

Supporting information

A versatile core-shell hetero nanostructure catalyzed chemo-selective synthesis of β -enamino carbonyl compounds

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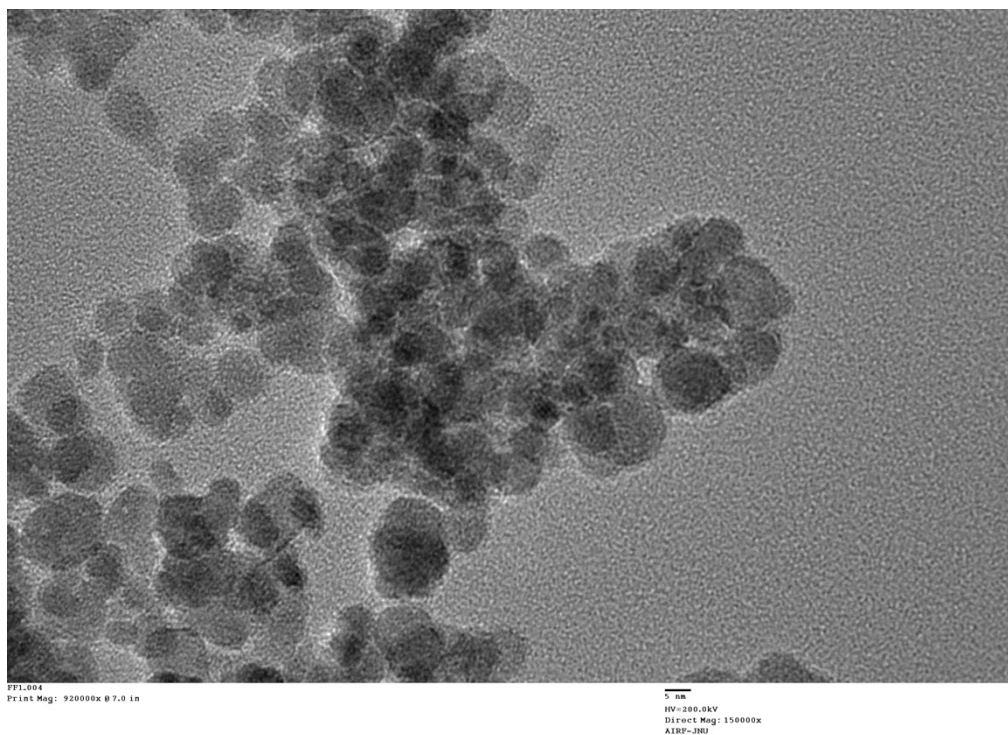


