Electronic Supplemental Materials

Sensitive 3-chlorophenol sensor development based on facile Er$_2$O$_3$/CuO nanomaterials for environmental safety

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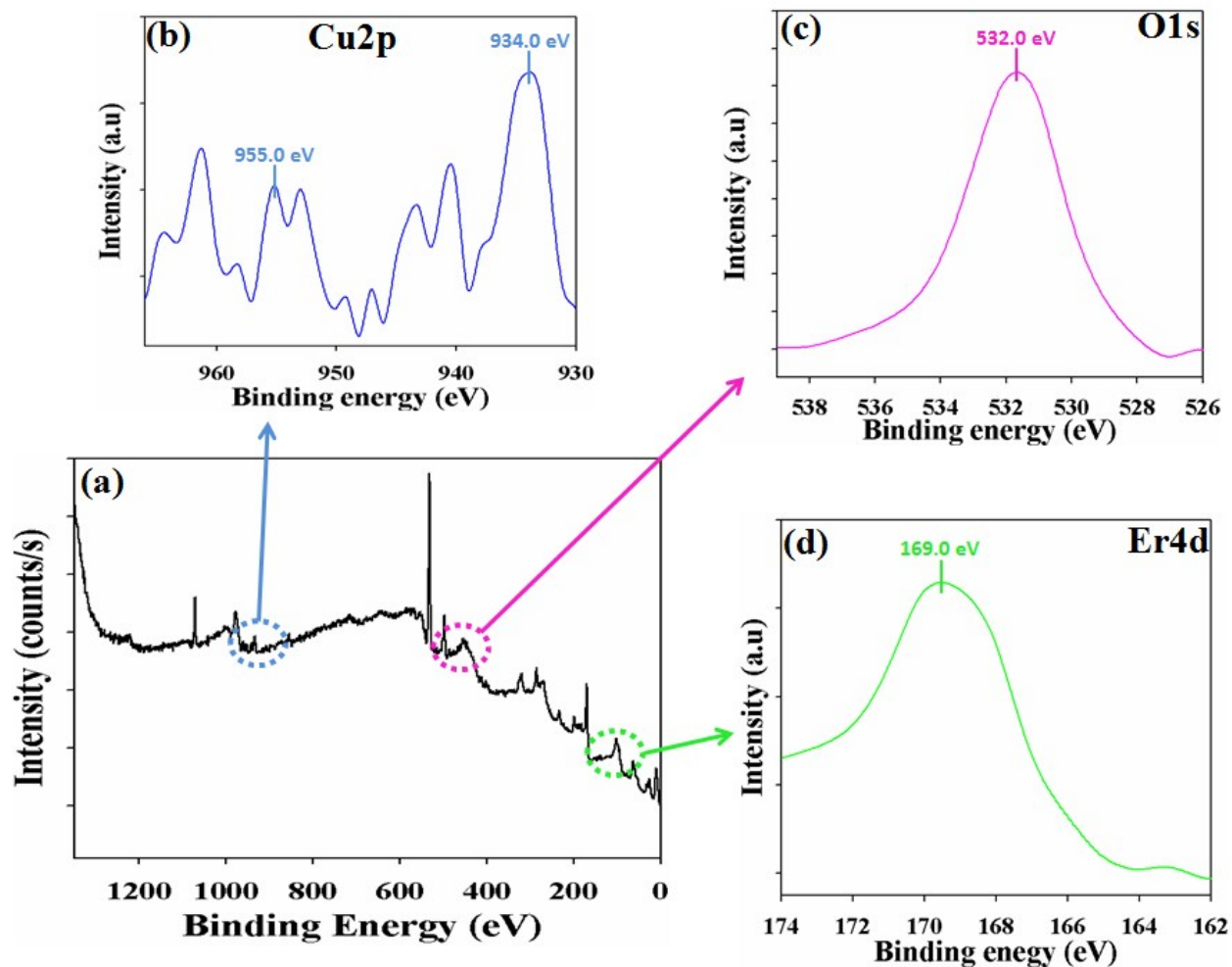
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Fig. S1: Evaluation of binding energy analysis (XPS) for Erbium oxide-Copper oxide doped nanomaterials at normal condition (a) Er_2O_3/CuO nanomaterials (b) Cu2p (c) O1s (d) Er4d.
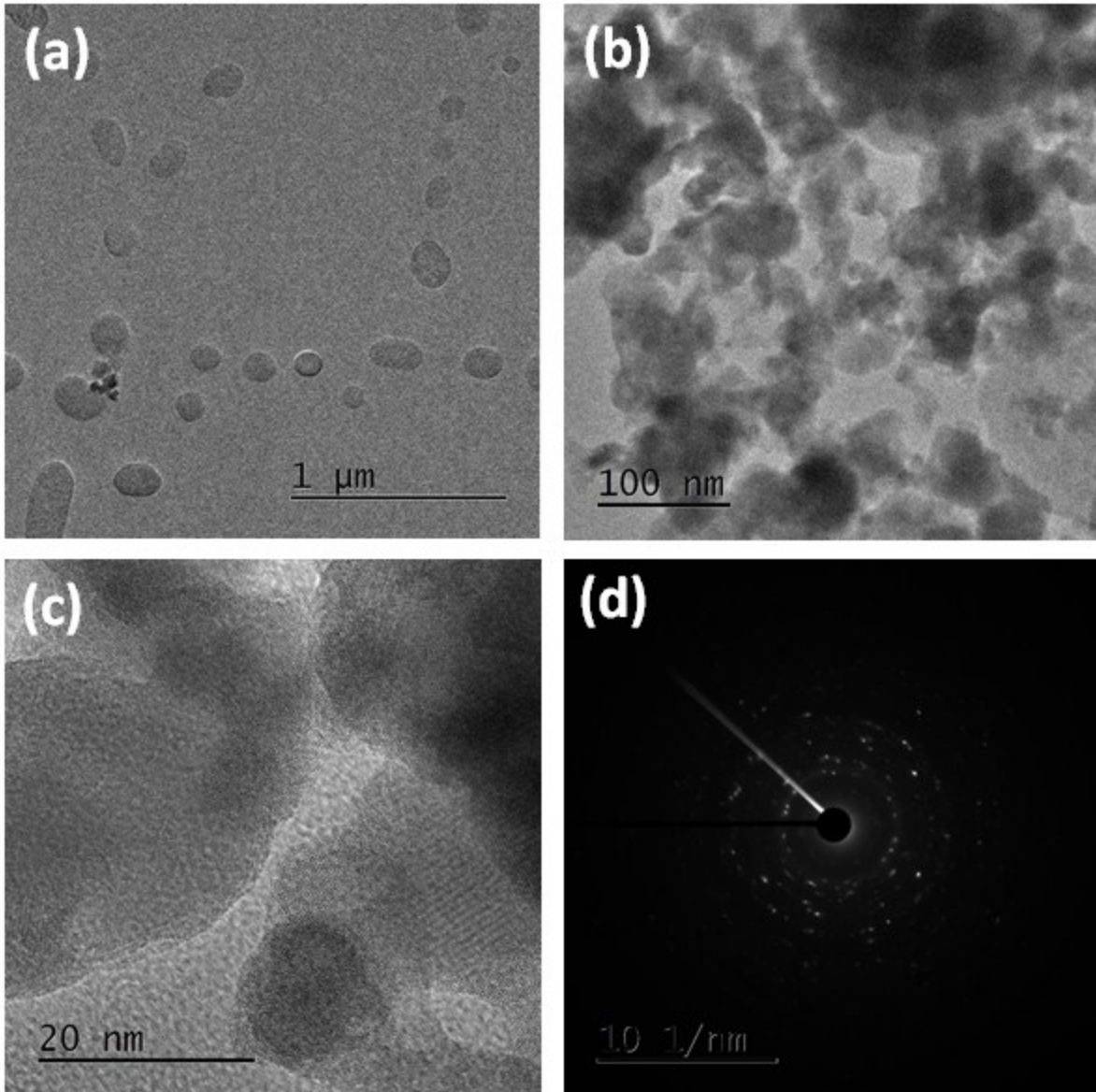
