Copper(II) Heterocyclic Thiosemicarbazone Complexes as Single-Source Precursors for the Preparation of Cu_9S_5 Nanoparticles: Application in Photocatalytic Degradation of Methylene Blue

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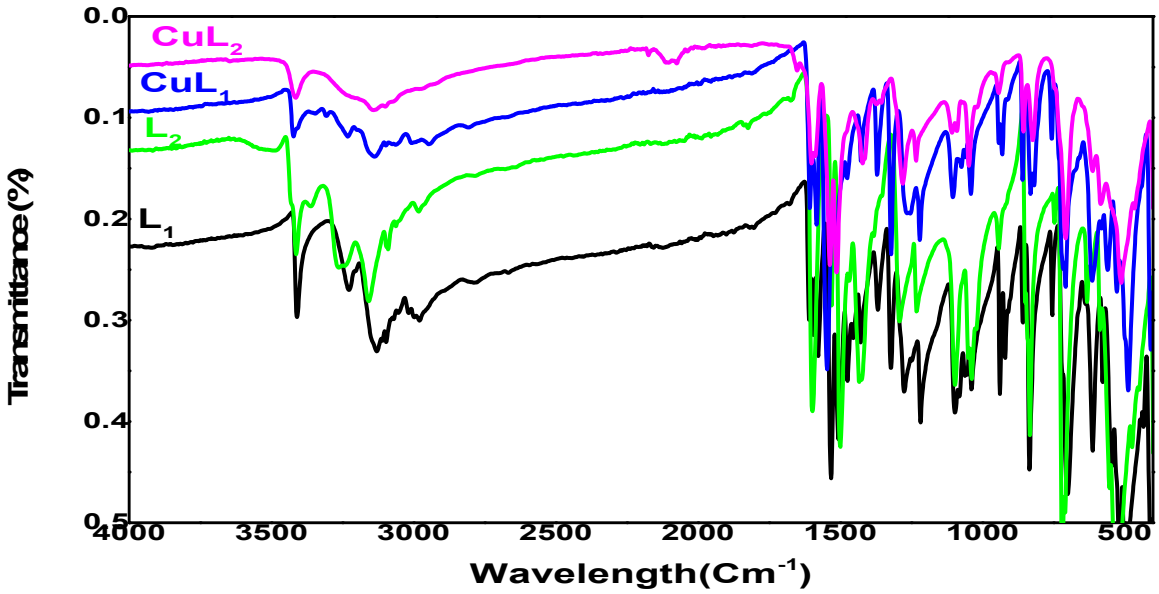
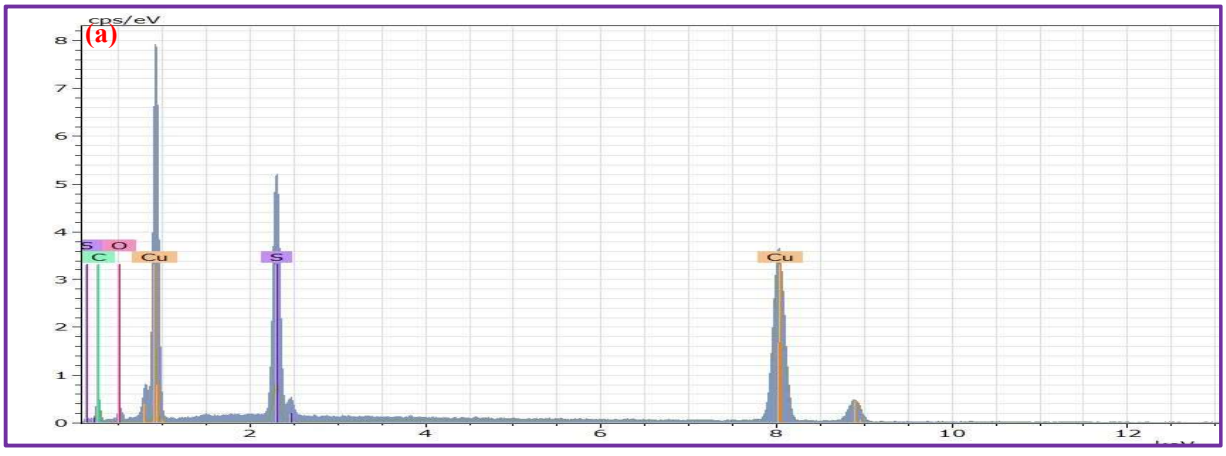
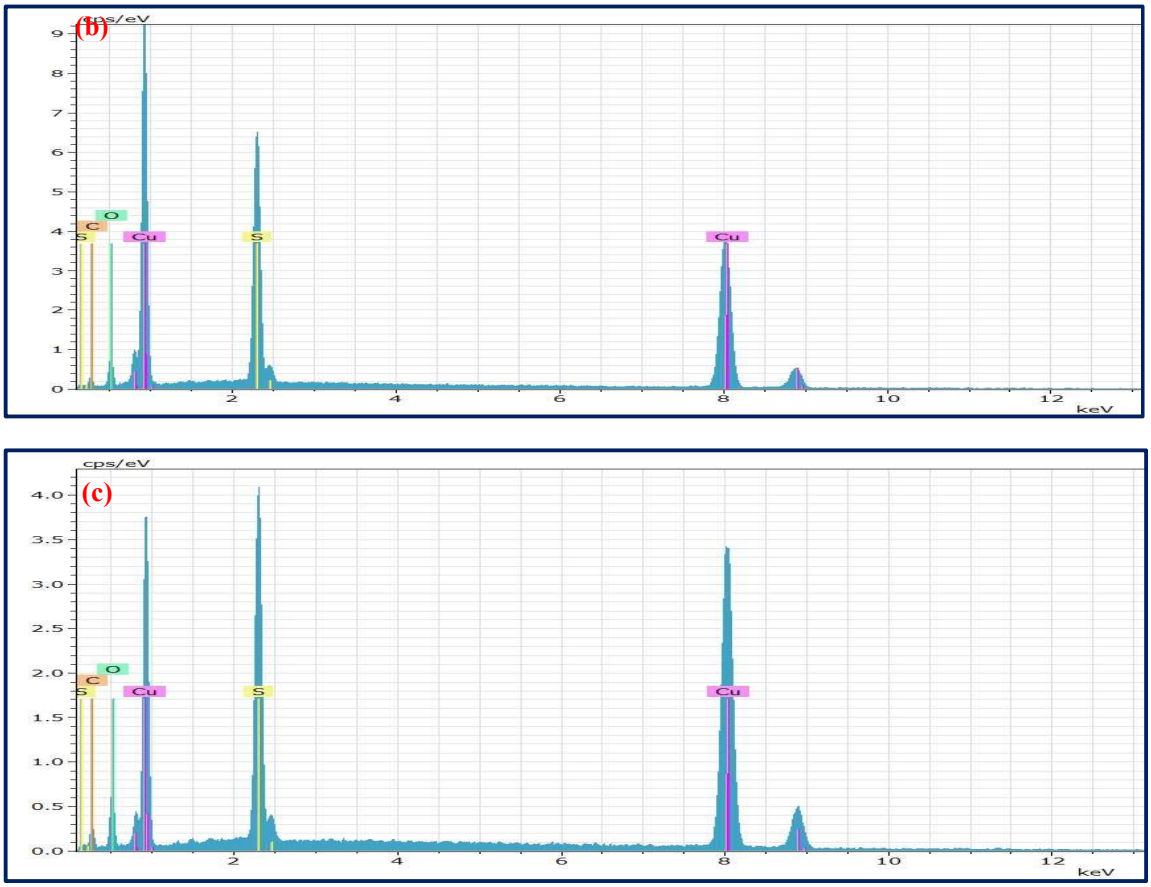
Supplementary Data