Figure S1: TEM image of silica coated magnetite nanoparticles

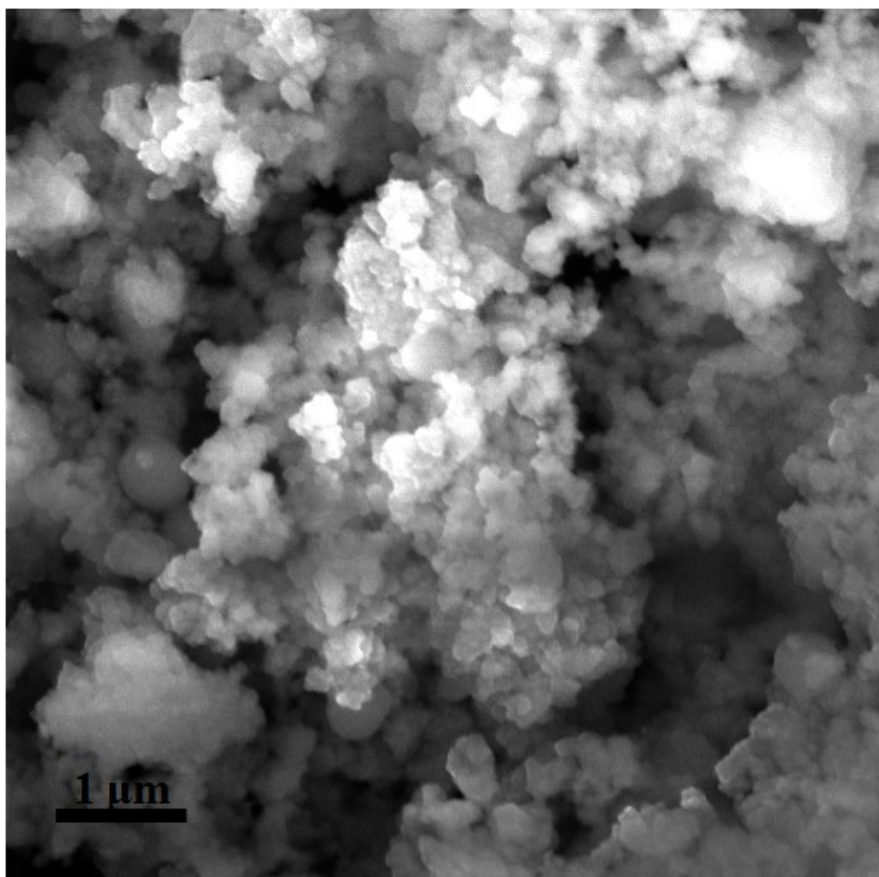


Figure S2: SEM Image of recovered catalyst.

