Supporting Information

Table S1. Comparison of H_2S sensing properties of the CuO-functionalized SnO_2 nanowires with those of previous reports.[14,18-20, 26-31]

Materials type	H_2S (ppm)	Response (R_a/R_g)	Response time (s)	Recovery time (s)	Operating Temp. (^oC)	Ref.
CuO-functionalized SnO_2 nanowires	0.1−1	10−15	9	8	300	this work
CuO-loaded SnO_2 film	50	2.5×10^4	80	100	200	14
SnO_2-CuO-SnO_2 multilayer thick film	50	210	45	41	90	18
Cu-doped SnO_2 thin film	1000	910	10	1500	200	19
CuO-modified SnO_2nanoribbons	3	180	15	·	27	20
CuO-doped SnO_2 thin film	50	3.6×10^5	600	180	150	26
SnO_2-ZnO-CuO composite thick film	50	6×10^4	15	420−480	250	27
CuO-SnO_2 core/shell nanorods	10	9.4×10^4	·	·	60	28
Cu-doped SnO_2 nanowires	50	6×10^6	·	·	150	29
CuO-doped SnO_2 nanowires	20	809	1	332	300	30
CuO-loaded SnO_2 nanofibers	10	1.98×10^4	1	10	300	31

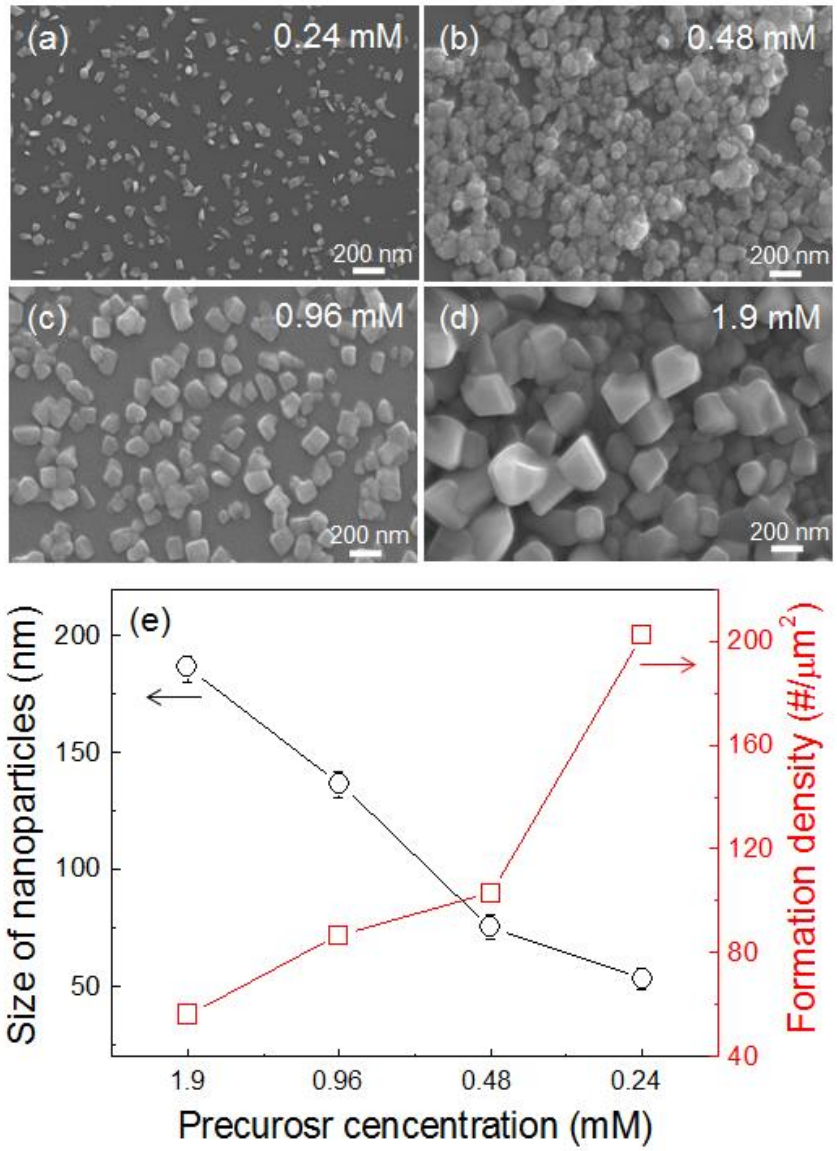

Fig. S1. Microstructures of Cu nanoparticles synthesized with different $CuSO_4.5H_2O$ precursor concentrations in γ-ray radiolysis at $10Gy.h^{-1}$ for 2h: (a) 0.24, (b) 0.48, (c) 0.96, and (d) 1.9 mM $CuSO_4.5H_2O$ in a mixed solvent of deionized water (77 vol%) and 2- propanol (23 vol%). (e) The size and formation density of Cu nanoparticles summarized from the microstructures in (a)–(d).

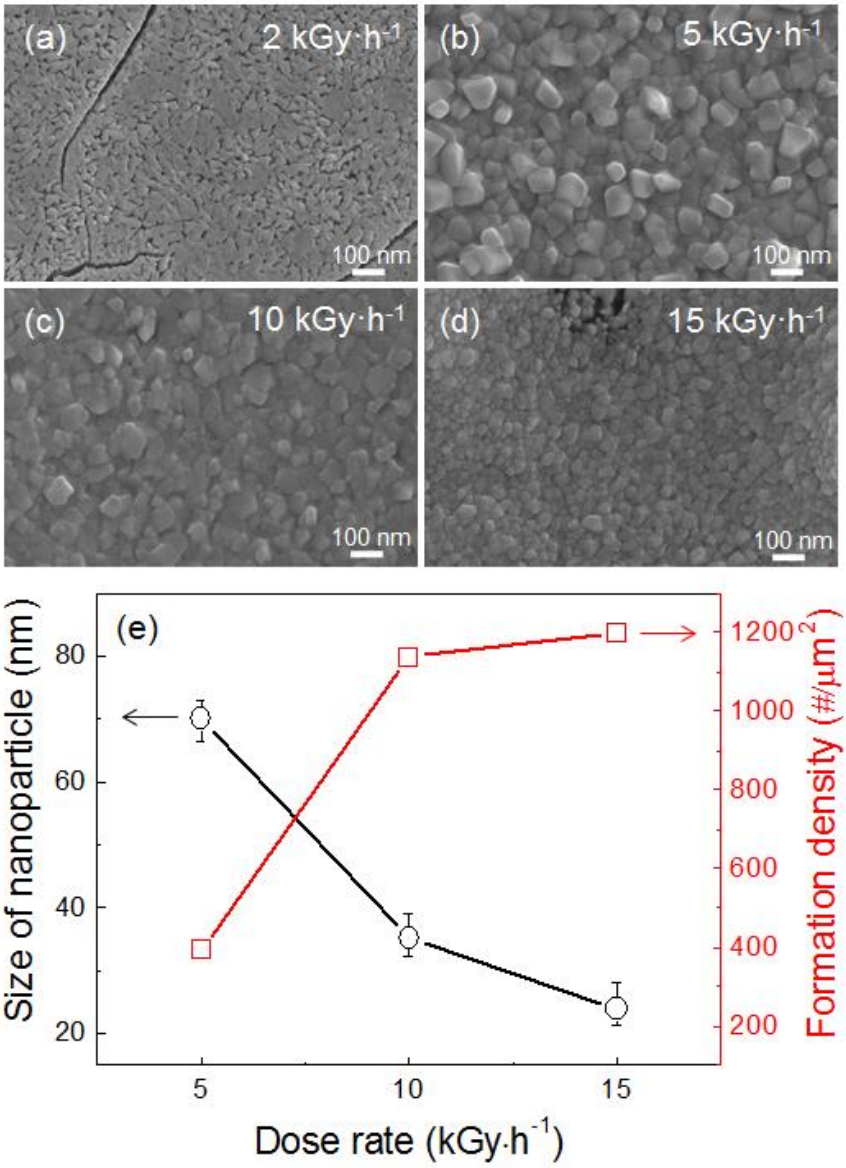

Fig. S2. Microstructures of Cu nanoparticles synthesized at various dose rates for 2 h at 0.96 mM $CuSO_4.5H_2O$: (a) 2, (b) 5, (c) 10, and (d) 15 $kGy.h^{-1}$ dose rate.(e) The size and formation density of Cu nanoparticles summarized from the microstructures in (c)–(d).

