

Supporting Information

Selective Oxidation of Cyclohexene to Adipic Acid over Silver supported Tungsten Oxide nanostructure catalyst†

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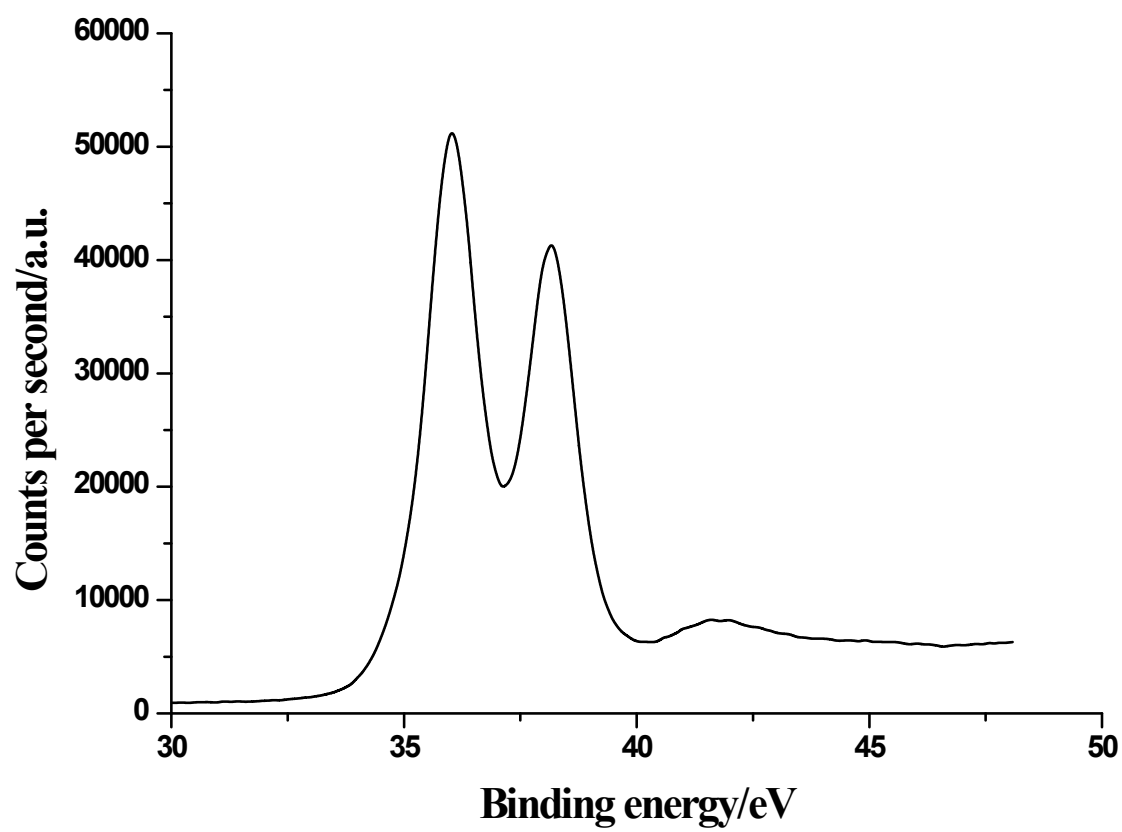


Figure. S1 W_{4f} spectrum of Ag/WO_3 catalyst.

