Supporting Information

Sparse silver loading on chitosan-boron carbon nitride framework: A sustainable route to multifunctional nanomaterials

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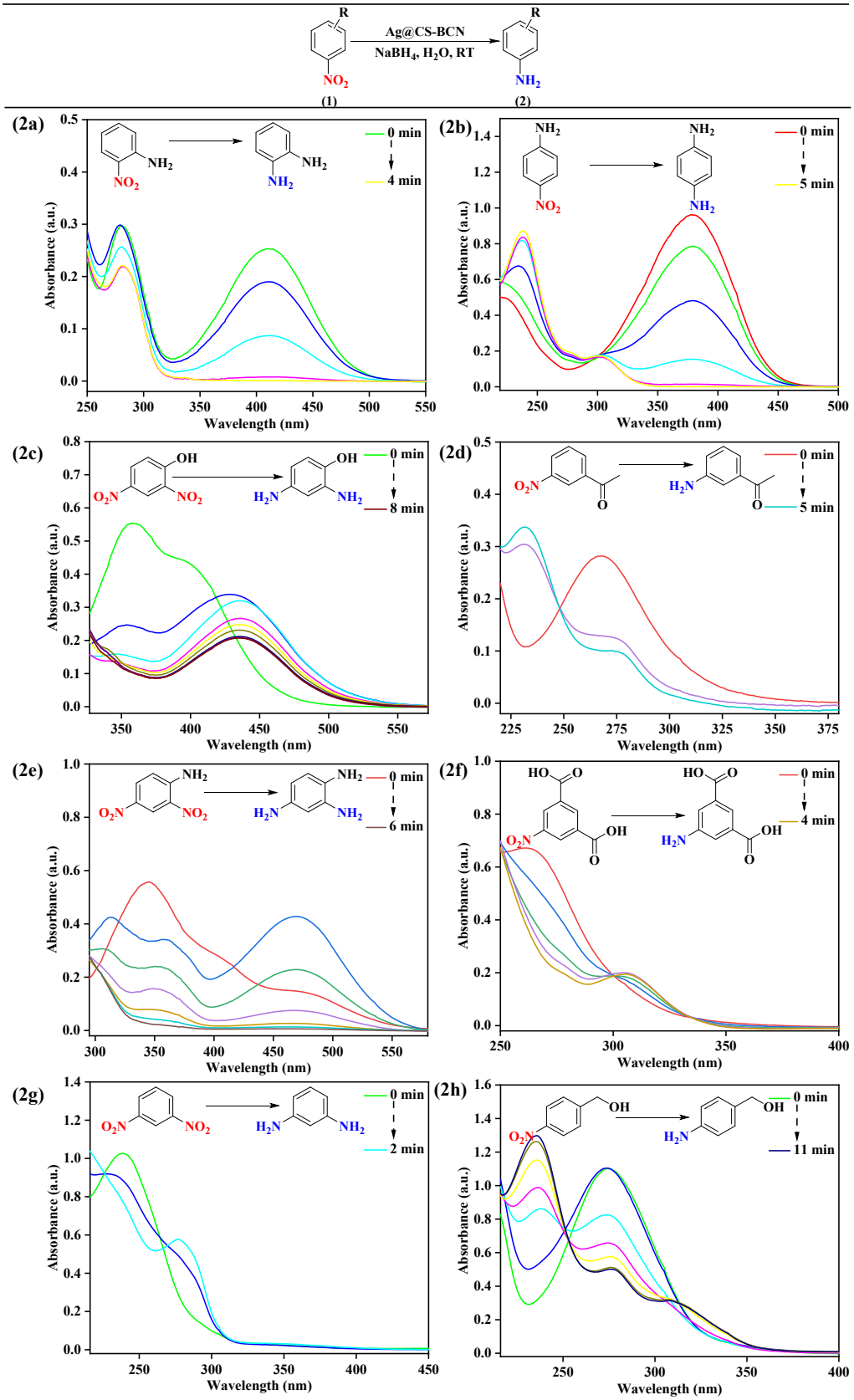
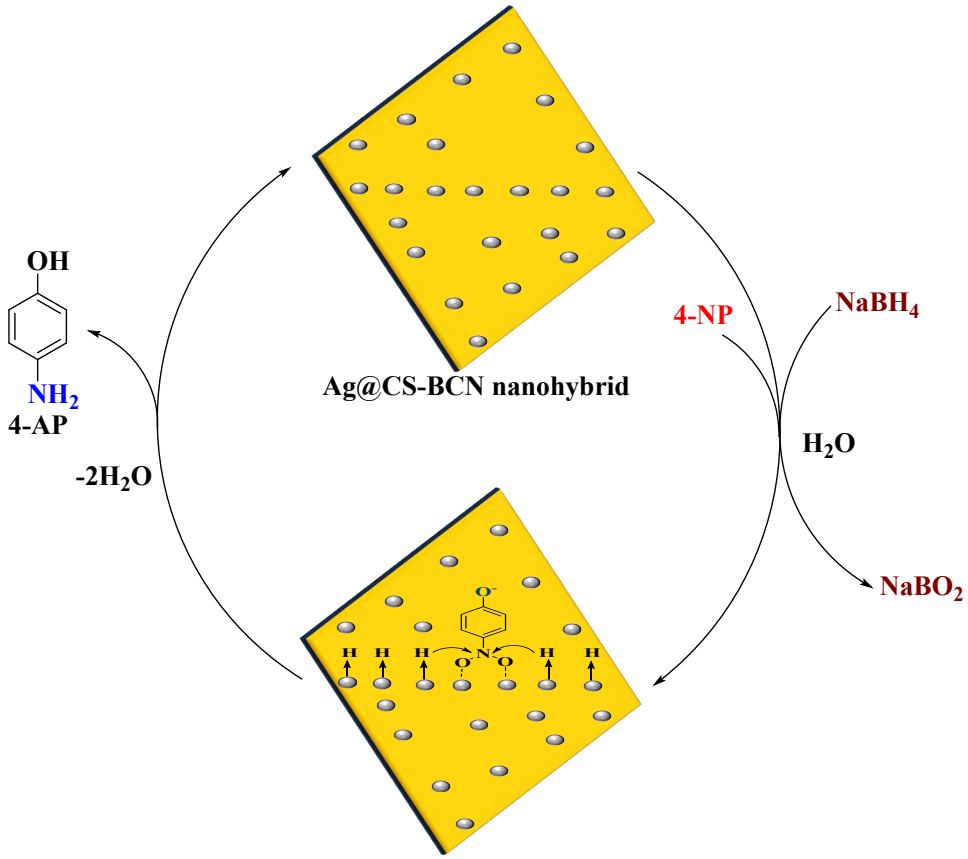
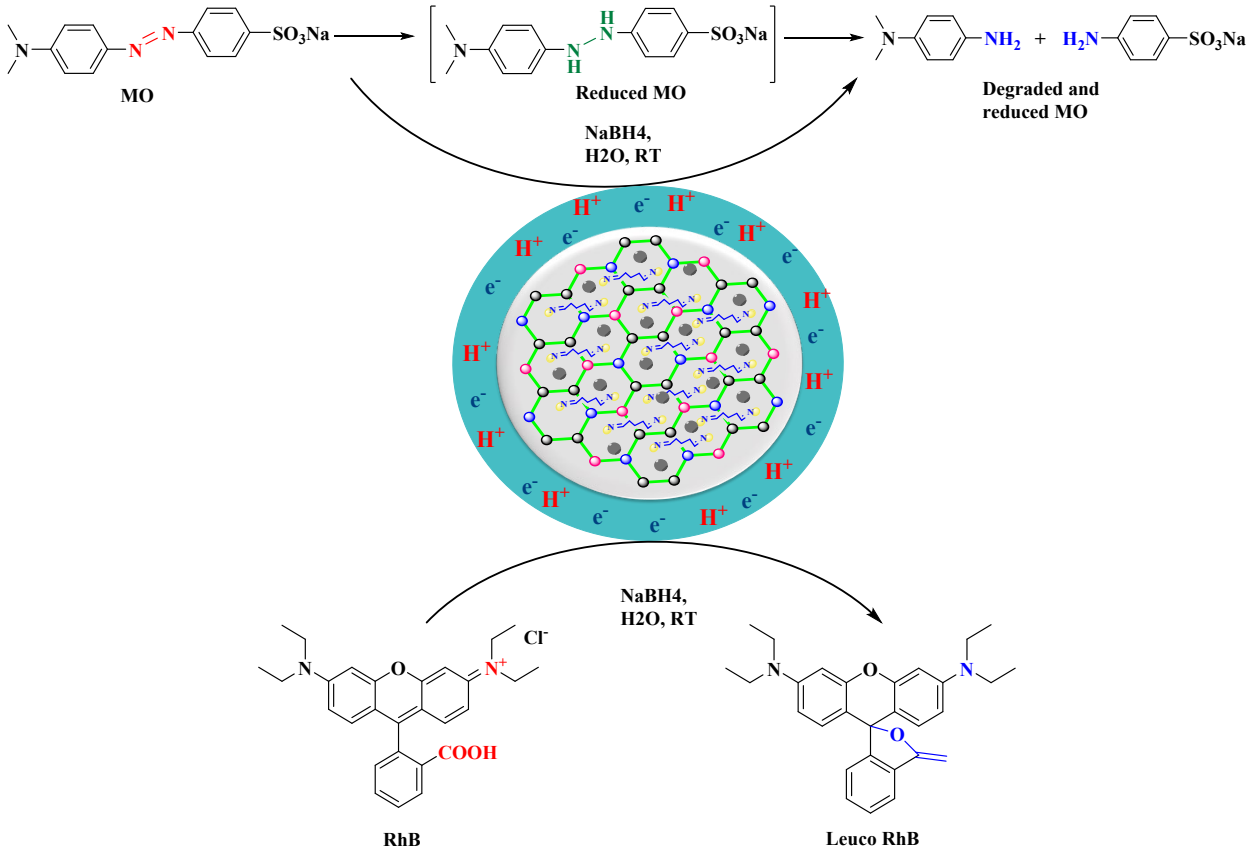