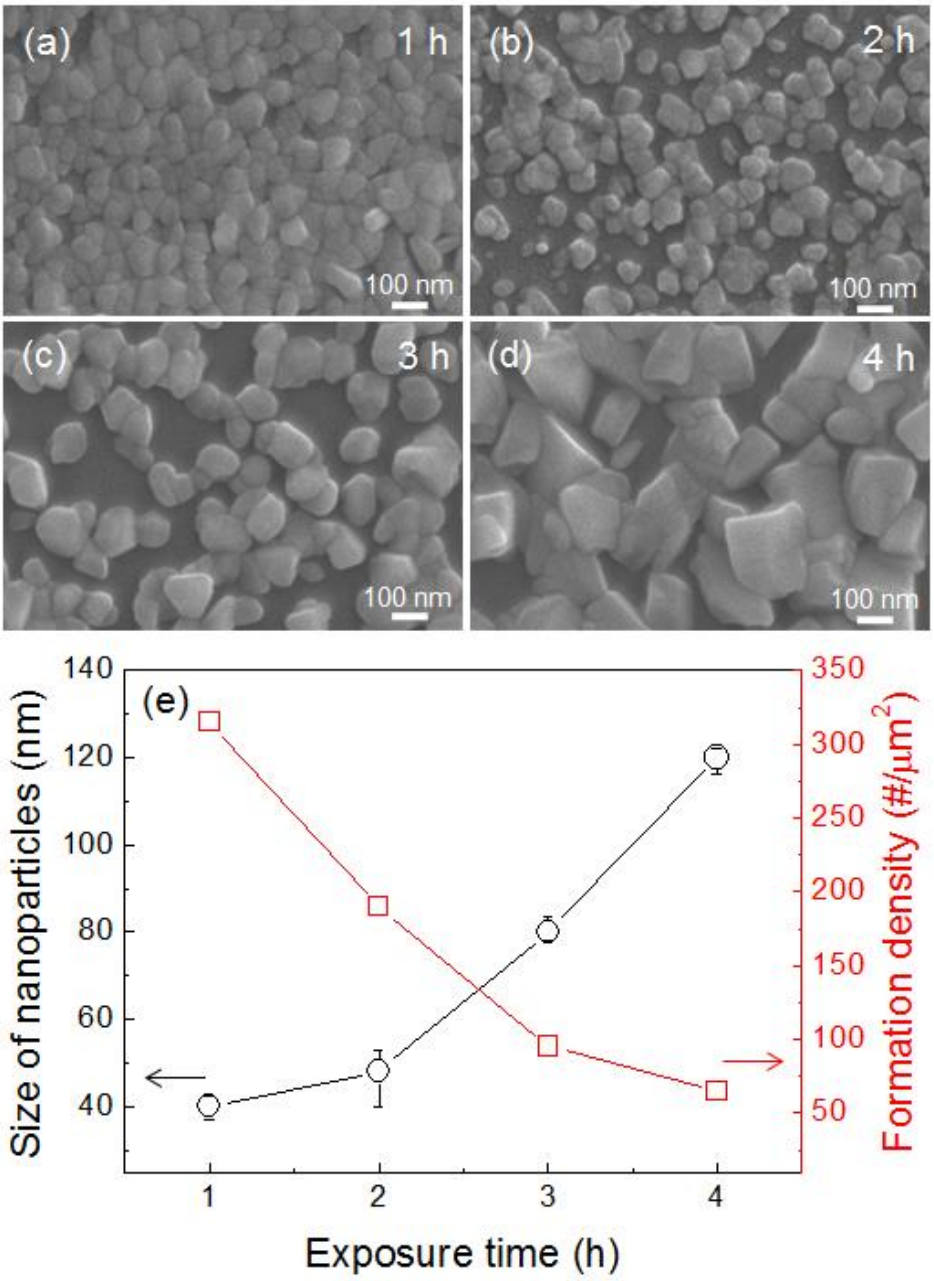

Fig. S3. Microstructures of Cu nanoparticles synthesized for various exposure times at 10 kGy·h^{-1} γ-ray and 0.96 mM $CuSO_4 \cdot 5H_2O$: (a) 1, (b) 2, (c) 3, and (d) 4 h. (e) The size and formation density of Cu nanoparticles summarized from the microstructures in (a)–(d).