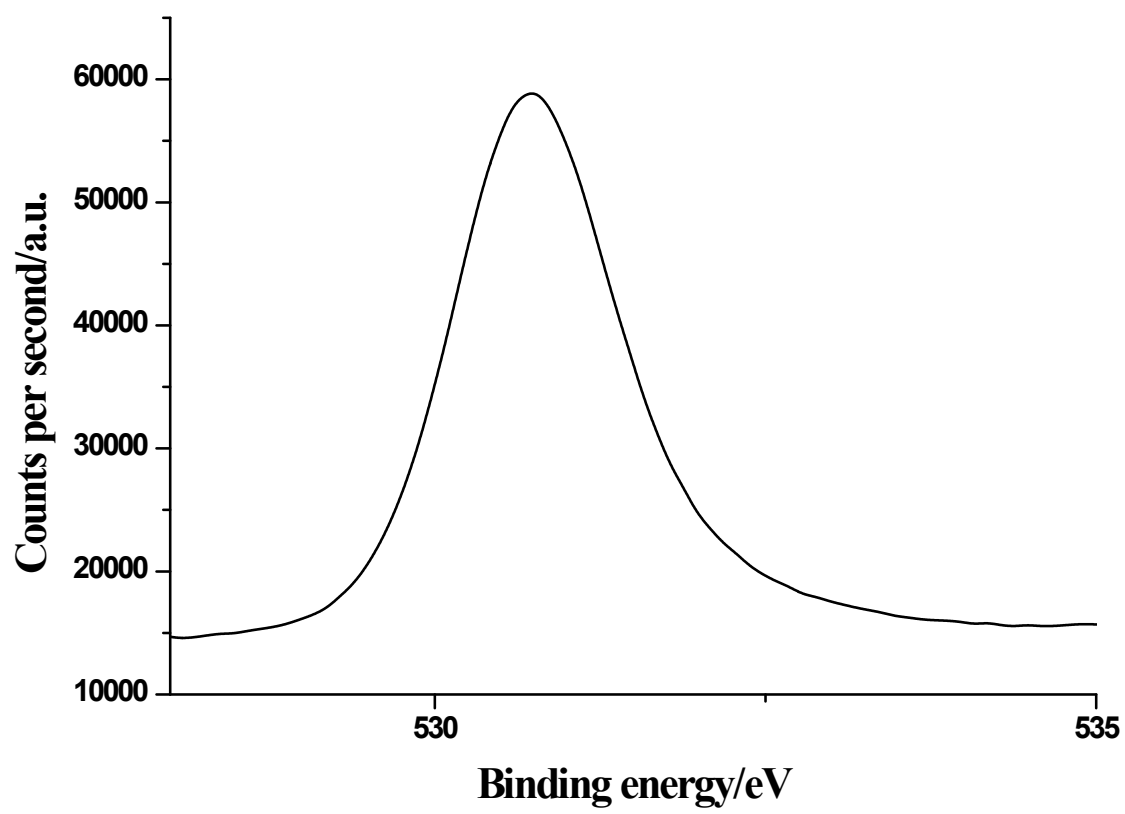
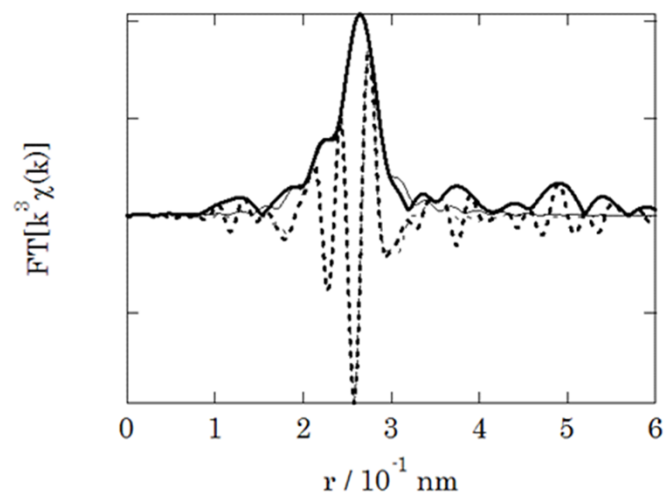


Fig.S2 O _{1s} spectrum of Ag/WO₃ catalyst.

