



Supplemental Material

Silver Nanoparticle-Intercalated Cotton Fiber for Catalytic Degradation of Aqueous Organic Dyes for Water Pollution Mitigation

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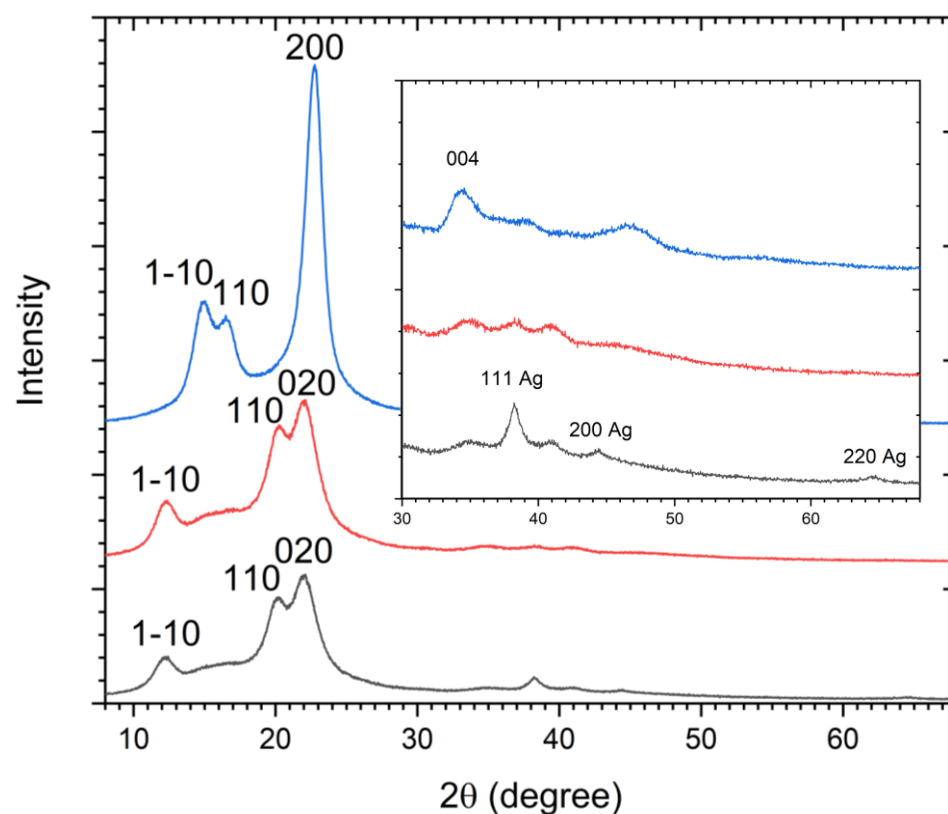


Figure S1. XRD spectra of (blue) pristine white cotton, (red) mercerized white cotton, and (black) Ag NP cotton catalyst with (inset) focused view of the spectra between 30 and 68°. Peaks for the cellulose from cotton and Ag NP lattice planes are denoted.

