Electronic Supplementary Material (ESI) for Nanoscale Advances.

Supporting Information

Biomimetic Strategies to Produce Catalytically Reactive CuS Nanodisks

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1. UV-vis NIR of Other Amino Acid Materials

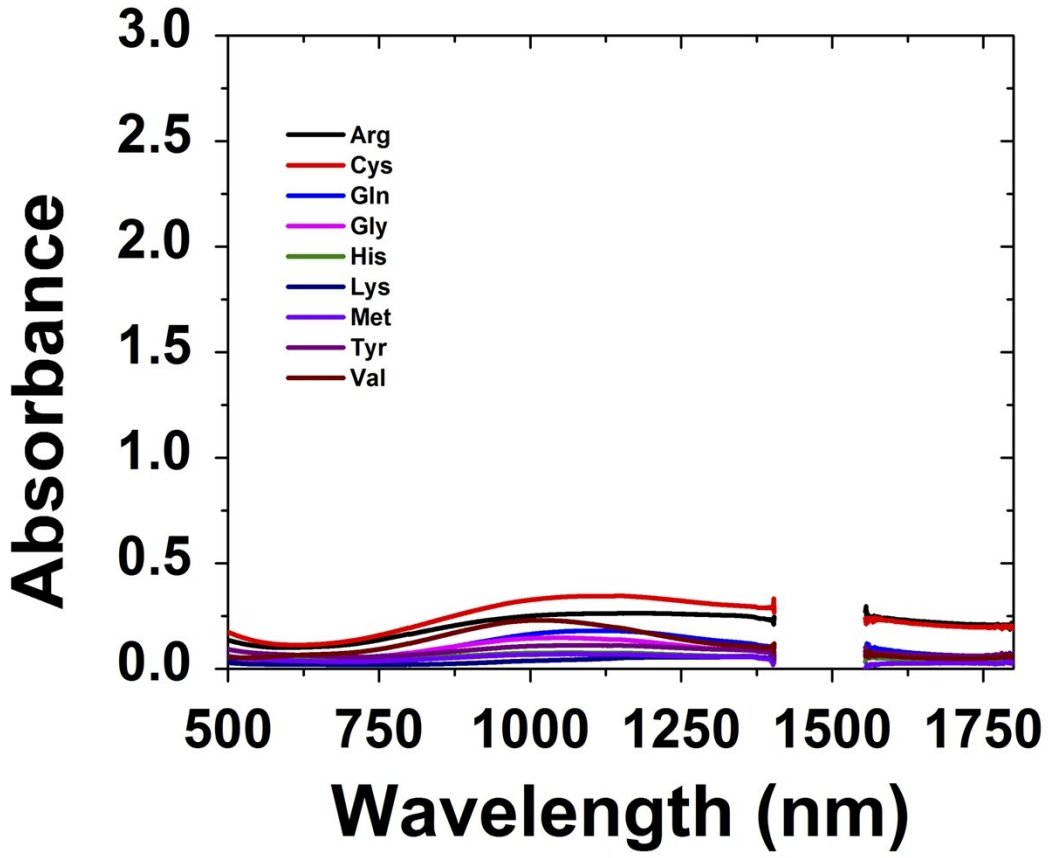

Figure S1. UV-vis NIR spectra of CuS materials prepared in the presence of the indicated amino acids 24 h after the addition of Na_2S. Note that the data between 1350 and 1650 nm is not included due to the strong absorbance of water within this window.