a) Fresh Catalyst



b) Spent Catalyst

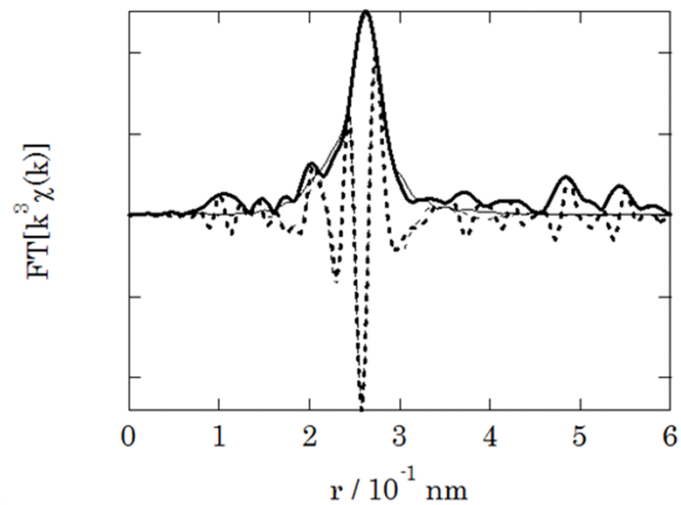


Fig. S3 EXAFS spectra of Ag/ WO₃ catalyst a) fresh catalyst and b) spent catalyst.

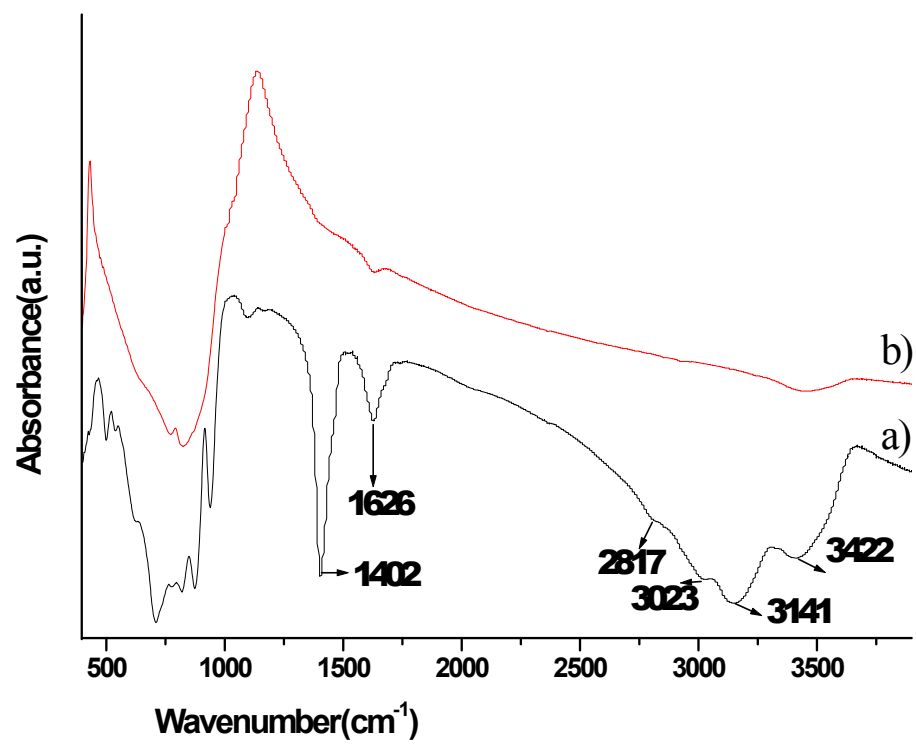


Fig.S4 IR spectra Ag/ WO₃ catalyst a) before calcination and b) after calcination.