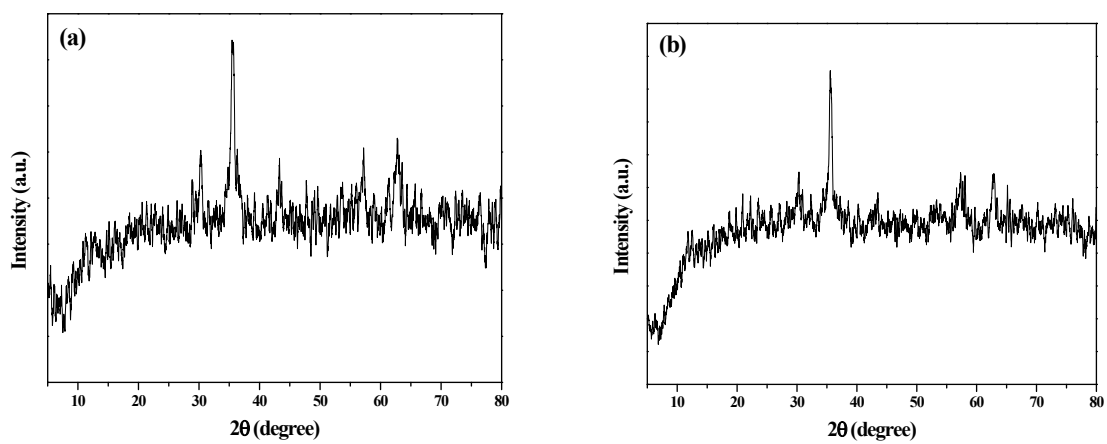


Figure S3: XRD Spectrum of (a) Fresh and (b) Recovered catalyst

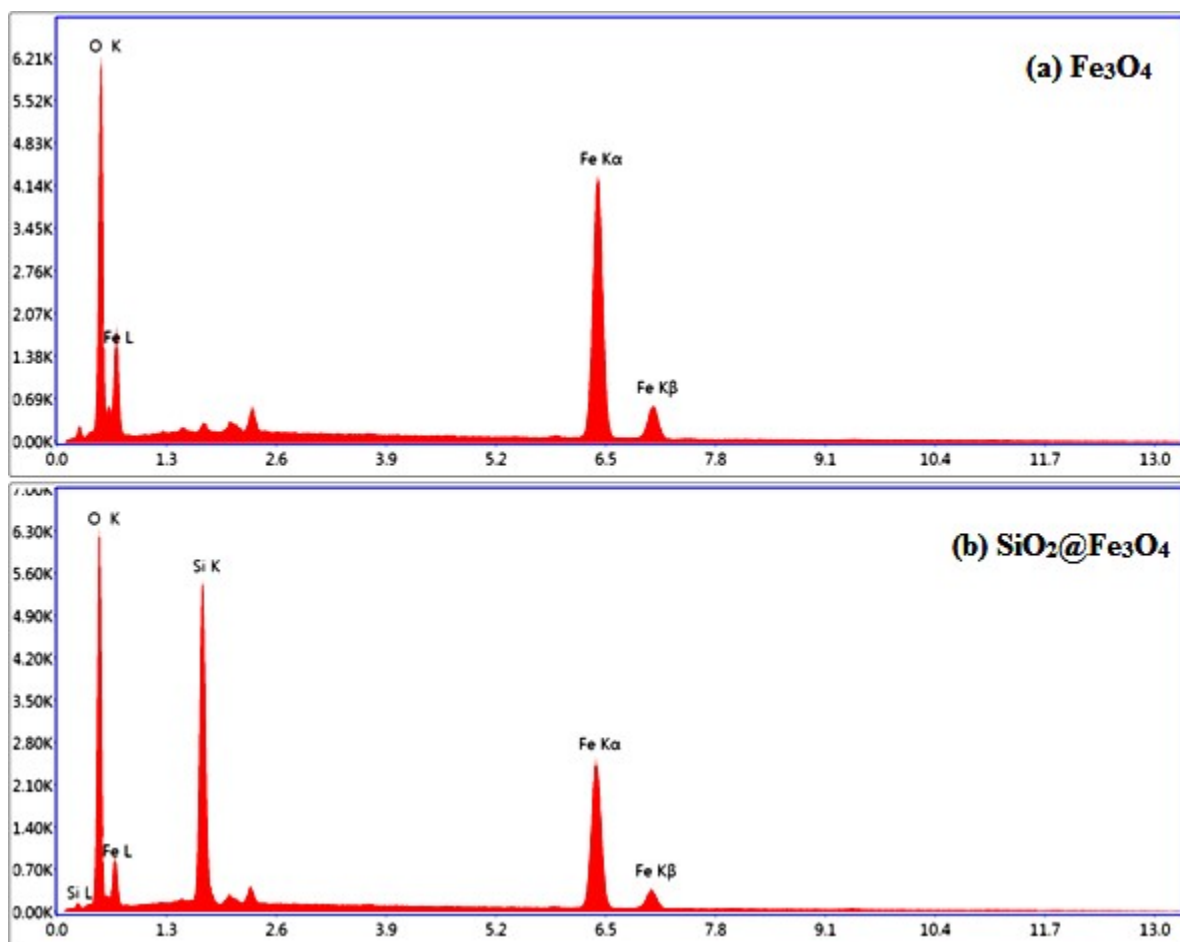


Figure S4: EDX spectra of a) Fe_3O_4 and b) $\text{SiO}_2@\text{Fe}_3\text{O}_4$ nanoparticles.