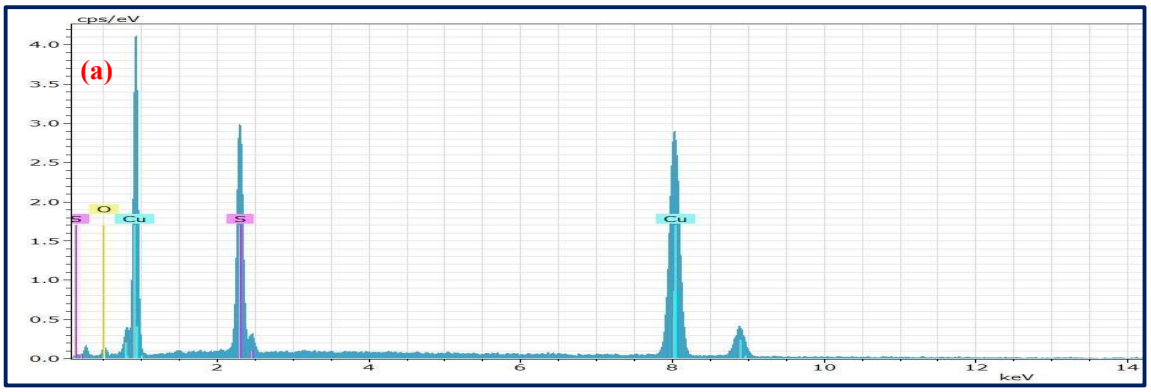


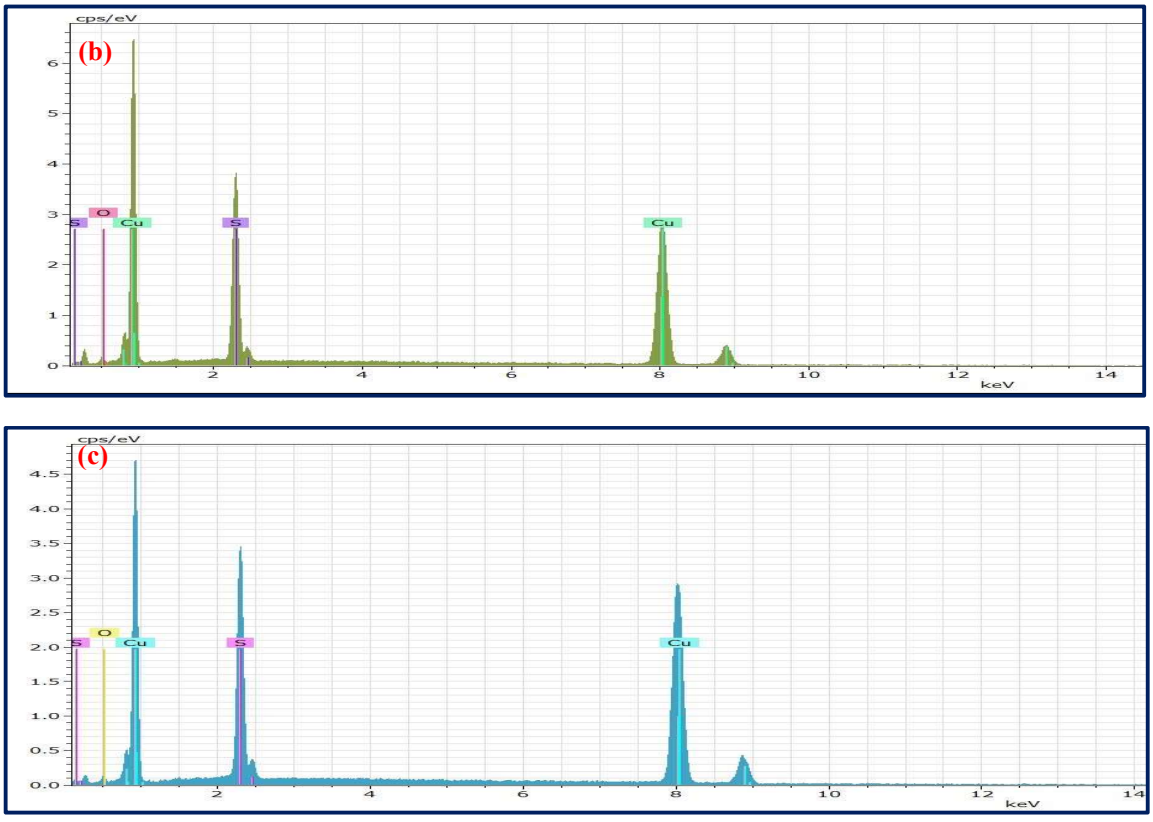
ESI Figure S1: Infrared spectra of ligands and their corresponding complexes.



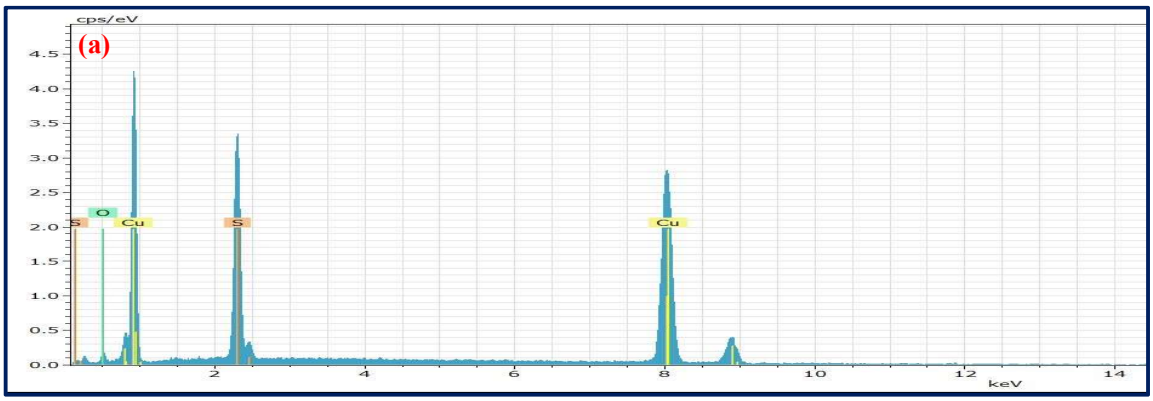


