Redox-Driven Synthesis of Stable Copper Nanoparticles via Metal Displacement and Their Application in Organic Dye Degradation

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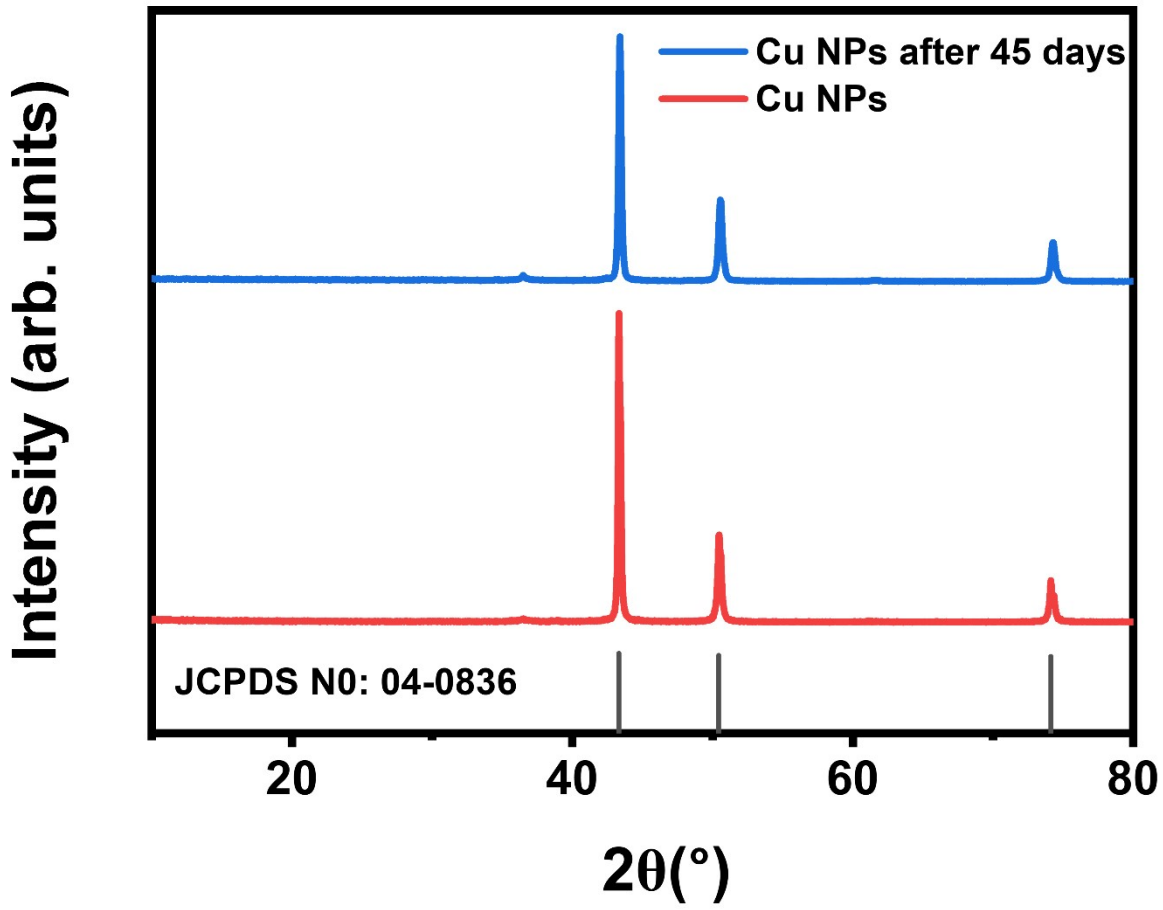

Figure S1: XRD patterns of Cu NPs immediately after synthesis and after 45 days.

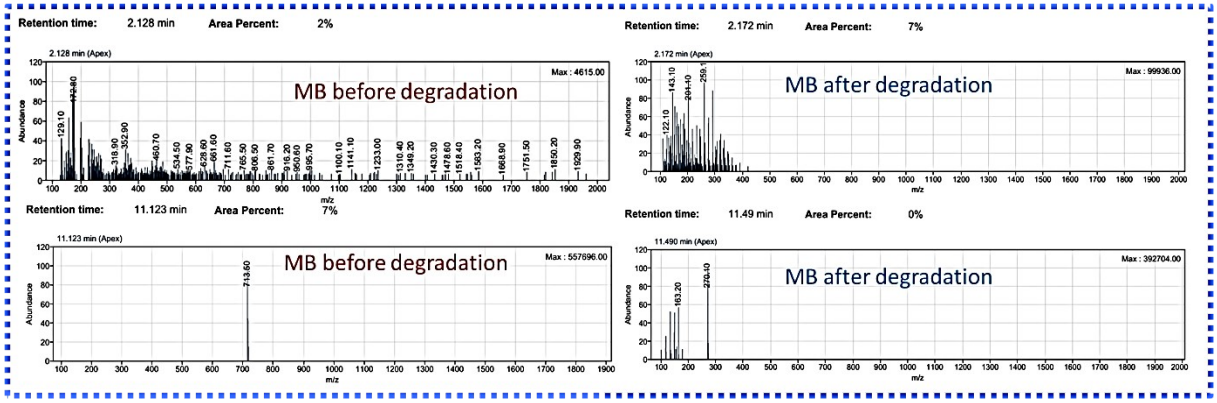

Figure S2: LC-MS analysis of methylene blue (MB) dye before and after photocatalytic degradation. Mass spectra before and after degradation reveal the loss of parent ion peaks and emergence of low-mass fragments, confirming the formation of intermediate products.