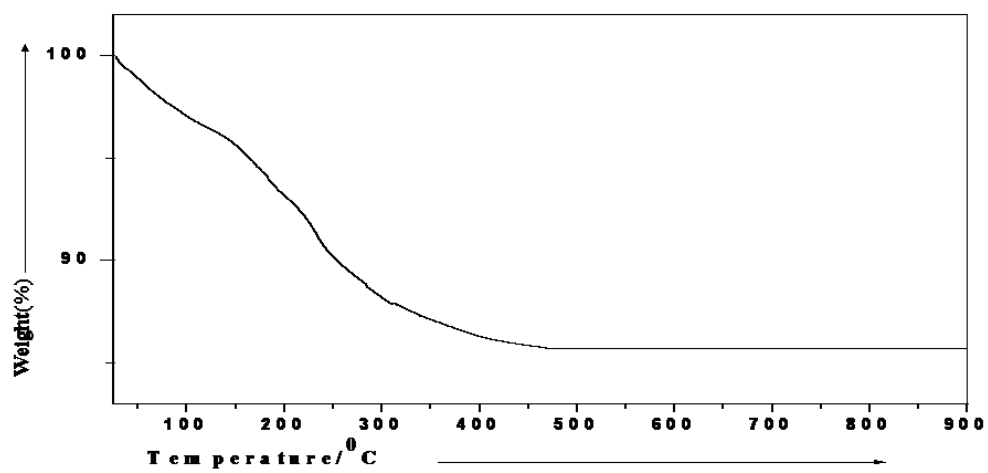


Fig.S5 TGA of Ag/ WO₃ catalyst.

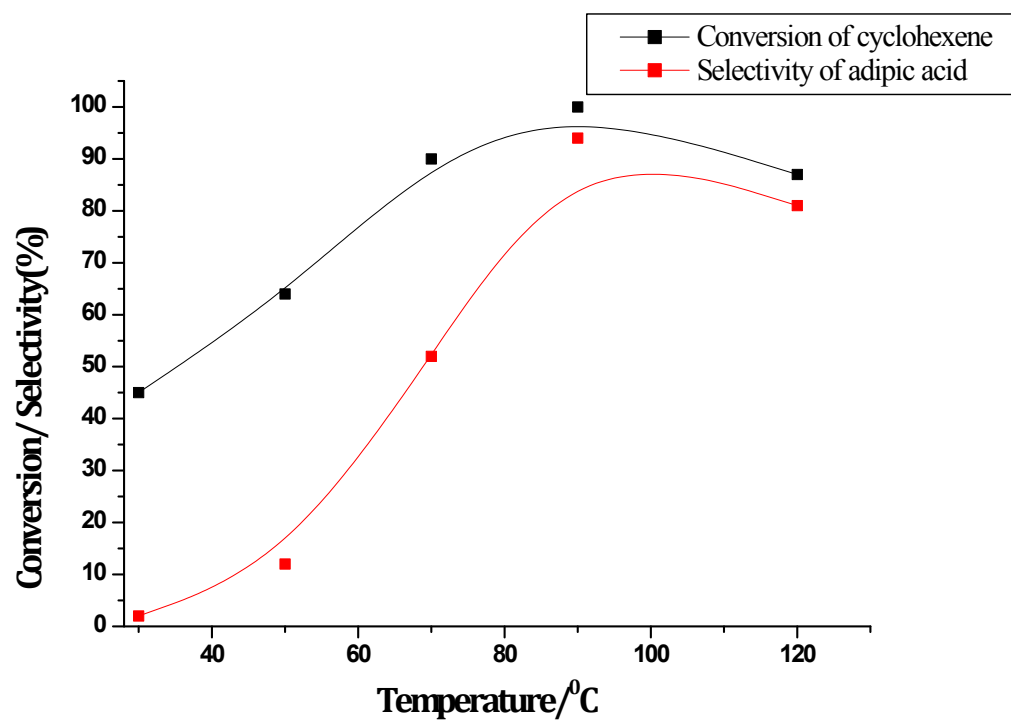


Fig.S6 Effect of temperature on cyclohexene oxidation.

[■] Conversion of cyclohexene; [■] Selectivity to adipic acid.