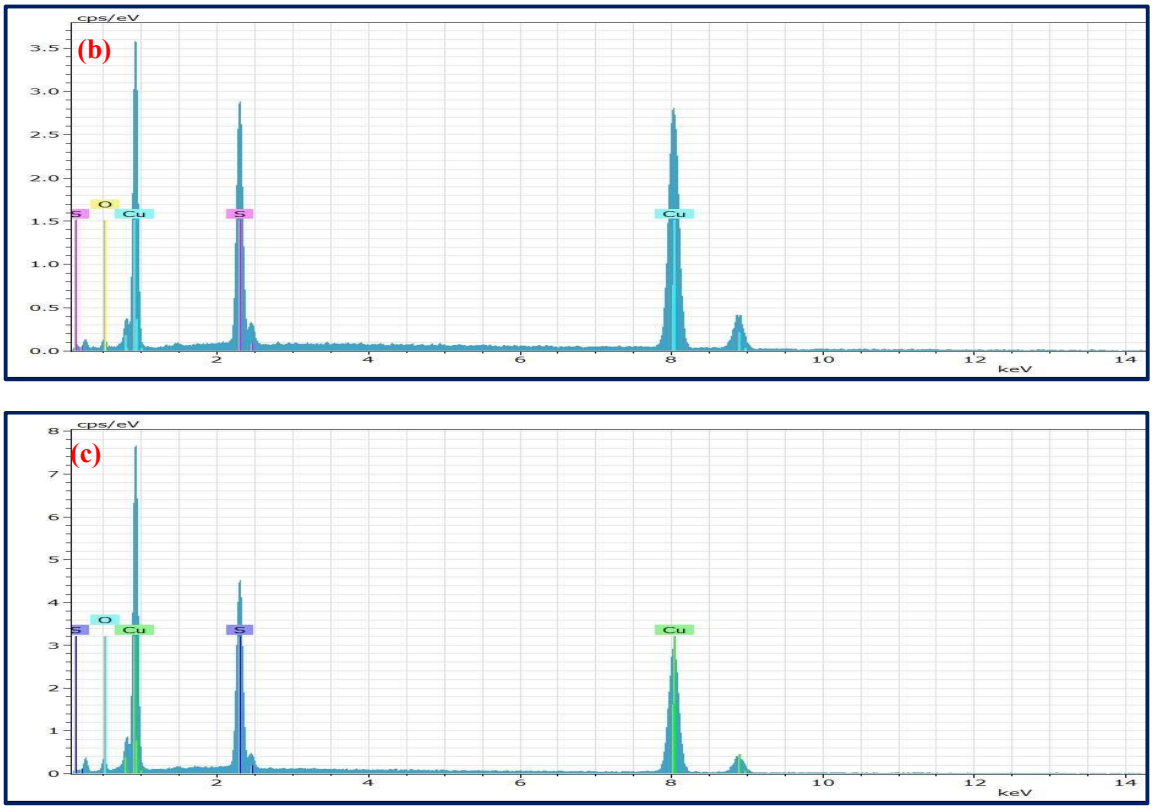
ESI Figure S2: EDX spectra of Cu_xS_y nanoparticles prepared in (a) OLA, (b) HDA and (c) DDA at 190 °C using complex **(2)**.