2. Additional TEM and Histogram of as Prepared Materials

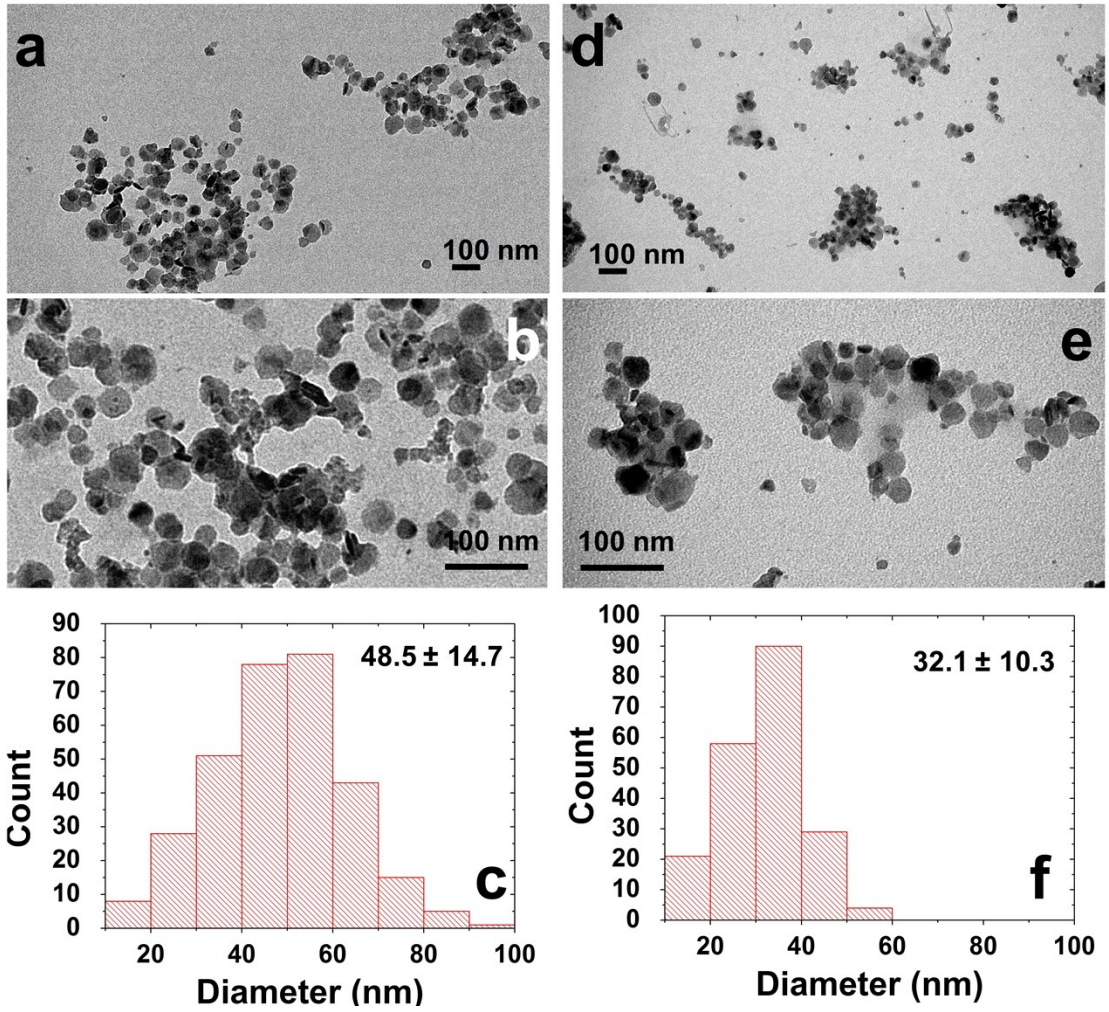

Figure S2. TEM and particle size histograms of the as prepared (a-c) Asp- and (d-f) Glu-stabilized CuS materials.

