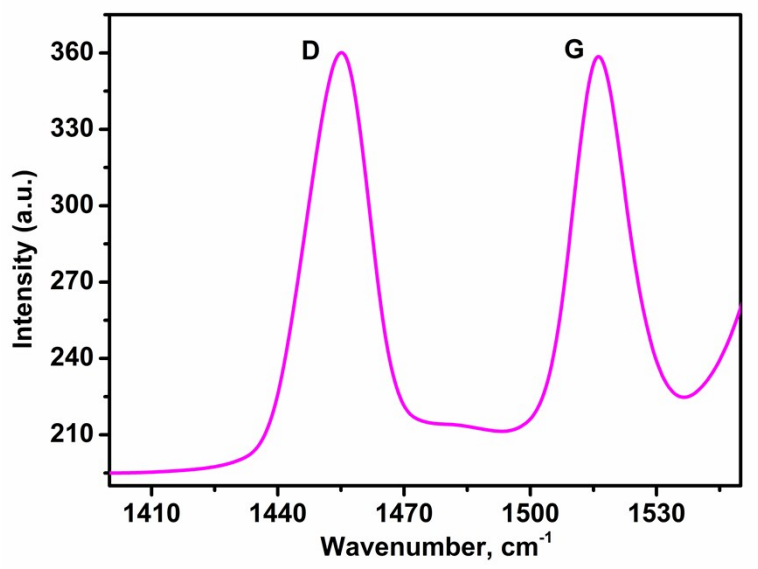


Fig. S2: XPS survey spectra of In_2O_3 nanocube (a), deconvoluted spectrum of In 3d peaks (b) and RGO C 1s peak (c).

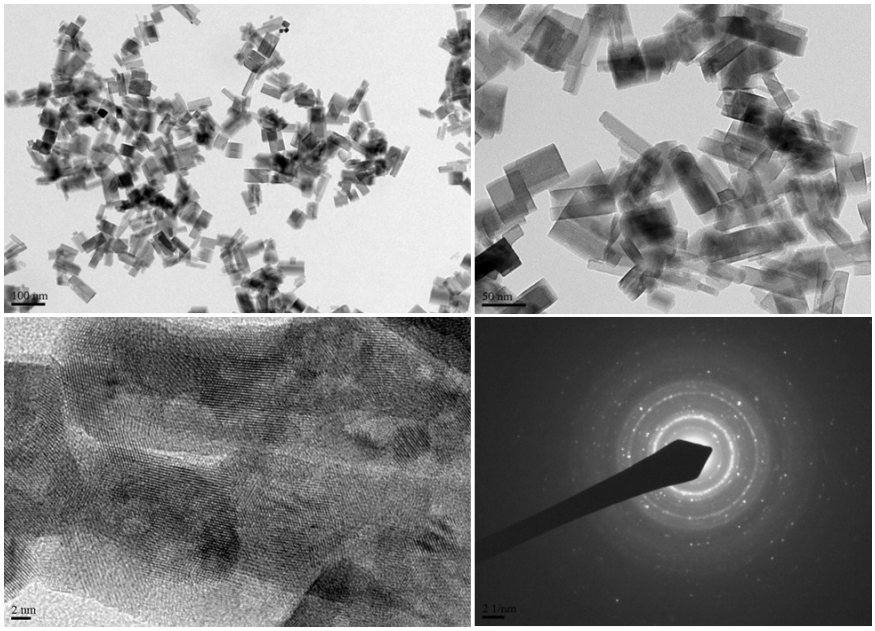


(a)