Fig. S2. TEM analysis. (a-b) Low-to-high magnified image of Er_2O_3/CuO nanomaterial, (c) High-resolution TEM image of Er_2O_3/CuO nanomaterial with lattice fringes (0.16 nm), and (c) SAED pattern images of corresponding structures indicated with a colored arrow.
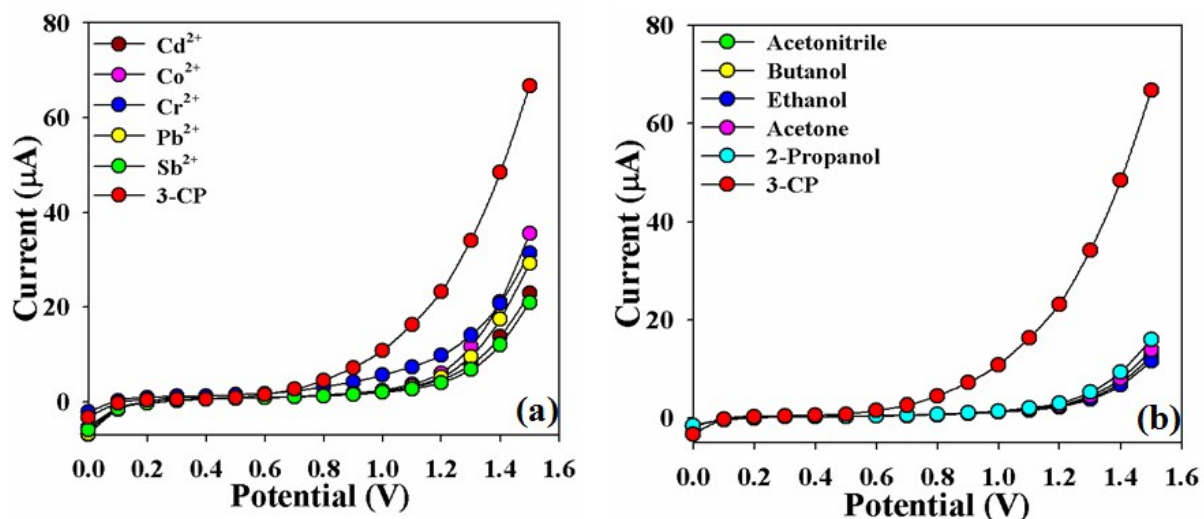
Fig. S3: Selectivity; (a) Current response of inorganic ions in the presence of 3-CP and analytes concentration were taken at 0.1 µM (b) Current response of organic compounds in the presence of 3-CP and analytes concentration were taken at 0.1 µM
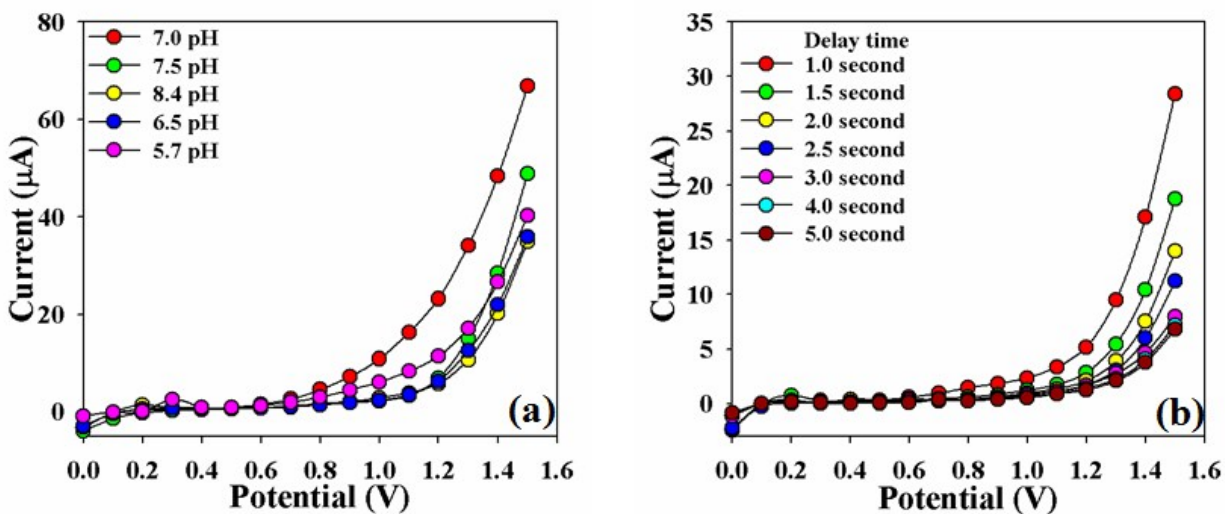