Fig. S1 UV-visible spectra for the reduction of nitroarenes to corresponding aromatic amines using aqueous $NaBH_4$ in the existence of Ag@CS-BCN nanohybrid, such as (2a) 2-nitroaniline, (2b) 4-

nitroaniline, (2c) 2,4-dinitrophenol, (2d) 3-nitroacetophenone, (2e) 2,4-dinitroaniline, (2f) 5-nitroisophthalic acid, (2g) 1,3-dinitrobenzene, and (2h) 4-nitrobenzyl alcohol



Scheme S1 Plausible mechanism for the reduction of 4-NP using Ag@CS-BCN nanohybrid [1, 2]



Scheme S2 Plausible mechanism for the reduction and degradation of MO and RhB using Ag@CS-BCN nanohybrid [1]

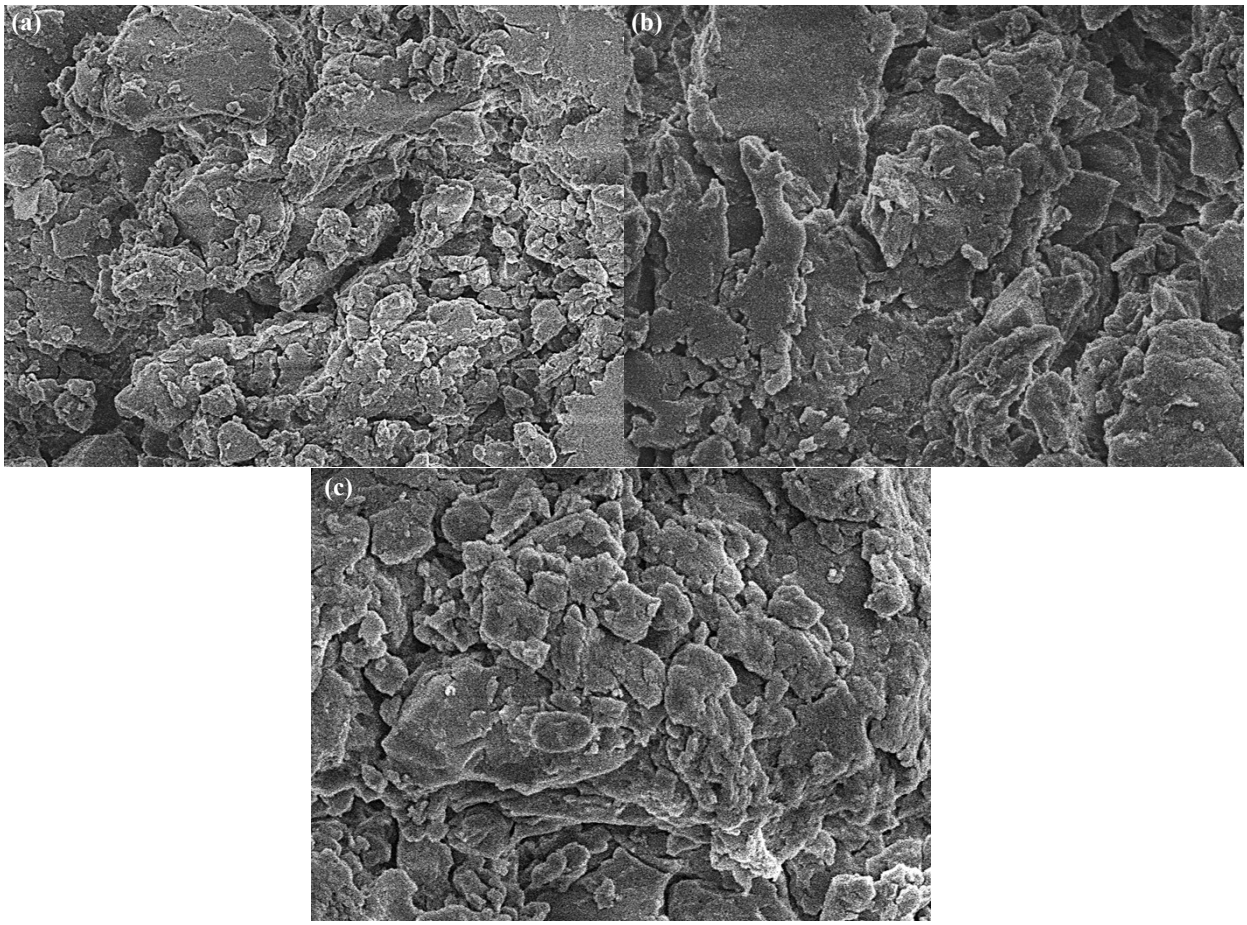


Fig. S2 FE-SEM images of recycled catalysts of (a) 4-NP, (b) MO, and (c) RhB

First-order rate equation:

$$\ln\left(\frac{C_t}{C_0}\right) = \ln\left(\frac{A_t}{A_0}\right) = -kt$$

Where C_0 and A_0 are the initial concentration and absorbance, C_t and A_t are concentration and absorbance at time t, and k is the rate constant.

Equation for % conversion

$$\% \text{ conversion} = \left(\frac{A_0 - A_t}{A_0}\right) x\ 100$$

A_0 and A_t are the initial absorbance and the absorbance at time t.

Example (Table 1, entry 6):

A_0 = 1.1128 and A_t = 0.002 at t = 5 min

$$\% \text{ conversion} = \left(\frac{1.1128 - 0.002}{1.1128}\right) x\ 100 = 99.82\ \%$$

References

[1] A.M. Antony, V. Kandathil, M. Kempasiddaiah, R. Shwetharani, R.G. Balakrishna, S.M. El-Bahy, M.M. Hessien, G.A. Mersal, M.M. Ibrahim, S.A. Patil, Graphitic carbon nitride supported palladium nanocatalyst as an efficient and sustainable catalyst for treating environmental contaminants and hydrogen evolution reaction, Colloids Surf. A: Physicochem. Eng. Asp. 647 (2022) 129116.

[2] Y.R. Mejía, N.K.R. Bogireddy, Reduction of 4-nitrophenol using green-fabricated metal nanoparticles, RSC adv. 12(29) (2022) 18661-18675.