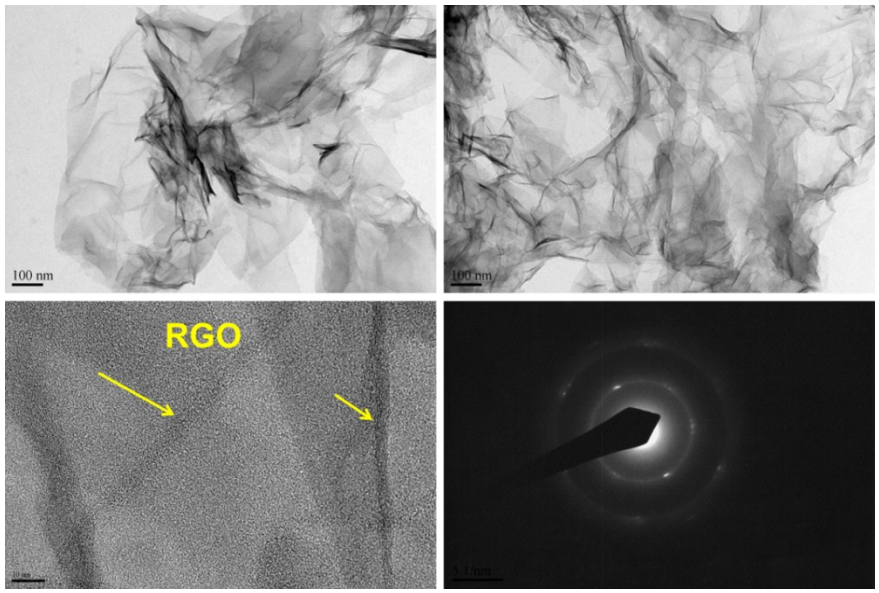


(b)

Fig. S3: Raman spectrum of the In_2O_3 nanocube (a) and RGO (b).