Reaction Condition: solvent= acetonitrile; cyclohexene =1g; weight of catalyst = 0.15 g;
cyclohexene: H₂O₂ mole ratio =1:5; time= 18 h.

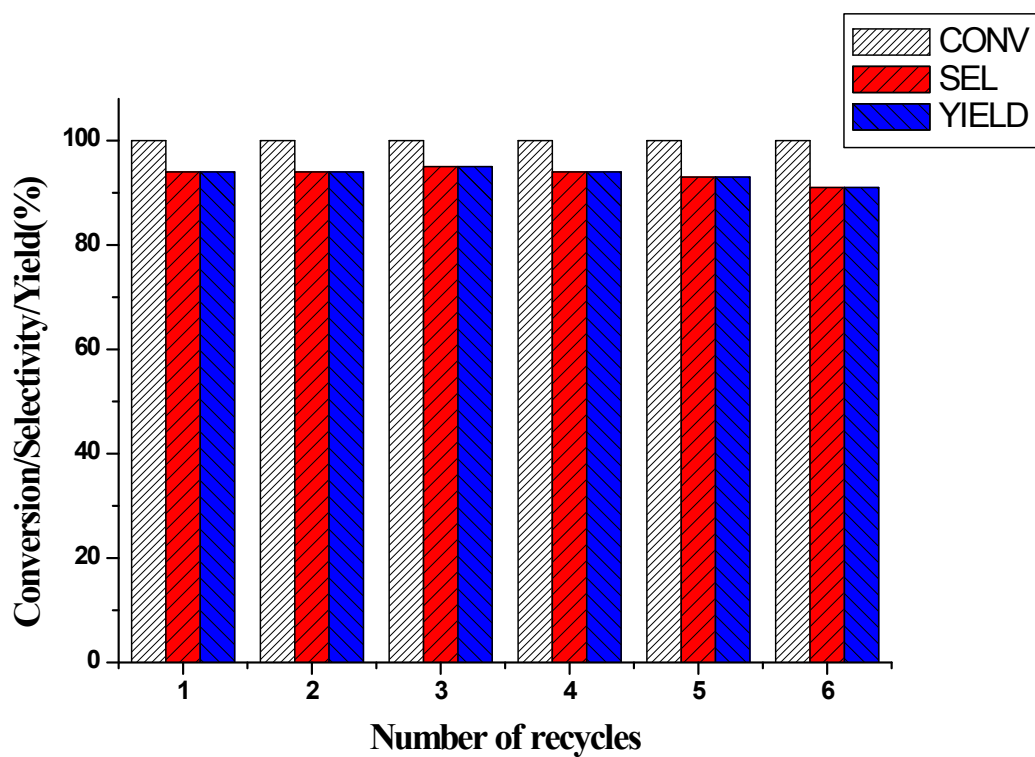


Fig. S7 Recyclability test of Ag/WO₃ nanostructure catalyst for the oxidation of cyclohexene to adipic acid.

Reaction Condition: solvent= acetonitrile; cyclohexene =1g; weight of catalyst = 0.15 g; cyclohexene: H₂O₂ mole ratio =1:5; temperature = 90 °C, time= 18 h.

Table S1. XPS data of the fresh and the used catalyst

Entry	Catalyst	Surface conc.(%) of Ag 3d5/2 from XPS	Area
1.	Fresh catalyst	7.95	15208.18
2.	Spent catalyst(after 5 reuse)	7.94	15189.05