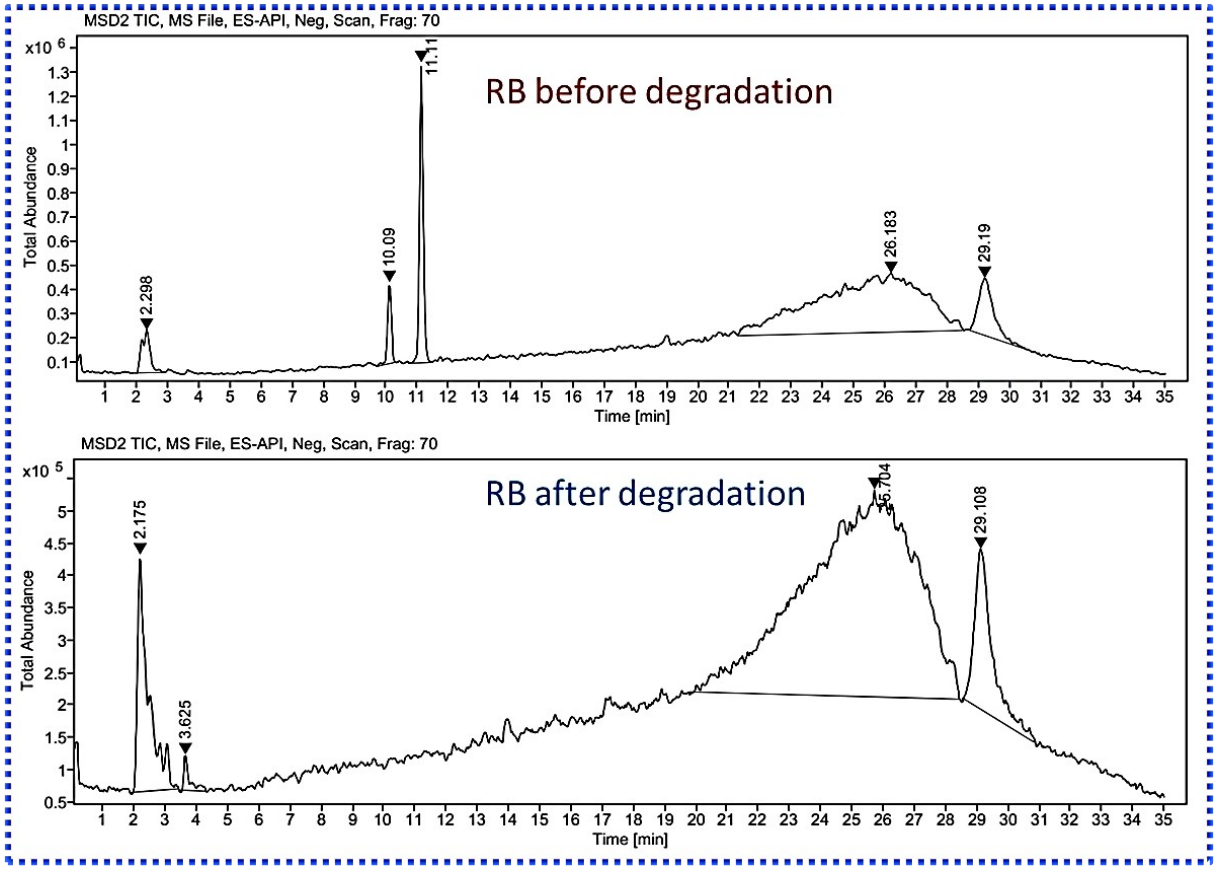

Figure S3: LC-MS analysis of Rose Bengal (RB) dye before and after photocatalytic degradation. (a) Total ion chromatograms (TIC) showing the disappearance of major RB peaks and appearance of new peaks post-treatment, indicating degradation.

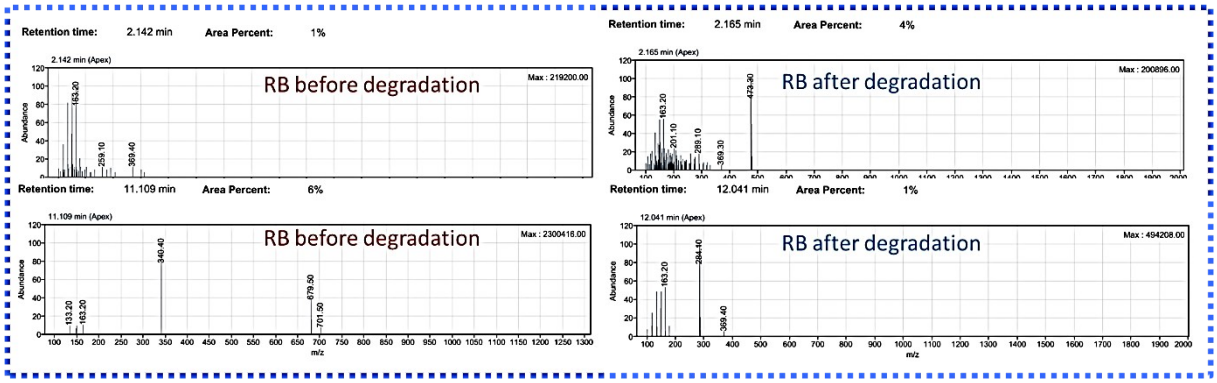

Figure S4: LC-MS analysis of Rose Bengal (RB) dye before and after photocatalytic degradation. Mass spectra before and after degradation reveal the loss of parent ion peaks and emergence of low-mass fragments, confirming the formation of intermediate products.