3. Additional TEM and Histogram of Lyophilized Materials

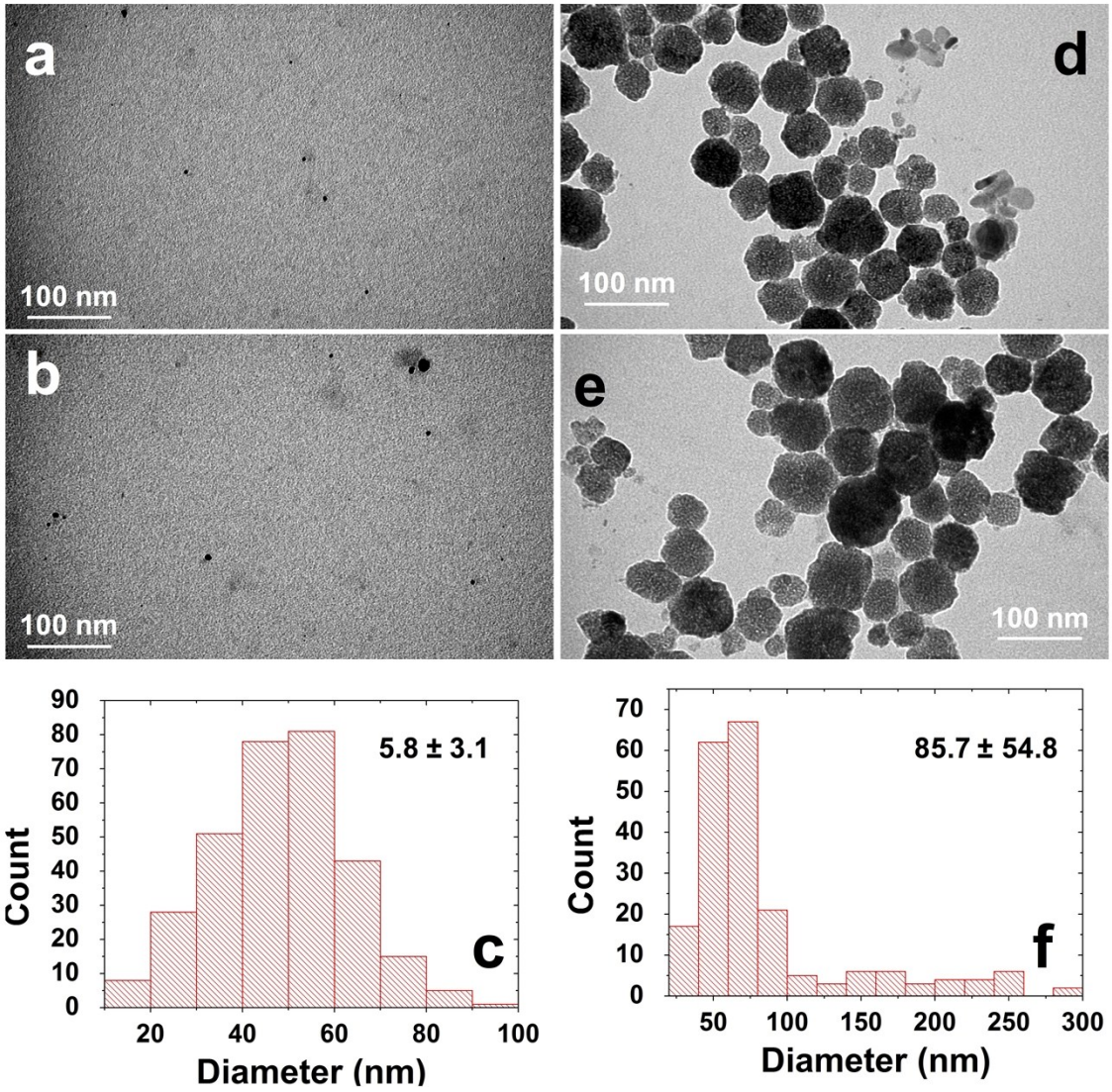

Figure S3. TEM and particle size histograms of the lyophilized (a-c) Asp- and (d-f) Glu-stabilized CuS materials.

4. Dye Degradation Particle Free Control Spectra

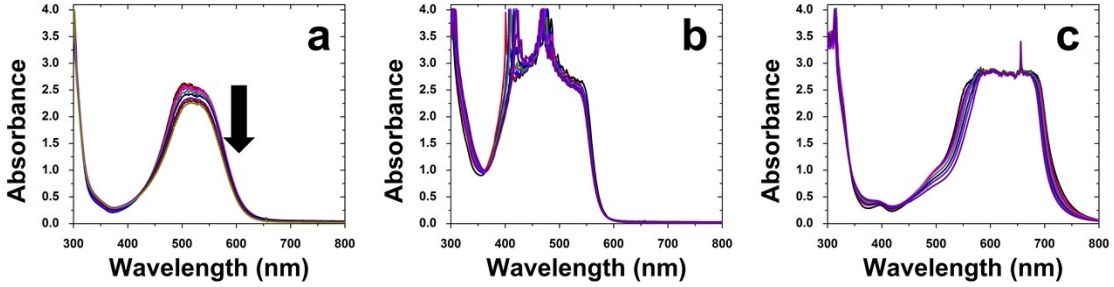

Figure S4. Control analysis for the degradation of (a) neutral red, (b) methyl orange, and (c) methylene blue in the absence of the CuS nanoparticles. Such results confirm negligible degradation due to the presence of H_2O_2 without the catalytic materials.