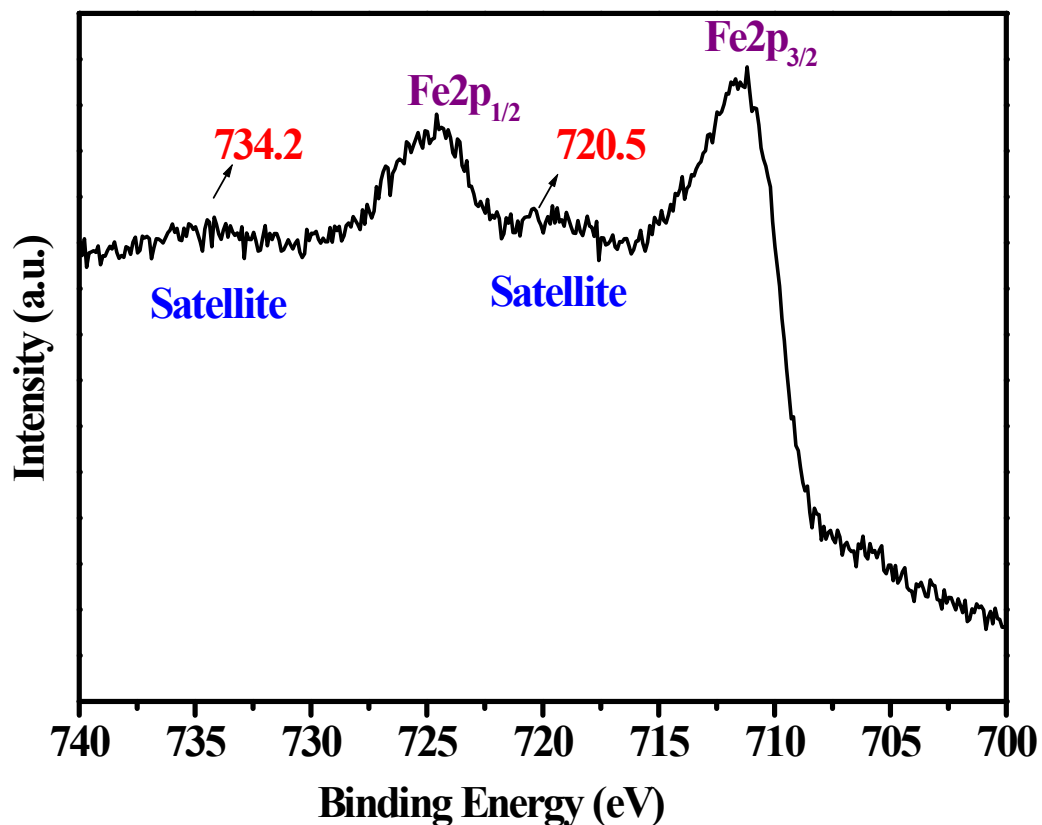


Figure S5: XPS Spectrum of Fe2p of catalyst.

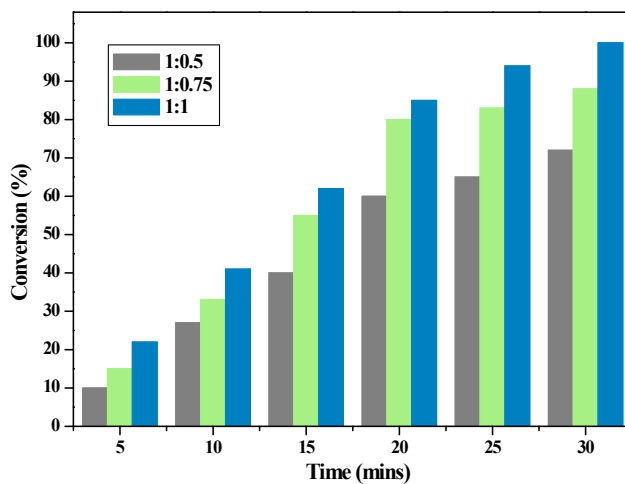


Figure S6: Effect of substrate molar ratio for the enamination reaction [Reaction conditions: benzylamine (a mmol), methylacetoacetate (b mmol), Co-NQ@Am-SiO₂@Fe₃O₄ (20 mg), solvent free conditions, r.t. (25 °C)].

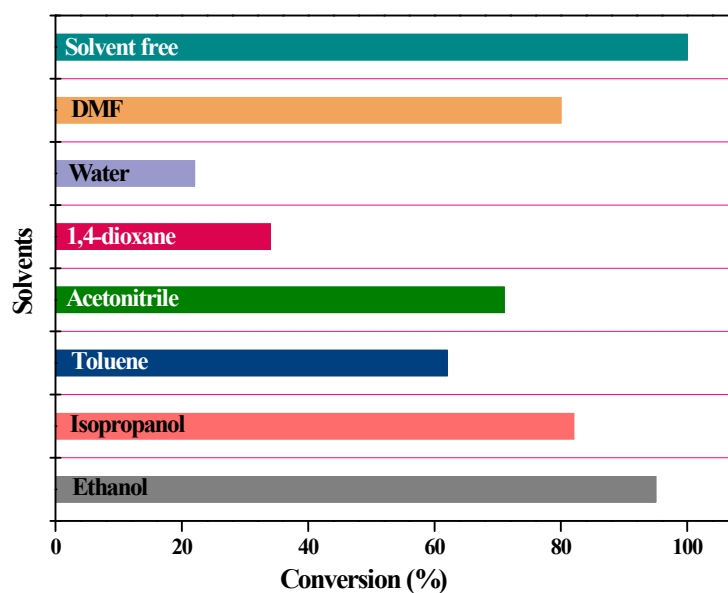


Figure S7: Effect of solvent on the enamination reaction [Reaction Conditions: benzylamine (1 mmol), methylacetoacetate (1 mmol), Co-NQ@Am-SiO₂@Fe₃O₄ catalyst (20 mg), solvent (2 mL), stirring at r.t. (25 °C)]