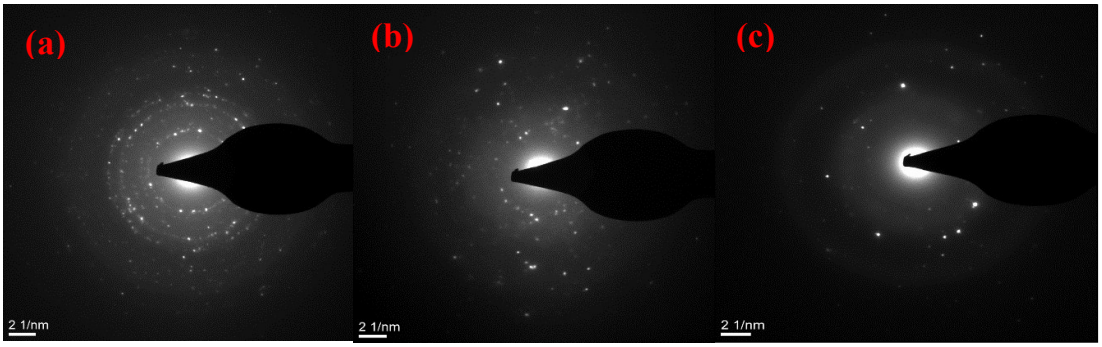


ESI Figure S3: EDX spectra of Cu_xS_y nanoparticles prepared in (a) OLA, (b) HAD and (c) DDA at 230 °C using complex **(1).**