5. Neutral Red Degradation Spectra

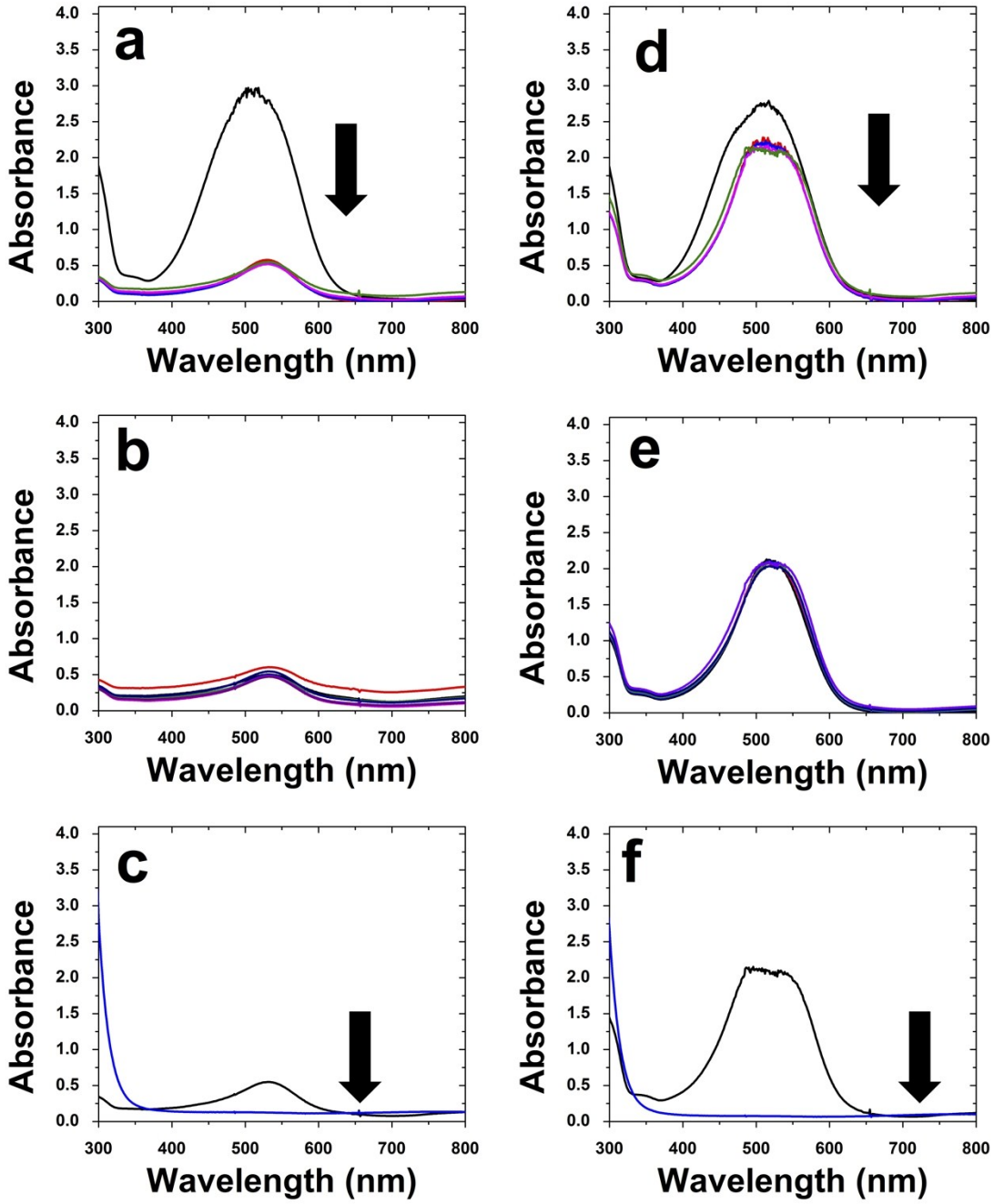

Figure S5. UV-vis analysis of (a) adsorption of neutral red on Asp-passivated CuS, (b) photo-driven degradation of neutral red by Asp-capped CuS in the absence of H_2O_2 demonstrating negligible degradation, and (c) photo-driven advanced oxidation of neutral red by Asp-stabilized CuS in the presence of H_2O_2, parts (d-f) present the same analysis as parts (a-c); however, Glu-passivated CuS was used for all analyses.