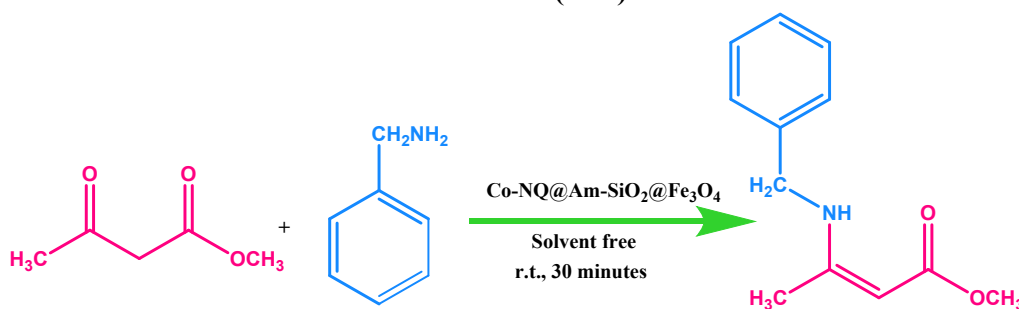
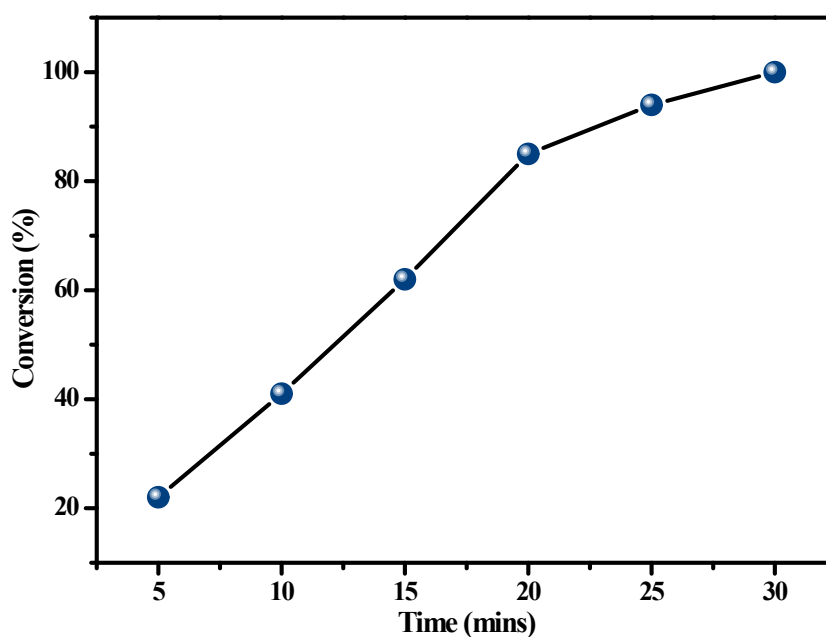


Figure S8: Effect of time on Co-NQ@Am-SiO₂@Fe₃O₄ catalyzed enamination reaction [Reaction conditions: benzylamine (1 mmol), methylacetoacetate (1 mmol), Co-NQ@Am-SiO₂@Fe₃O₄ catalyst (20 mg), stirring at r.t. (25 °C)].

Table S1: Effect of temperature on the Co-NQ@Am-SiO₂@Fe₃O₄ catalyzed enamination reaction.

Entry	Temperature	Conversion (%)
1.	25	100
2.	35	98
3.	45	94
4.	55	92
5.	65	89

[Reaction Conditions: Benzylamine (1 mmol), Methylacetoacetate (1 mmol), Co-NQ@Am-SiO₂@Fe₃O₄ catalyst (20 mg), stirring].