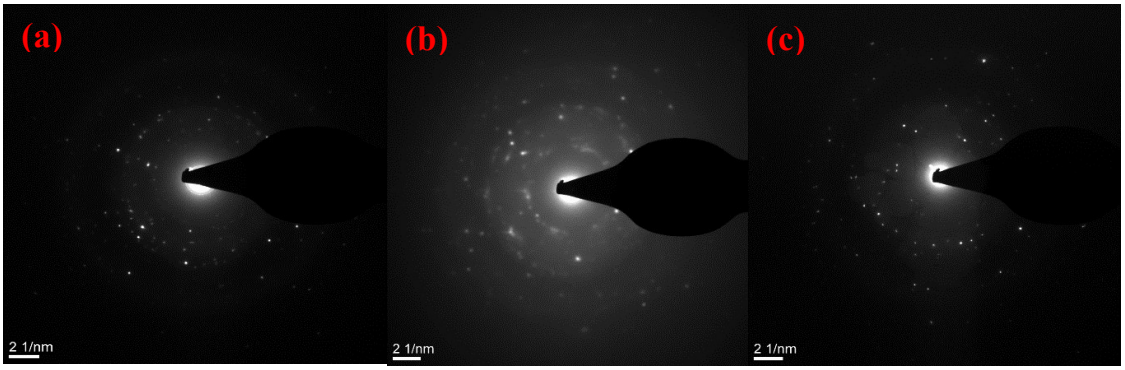




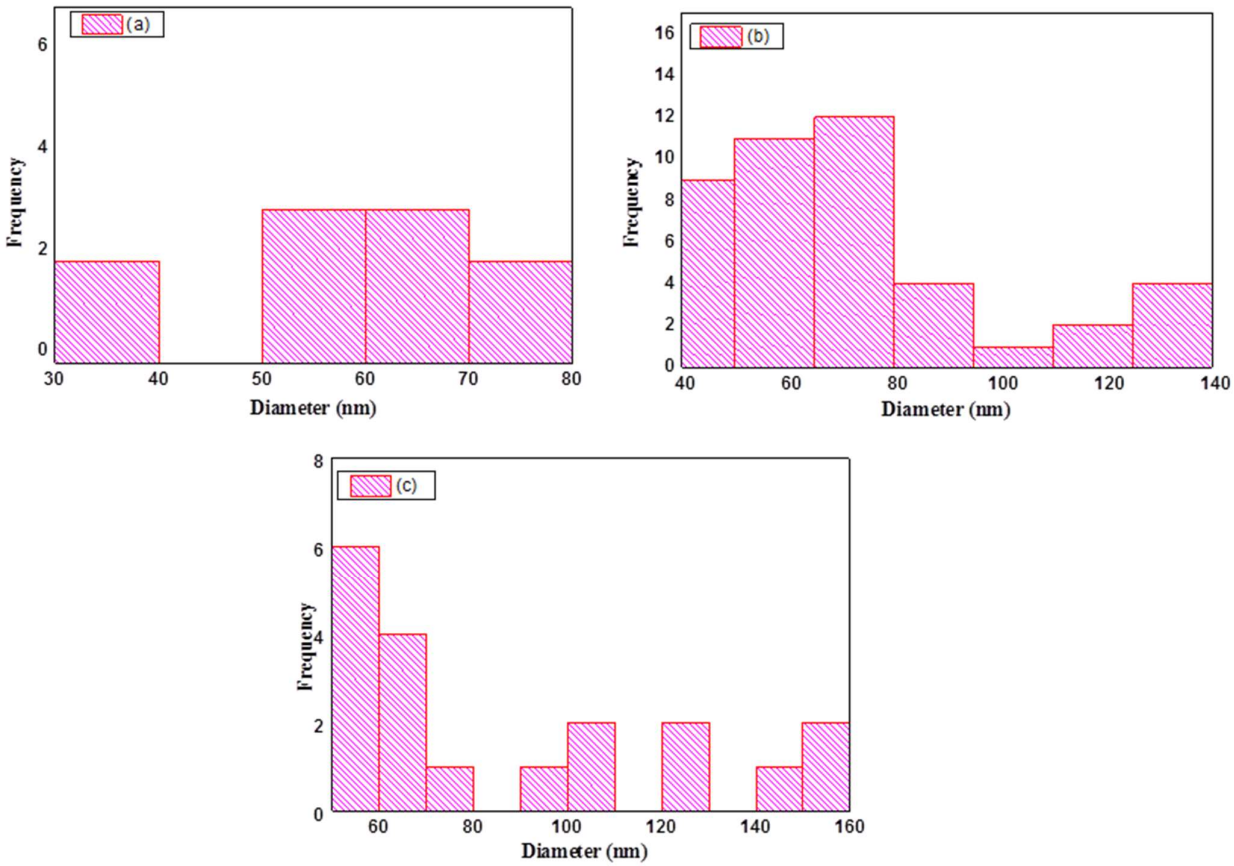
ESI Figure S4: EDX spectra of Cu_xS_y nanoparticles prepared in (a) OLA, (b) HAD and (c) DDA at 230 °C using complex **(2)**.



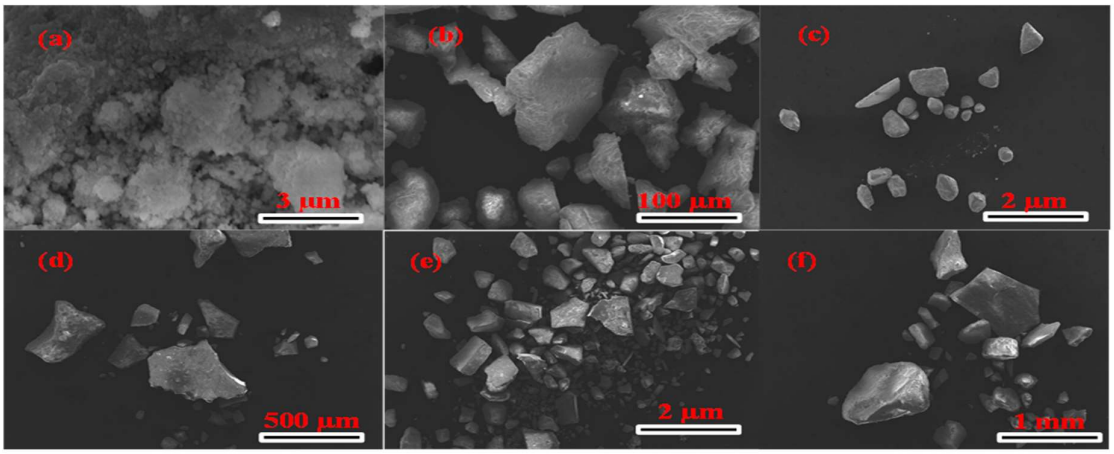
ESI Figure S5: SAED patterns of Cu_xS_y nanoparticles prepared at 190 °C in (a) OLA, (b) HDA and (c) DDA using complex **(2)**.