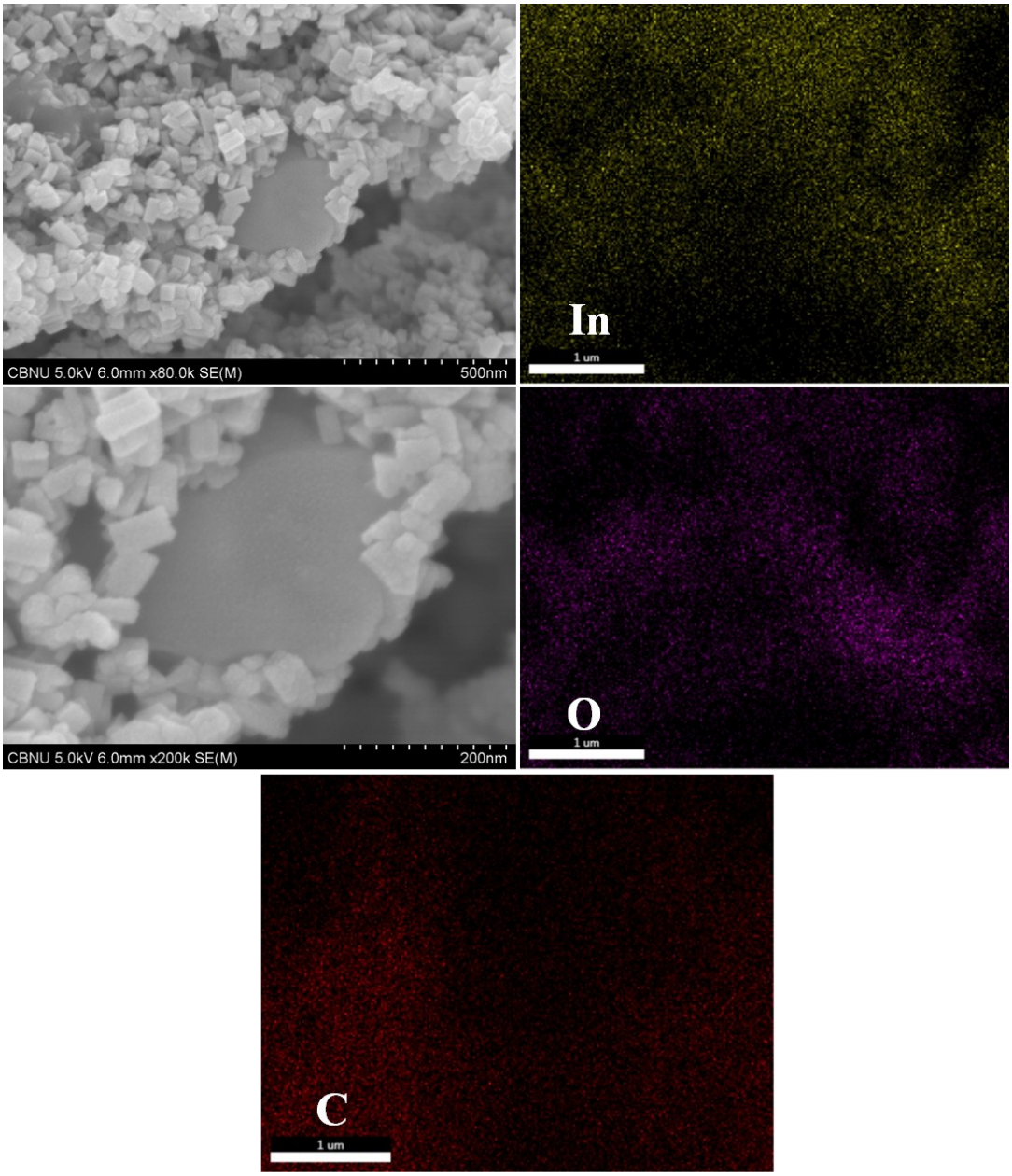


(a)

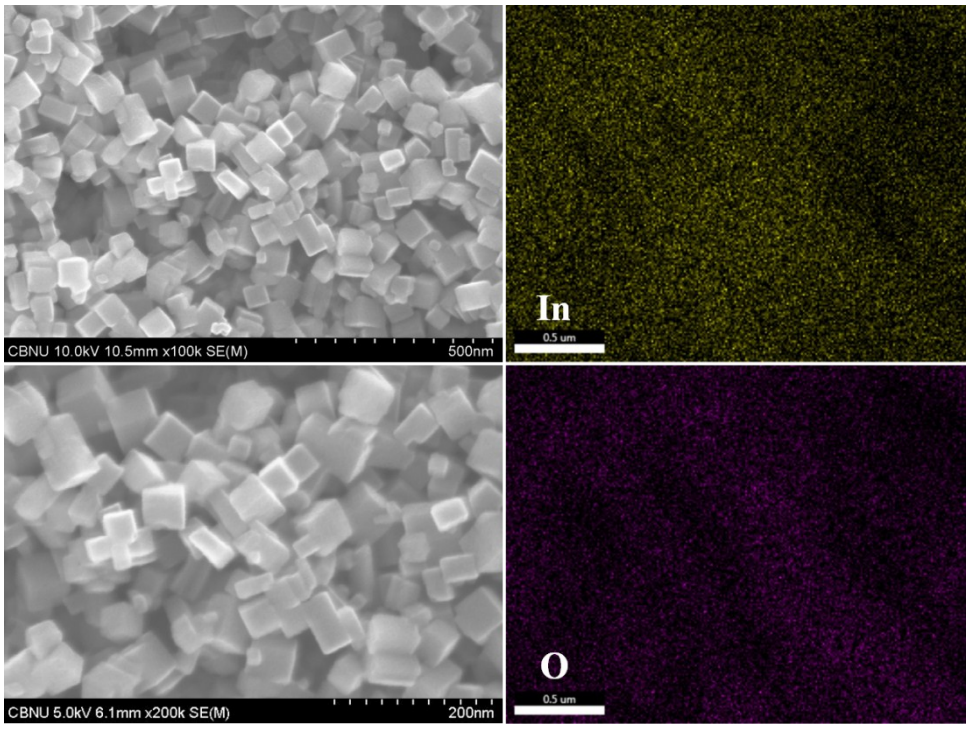


(b)