Fig S4: optimization of operational condition; (a) Effect of pH and (b) scan rate

Table S1: Interference Effect of various toxic chemicals on Er$_2$O$_3$/CuO NBs/Nafion/GCE

Toxic Chemicals	Observed Current (µA)				Interference effect (%)	SD (n = 3)	RSD (%) (n = 3)
	R1	R2	R3	Average			
3-CP	*4.5612*	*4.6783*	*4.5159*	*4.5851*	*100*	*0.083*	*1.82*
2,4-DNP	2.9195	2.9019	2.8673	2.8962	63	0.026	0.91
2-NP	0.6455	0.6528	0.6549	0.6510	14	0.004	0.75
3-MP	2.4977	2.4285	2.5683	2.4981	54	0.069	2.79
4-AP	0.6532	0.6094	0.6396	0.6340	13	0.022	3.53
4-MP	1.6978	1.6835	1.6937	1.6916	36	0.007	0.43
BPA	1.0244	1.0623	1.1463	1.0776	23	0.062	5.78
HDN	1.0406	1.0738	1.0635	1.0593	23	0.016	1.60
Ph-HDN	2.5749	2.5796	2.5978	2.5841	56	0.012	0.46
p-NP	1.6187	1.6039	1.6168	1.6131	35	0.008	0.49

"Interference effect of 3-CP is consider to be 100 % ; R = reading; SD = standard deviation; and RSD = relative standard deviation."