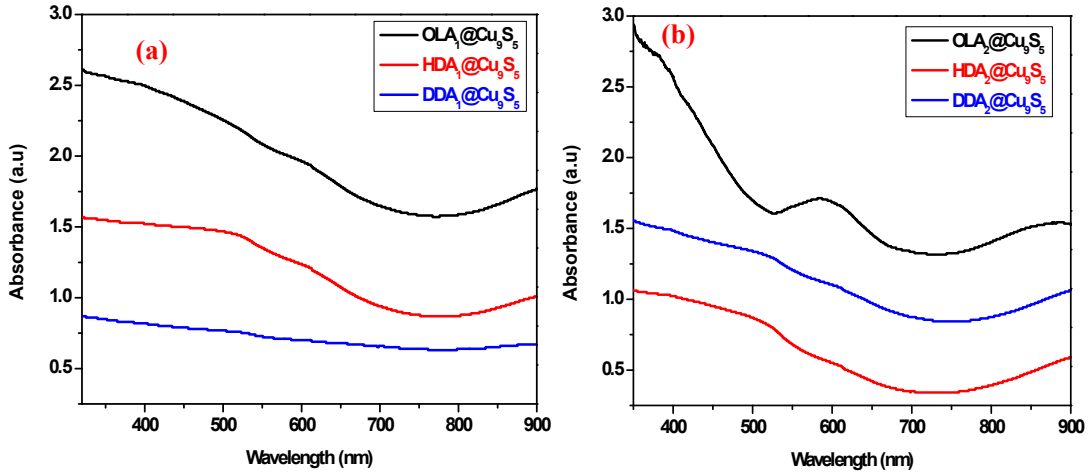
ESI Figure S6: SAED patterns of Cu_xS_y nanoparticles prepared at 230 °C in (a) OLA, (b) HDA and (c) DDA using complex **(2)**.



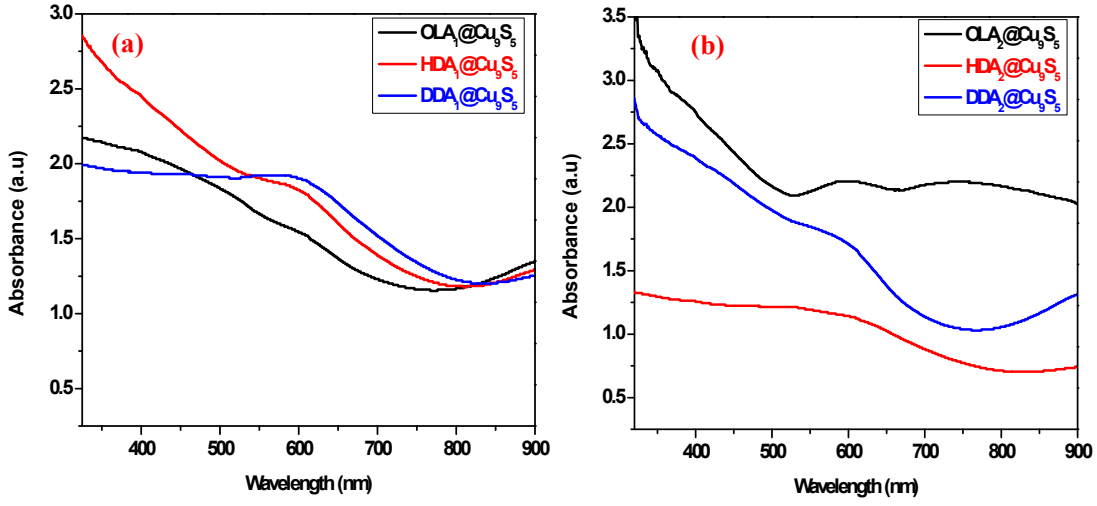
ESI Figure S7: Particle size distribution for Cu_xS_y nanoparticles prepared in (a) OLA, (b) HDA and (c) DDA using complex **(1)** at 190 °C.



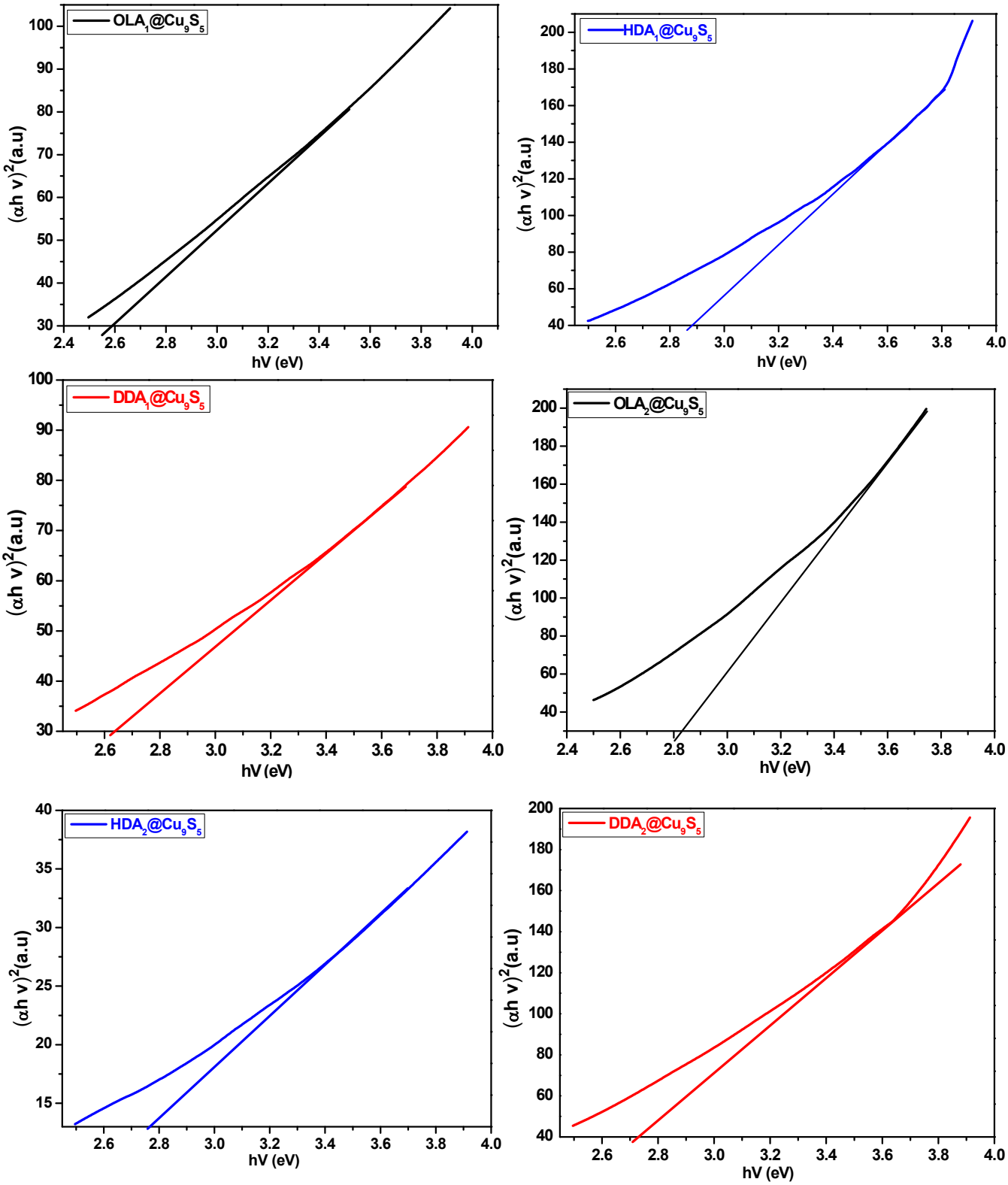
ESI Figure S8: SEM images of Cu_xS_y nanoparticles prepared in (a, d) OLA, (b, e) HDA and (c, f) DDA at 230 °C using the complexes **(1)** and **(2)** as precursors.