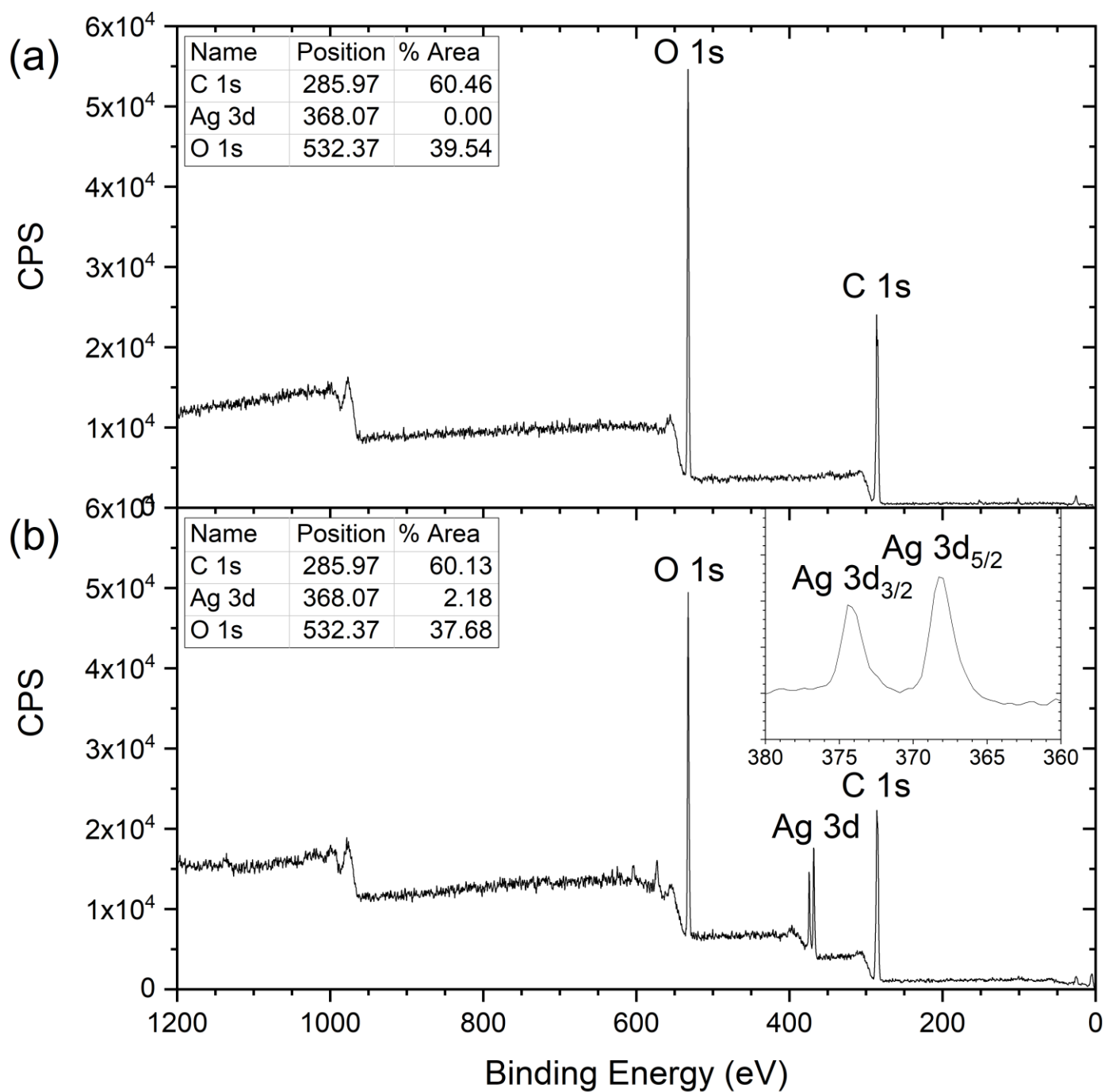


Figure S2. XPS spectra of (a) pristine white cotton and (b) Ag NP cotton catalyst with inset of Ag 3d_{3/2} and Ag 3d_{5/2}.



Figure S5. Digital images degradation reactions for MO at 25 ppm (left) before reaction and (right) after reaction time.



Figure S6. Digital images degradation reactions for CR at 25 ppm (left) before reaction and (right) after reaction time.

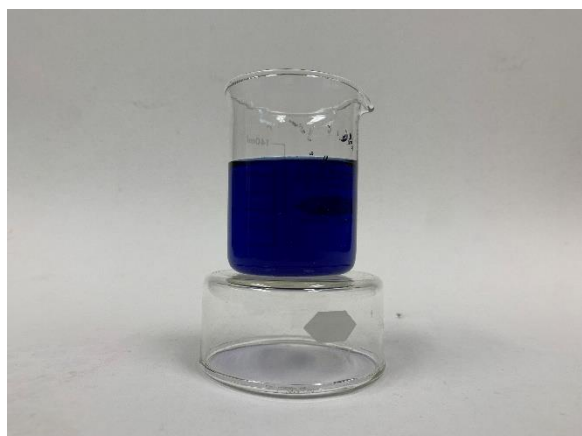


Figure S7. Digital images degradation reactions for CSBB at 25 ppm (left) before reaction and (right) after reaction time.

Table S1. Comparison of degradation reaction conditions for this study and others similarly performed in the literature.

[Ag NP] ($\mu\text{g/mL}$)	Dye	[Dye] (ppm)	[NaBH ₄] (mM)	Time (min)	Reference
26.3	Methyl Orange	25	7.93	90	This study
26.3	Congo Red	25	7.93	145	
26.3	Chicago Sky Blue 6B	25	7.93	125	
52.6	Methyl Orange	25	7.93	30	
52.6	Congo Red	25	7.93	18.5	
52.6	Chicago Sky Blue 6B	25	7.93	21	
100	Methyl Orange	33	100	3	[1]
1	Methyl Orange	16	135 *	40	[2]
0.108	Congo Red	7	1	50	[3]
4	Congo Red	581	83	15	[4]

* Peroxodisulfate as reductant.

References

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3. Albeladi, S.S.R.; Malik, M.A.; Al-Thabaiti, S.A. Facile biofabrication of silver nanoparticles using *Salvia officinalis* leaf extract and its catalytic activity towards Congo red dye degradation. *J. Mater. Res. Technol.* **2020**, *9*, 10031–10044, <https://doi.org/10.1016/j.jmrt.2020.06.074>.
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