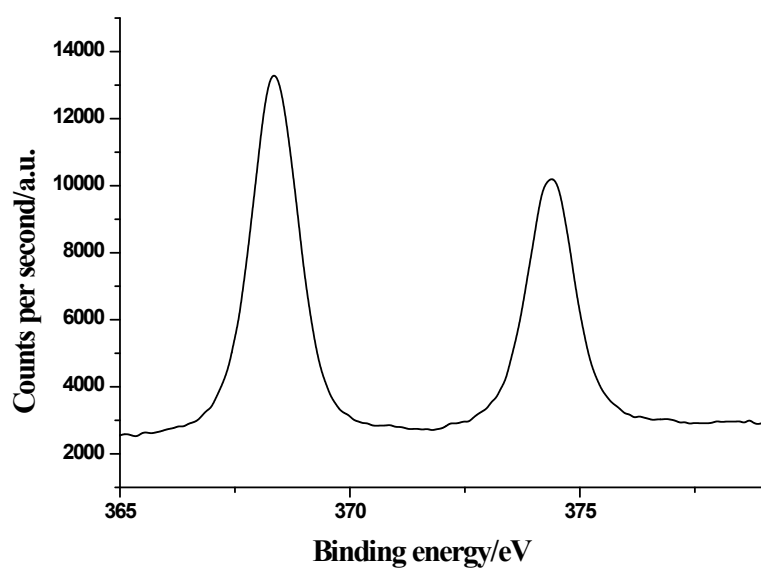


Fig. S8 XPS spectrum of the used Ag/WO₃ nanostructure catalyst.