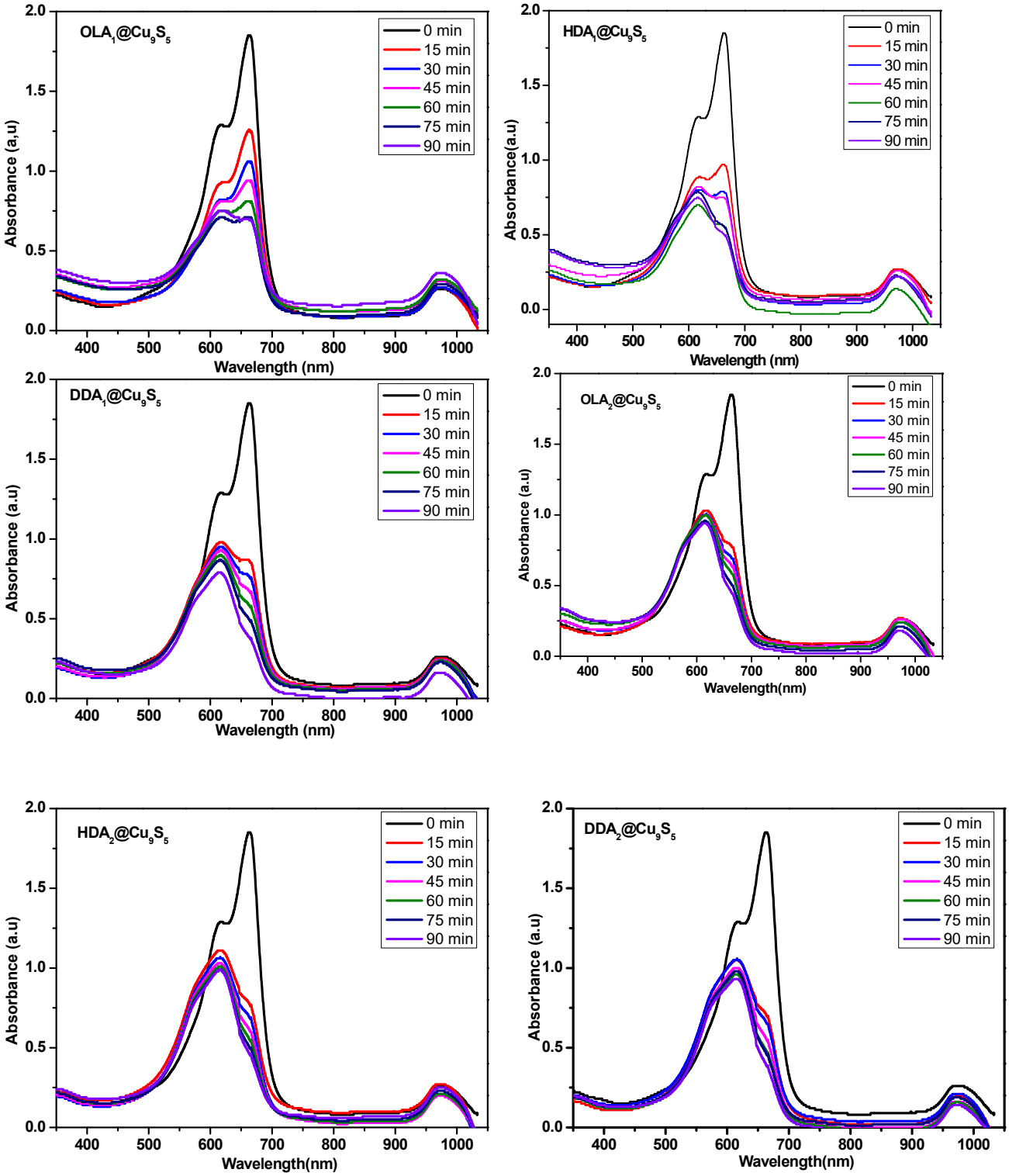
ESI Figure S9: UV-visible-NIR of Cu_xS_y nanoparticles prepared in OLA, HAD and DDA at 190 °C using (a) complex **(1)** and (b) complex **(2)** as single source precursors.