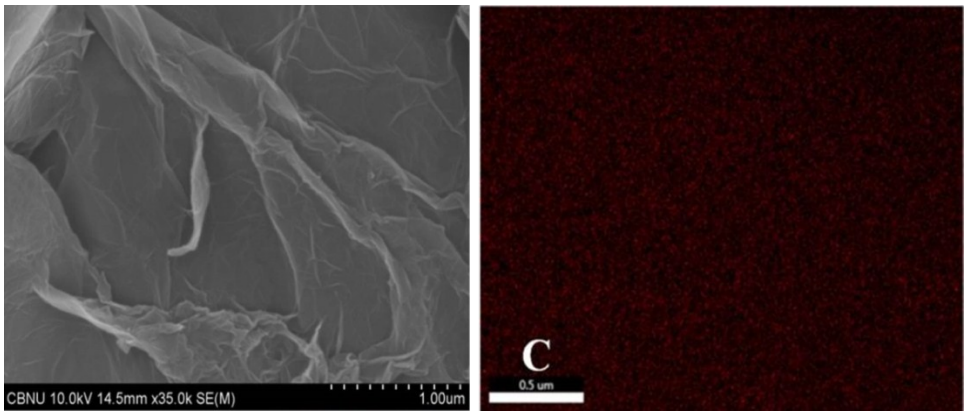
Fig. S4: The TEM, HR-TEM images and SAED pattern of the as synthesized (a) In_2O_3 nanocube and (b) RGO.


CBNU 5.0kV 6.0mm x80.0k SE(M)
500nm
In
1 um
CBNU 5.0kV 6.0mm x200k SE(M)
200nm
O
1 um
C
1 um

(a)



(b)



(c)

Fig. S5: FE-SEM images and corresponding elemental mapping of the as synthesized nanocube In_2O_3@RGO heterostructure (a), In_2O_3 nanocube (b) and RGO (c).

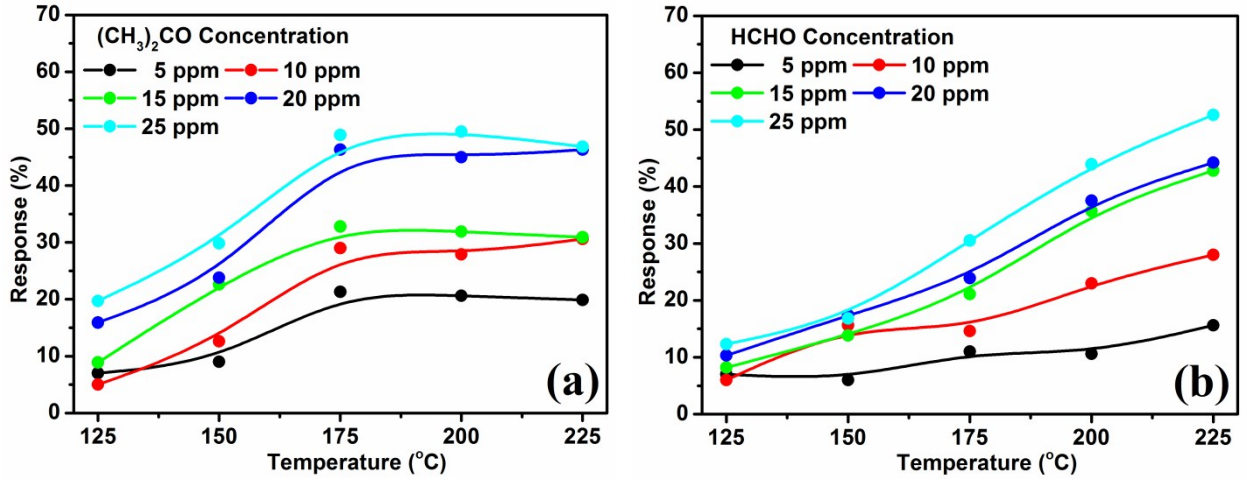


Fig. S6: Acetone (a) and formaldehyde (b) gas sensing characteristics of the In_2O_3 nanocube sensor as a function of operating temperature for various concentrations.

