

Polymer microgels for stabilization of gold nanoparticles and their application in catalytic reduction of nitroarenes in aqueous medium

Muhammad Arif ^{a, b}, Muhammad Shahid ^a, Ahmad Irfan ^{c, d}, Jan Nisar ^e, Weitai Wu ^f, Zahoor H.

Farooqi ^{a, *}, Robina Begum ^{a, *}

^a *School of Chemistry, University of the Punjab, New Campus, Lahore 54590, Pakistan*

^b *Department of Chemistry, School of Science, University of Management and Technology,*

Lahore 54770, Pakistan

^c *Research Center for Advanced Materials Science (RCAMS), King Khalid University, P.O. Box*

9004, Abha 61413, Saudi Arabia

^d *Department of Chemistry, Faculty of Science, King Khalid University, P.O. Box 9004, Abha*

61413, Saudi Arabia

^e *National Centre of Excellence in Physical Chemistry, University of Peshawar, Peshawar*

25120, Pakistan

^f *State Key Laboratory for Physical Chemistry of Solid Surfaces, Collaborative Innovation*

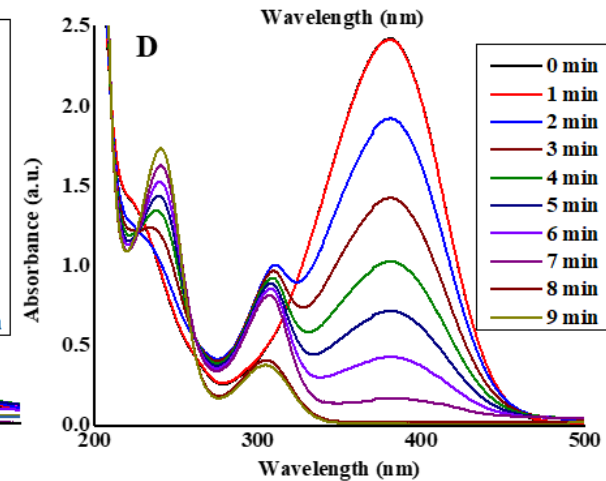
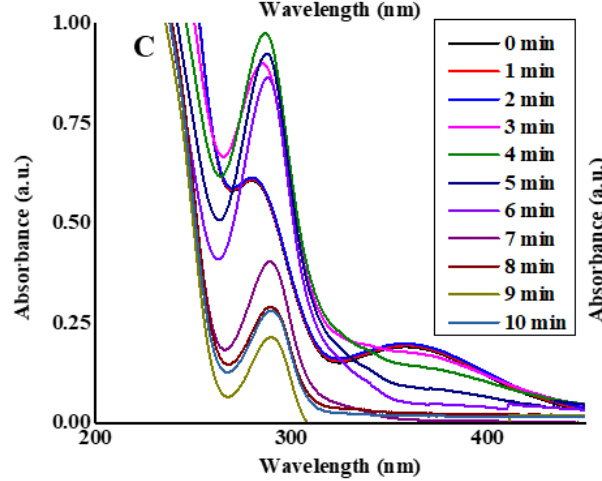
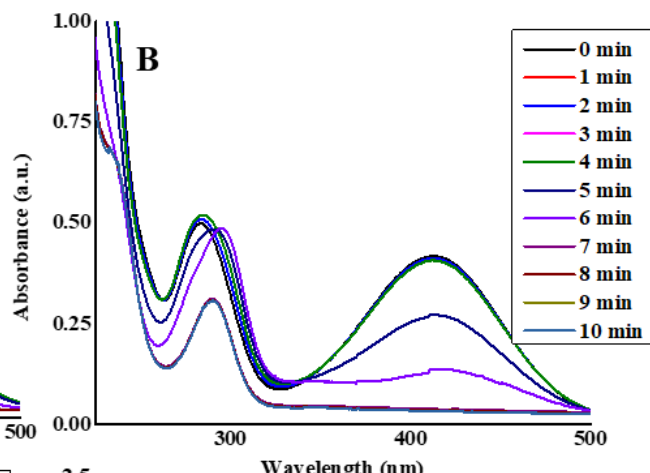
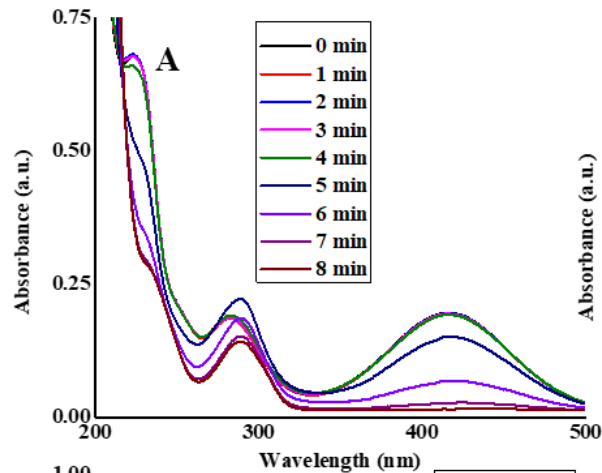
Center of Chemistry for Energy Materials, The Key Laboratory for Chemical Biology of Fujian

Province, and Department of Chemistry, College of Chemistry and Chemical Engineering,

Xiamen University, Xiamen, Fujian 361005, China

* Corresponding Authors email addresses: zhfarooqi@gmail.com, Zahoor.chem@pu.edu.pk (Z.