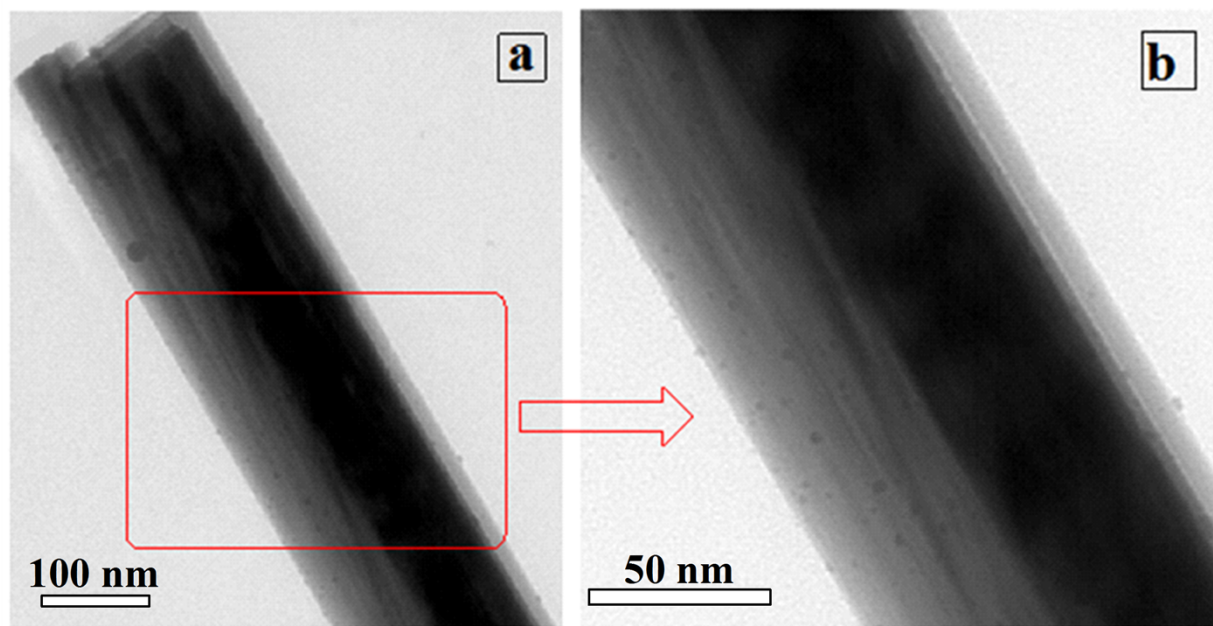
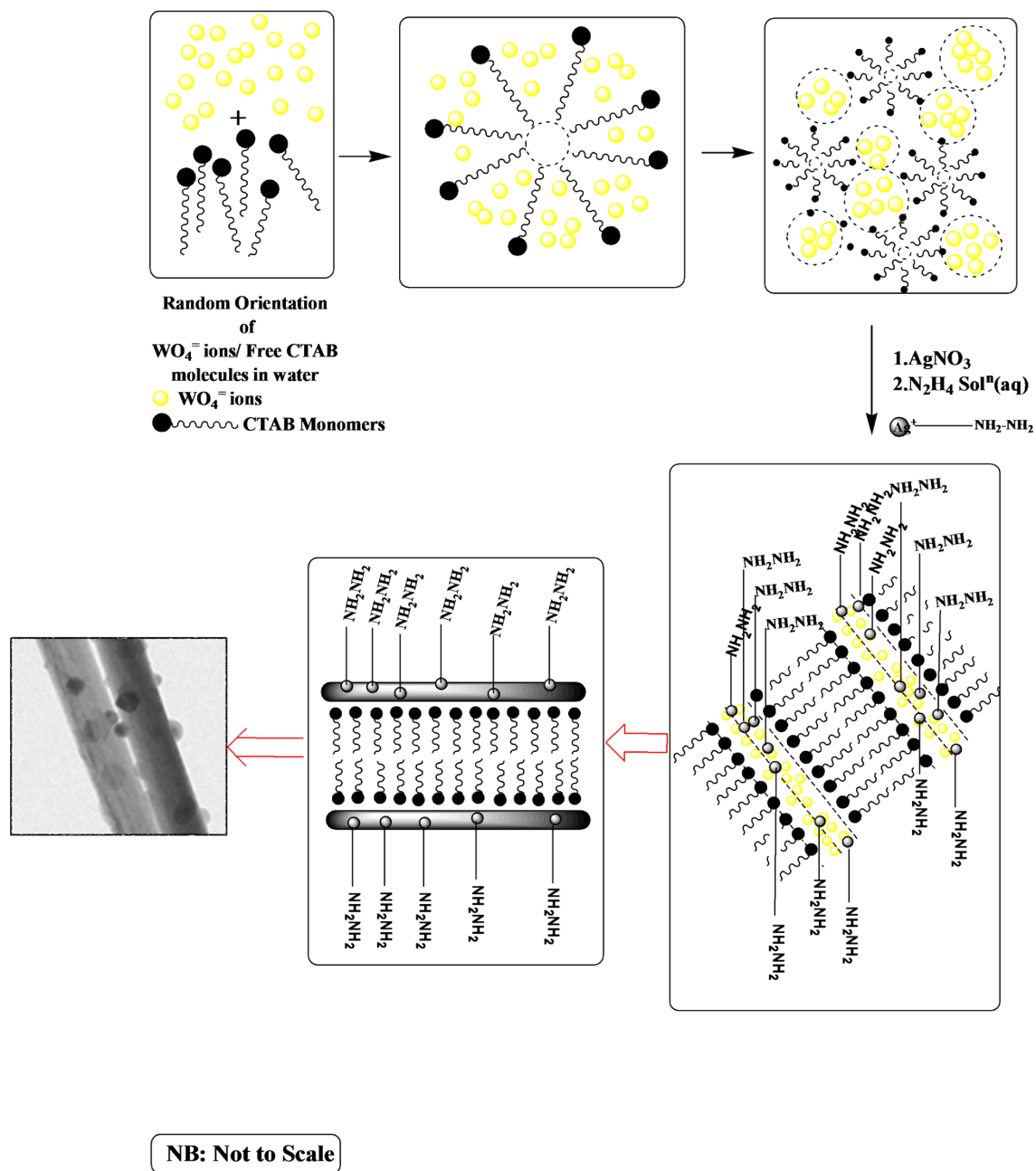


Fig. S9 TEM of the used Ag/WO₃ nanostructure (after 5 reuses) catalyst a) Low resolution, b) High resolution.



Scheme S1 Synthesis of Ag/ WO_3 nanostructure catalyst