6. Methyl Orange Degradation Spectra

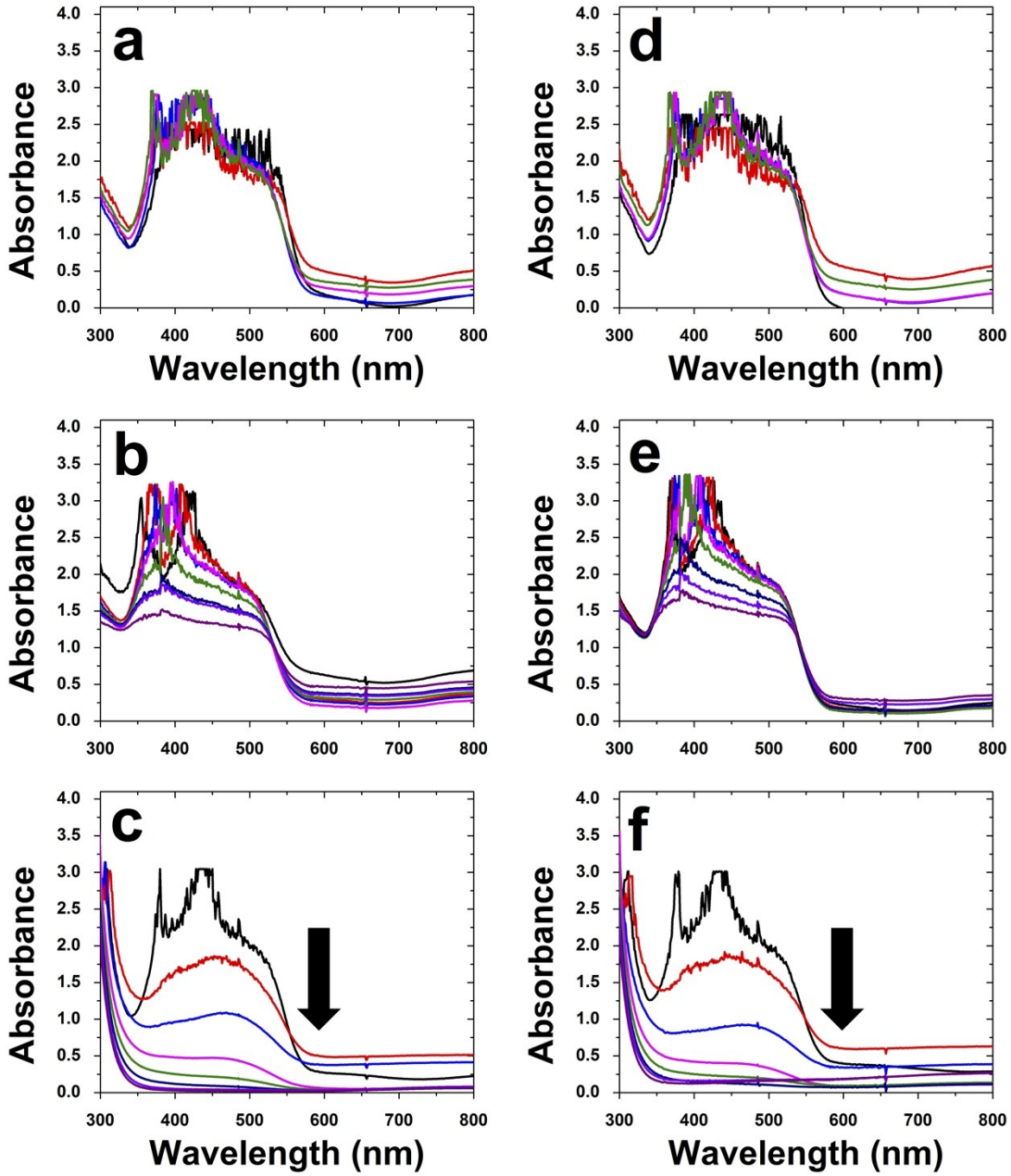

Figure S6. UV-vis analysis of (a) adsorption of methyl orange on Asp-passivated CuS, (b) photo-driven degradation of methyl orange by Asp-capped CuS in the absence of H_2O_2 demonstrating negligible degradation, and (c) photo-driven advanced oxidation of methyl orange by Asp-stabilized CuS in the presence of H_2O_2, parts (d-f) present the same analysis as parts (a-c); however, Glu-passivated CuS was used for all analyses.