H. Farooqi), robina.hons@pu.edu.pk (R. Begum)



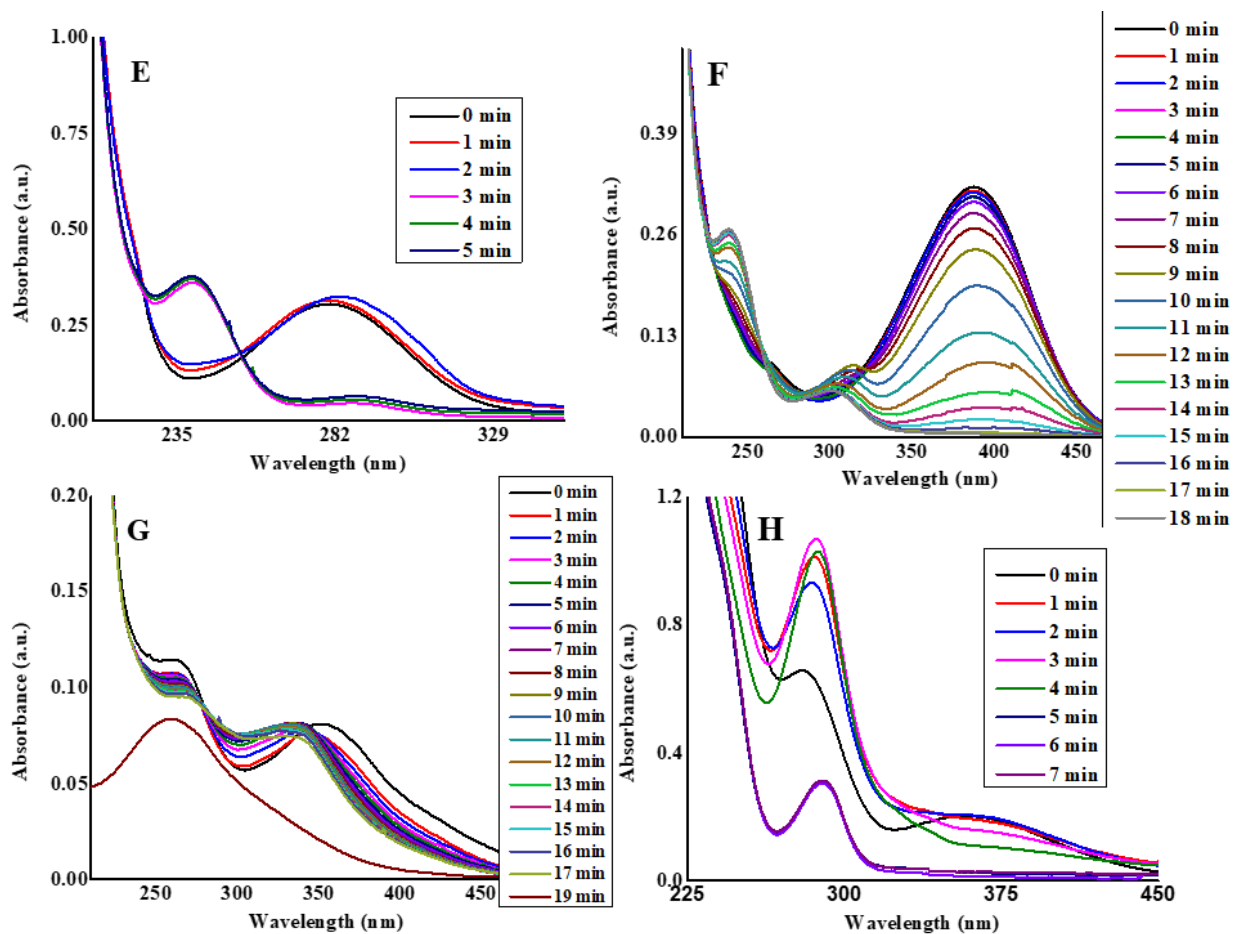
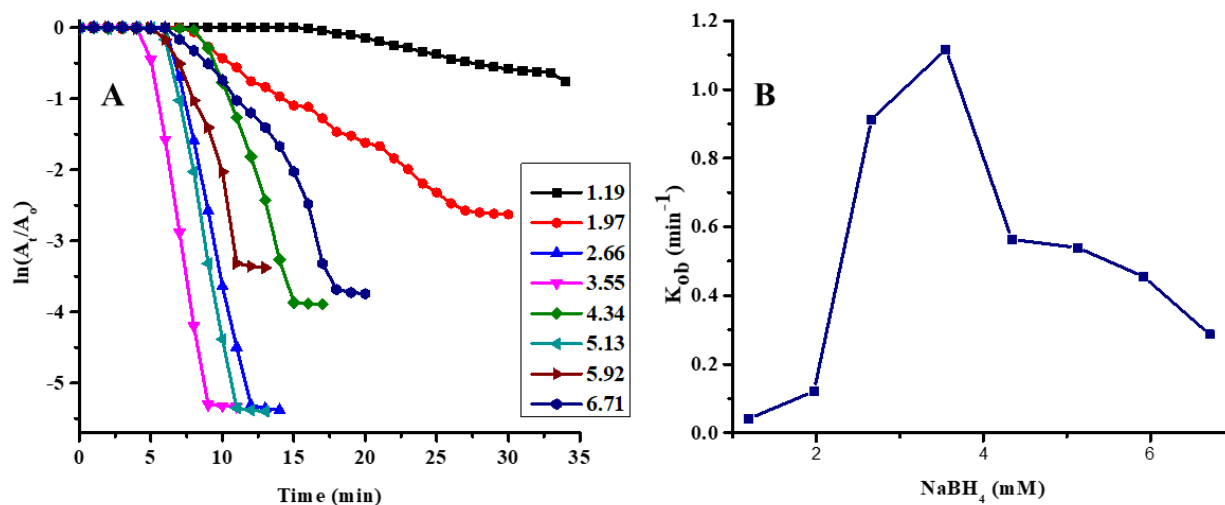