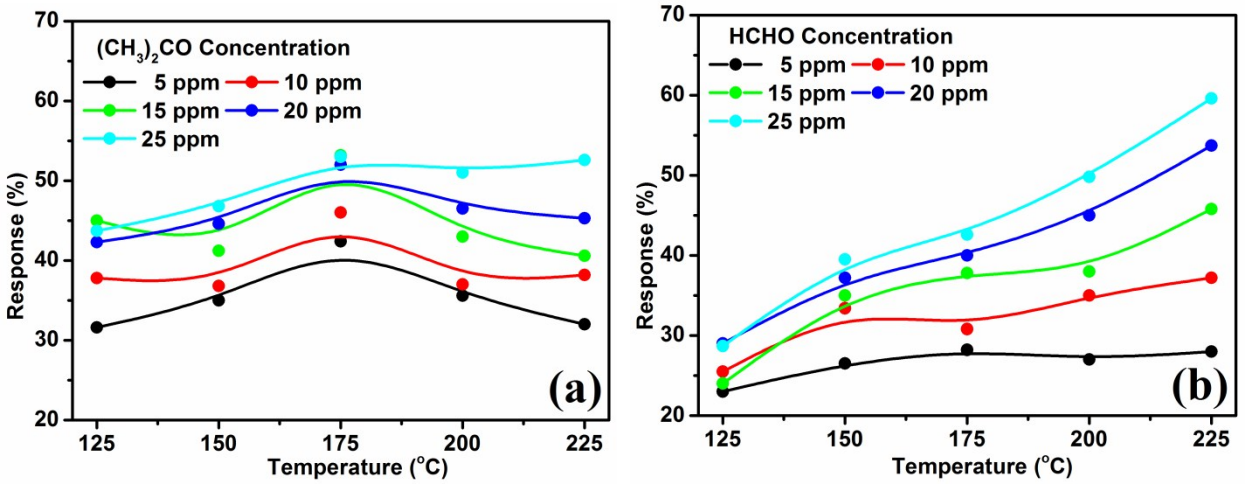


Fig. S7: Acetone (a) and formaldehyde (b) gas sensing characteristics of the RGO sensor as a function of operating temperature for various concentrations.

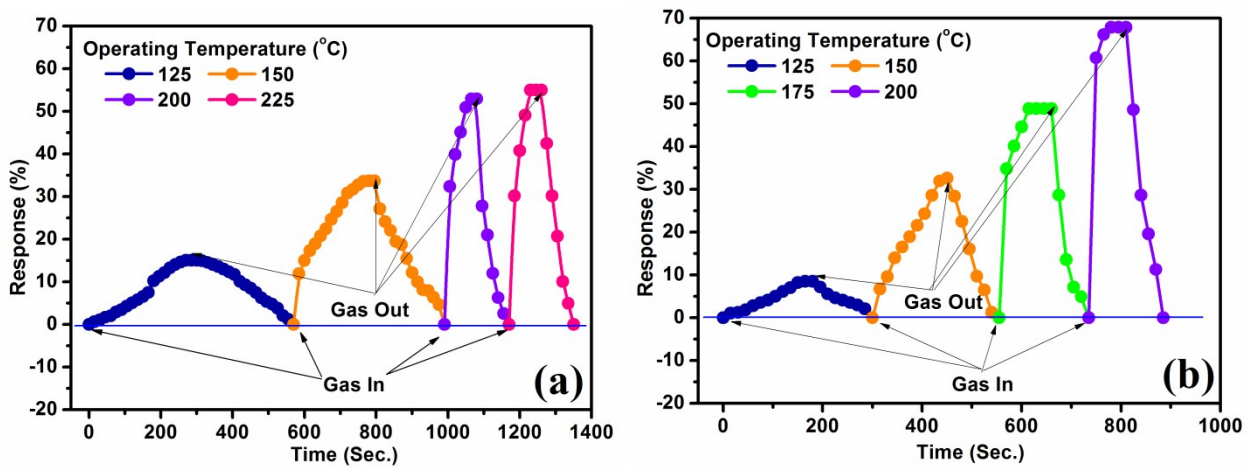


Fig. S8: Acetone (a) and formaldehyde (b) transient response characteristics of the nanocube In_2O_3@RGO heterostructure sensor at different operating temperatures for 25 ppm concentration.