7. Methylene Blue Degradation Spectra

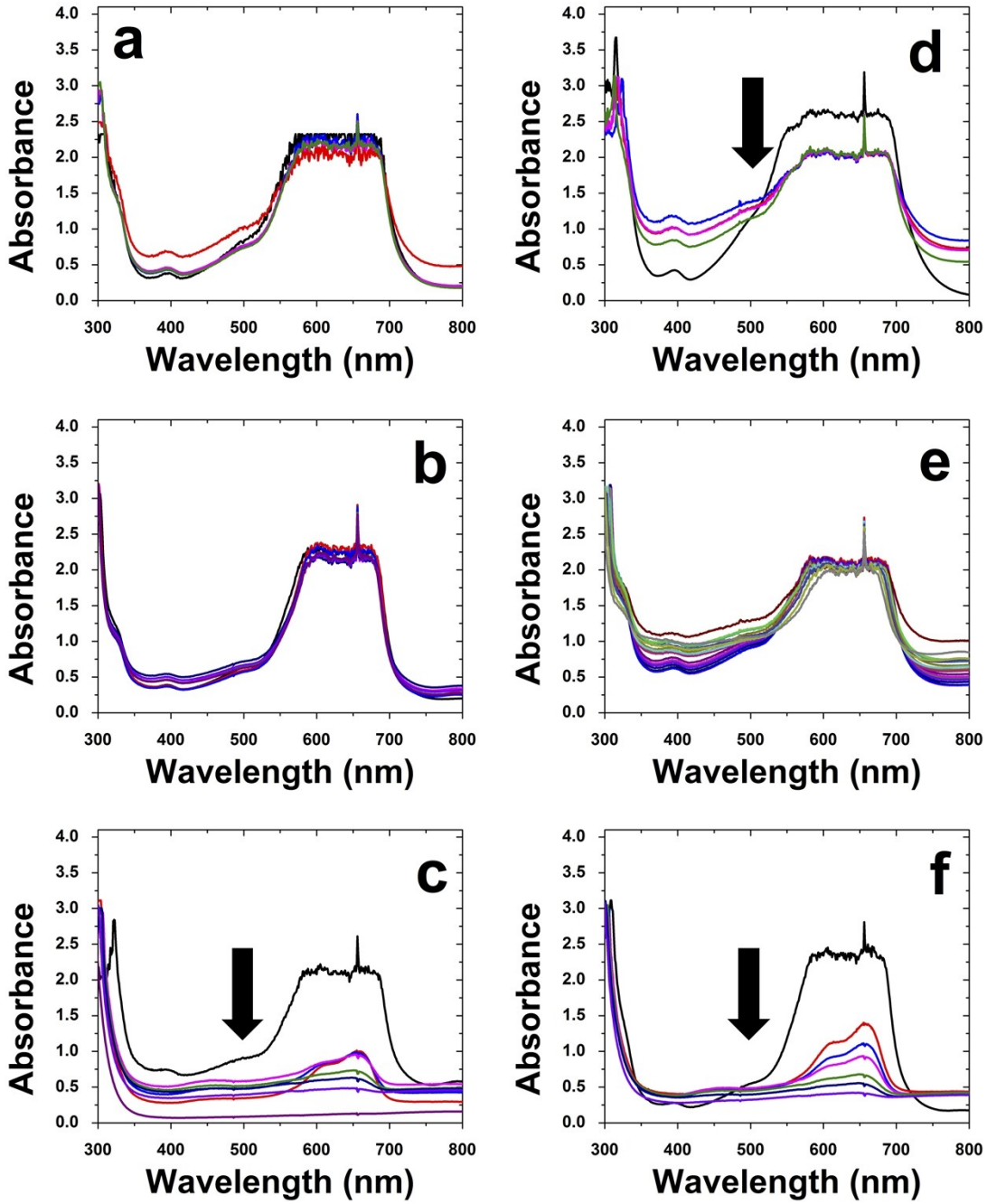

Figure S7. UV-vis analysis of (a) adsorption of methylene blue on Asp-passivated CuS, (b) photo-driven degradation of methylene blue by Asp-capped CuS in the absence of H_2O_2 demonstrating negligible degradation, and (c) photo-driven advanced oxidation of methylene blue by Asp-stabilized CuS in the presence of H_2O_2, parts (d-f) present the same analysis as parts (a-c); however, Glu-passivated CuS was used for all analyses.