Fig. S1. Catalytic reduction of (A) 2NP, (B) 2NA, (C) 3NA, (D) 4NA, (E) 4CNB, (F) 4NPH, (G) 2,4DNP, and (H) 3NP [conditions: [substrate] = 0.057 mM, Au-P(STY@NIPM) = 2.40 $\mu\text{g/mL}$, NaBH_4 = 2.66 mM].



S2: (A) $\ln(A_t/A_0)$ vs t function for 4NP reduction under different concentrations of NaBH_4 in the presence of Au-P(STY@NIPM) [conditions: concentration of 4NP = 0.057 mM, Au-P(STY@NIPM) = 2.40 $\mu\text{g/mL}$, NaBH_4 = 1.19-6.71 mM] and (B) the dependence of k_{ob} on NaBH_4 concentration.

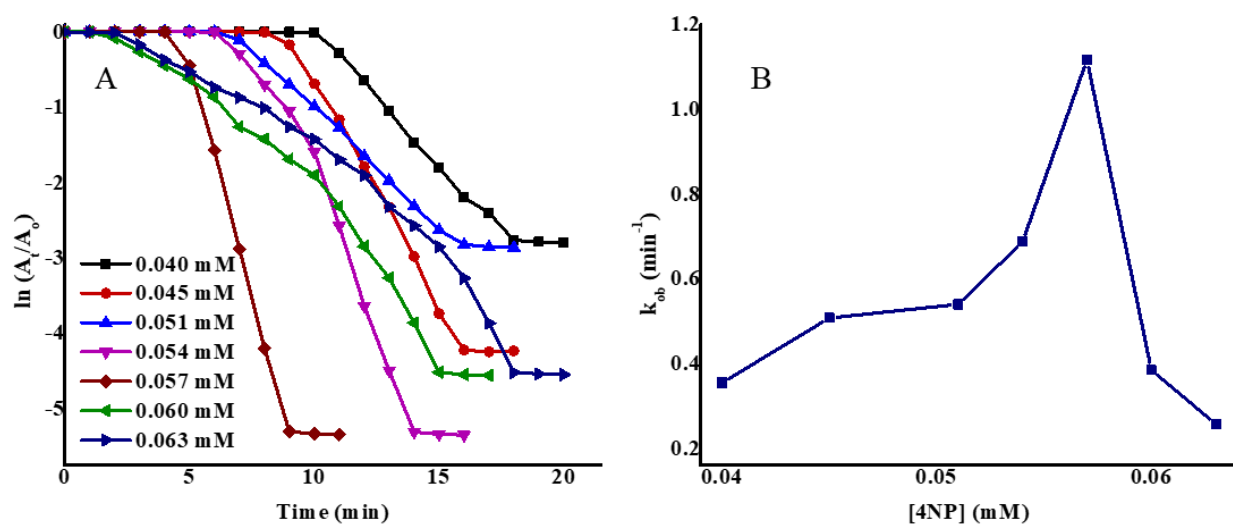


Fig. S3. (A) $\ln(A_t/A_0)$ vs time for 4NP reduction under its different concentrations [conditions: Au-P(STY@NIPM) = 2.40 $\mu\text{g/mL}$, NaBH_4 = 2.66 mM], and (B) plot of k_{ob} as a function of [4NP].