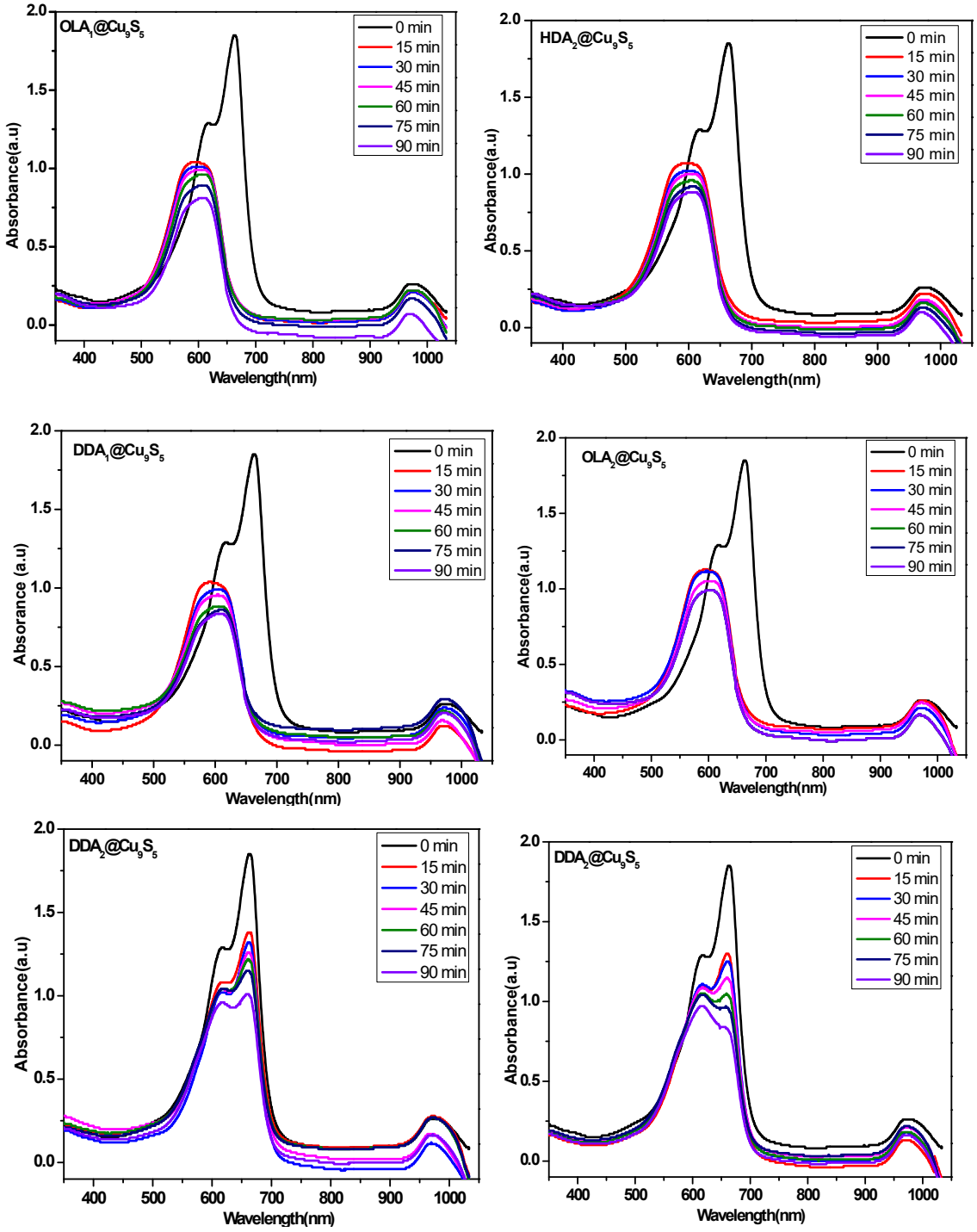
ESI Figure S10: UV-visible-NIR of Cu_xS_y nanoparticles prepared in OLA, HDA and DDA at 230 °C using (a) complex **(1)** and (b) complex **(2)** as single source precursors.



SI Figure S11: Tauc plots of Cu_xS_y nanoparticles prepared in OLA, HDA, and DDA at 230 °C using complexes **(1)** and **(2)**.



ESI Figure S12: UV-Vis absorption spectra for methylene blue photodegradation using copper sulfide nanoparticles synthesized at 190 °C.



ESI Figure S13: UV-Vis absorption spectra for methylene blue photodegradation using Cu_xS_y nanoparticles synthesized at 230 °C.