Supplementary Information

Quinoline-2-carboimine complex immobilized on amine functionalized silica coated magnetite nanoparticles: A novel and magnetically retrievable nanocatalyst for the synthesis of carbamates *via* C-H activation of formamides

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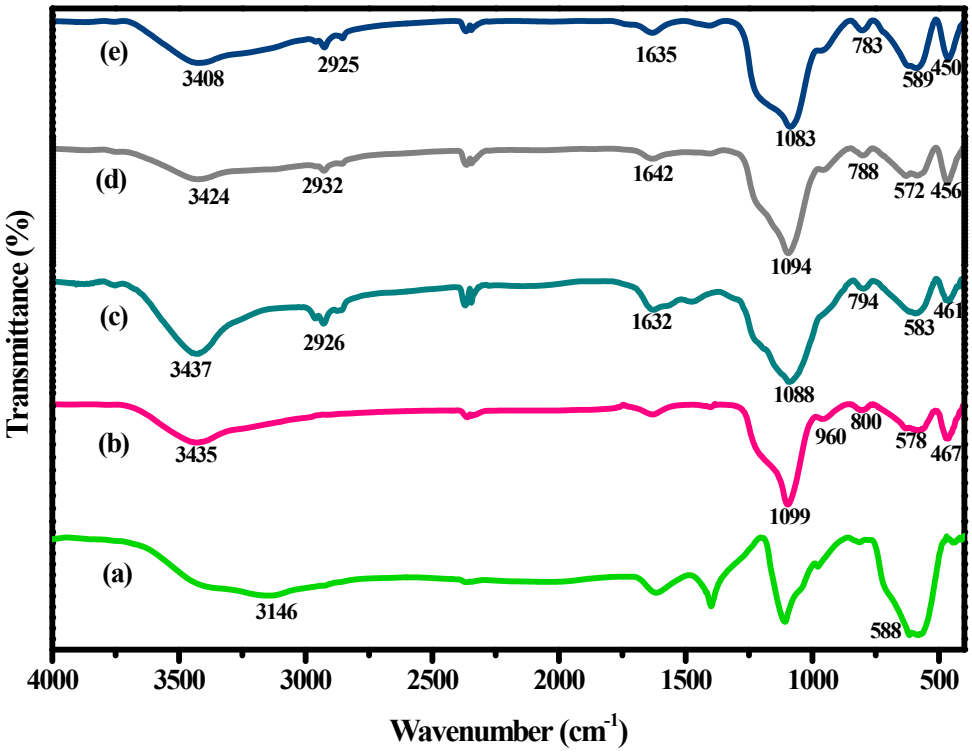

Fig. S1 FT-IR spectra of (a) Fe_3O_4 (b) SiO_2@Fe_3O_4 (c) Am-SiO_2@Fe_3O_4 (d) 2QC@Am-SiO_2@Fe_3O_4 and (e) Cu-2QC@Am-SiO_2@Fe_3O_4

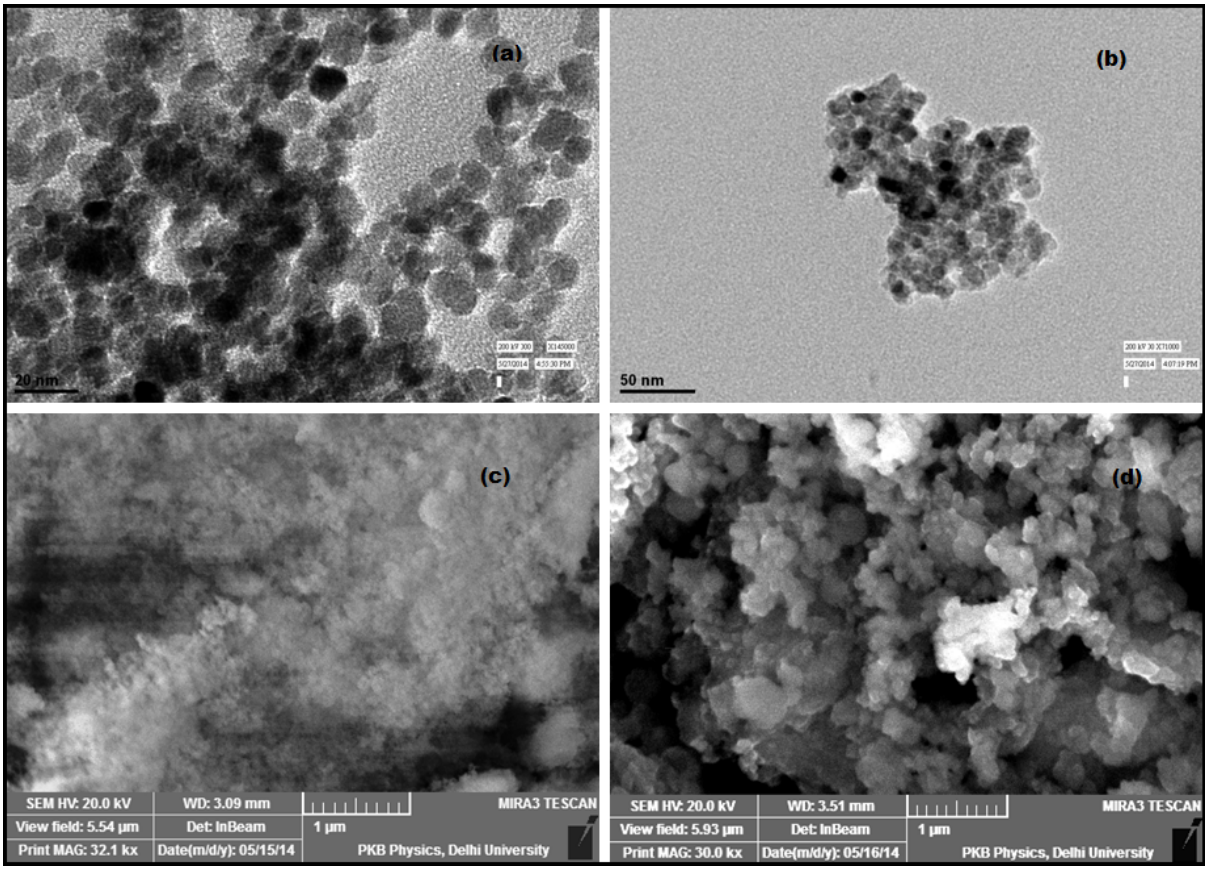

Fig. S2 TEM images of (a) $SiO_2@Fe_3O_4$ (b) recovered Cu-2QC@Am-$SiO_2@Fe_3O_4$ nanocatalyst and SEM images of (c) $SiO_2@Fe_3O_4$ and (d) recovered Cu-2QC@Am-$SiO_2@Fe_3O_4$ nanocatalyst.

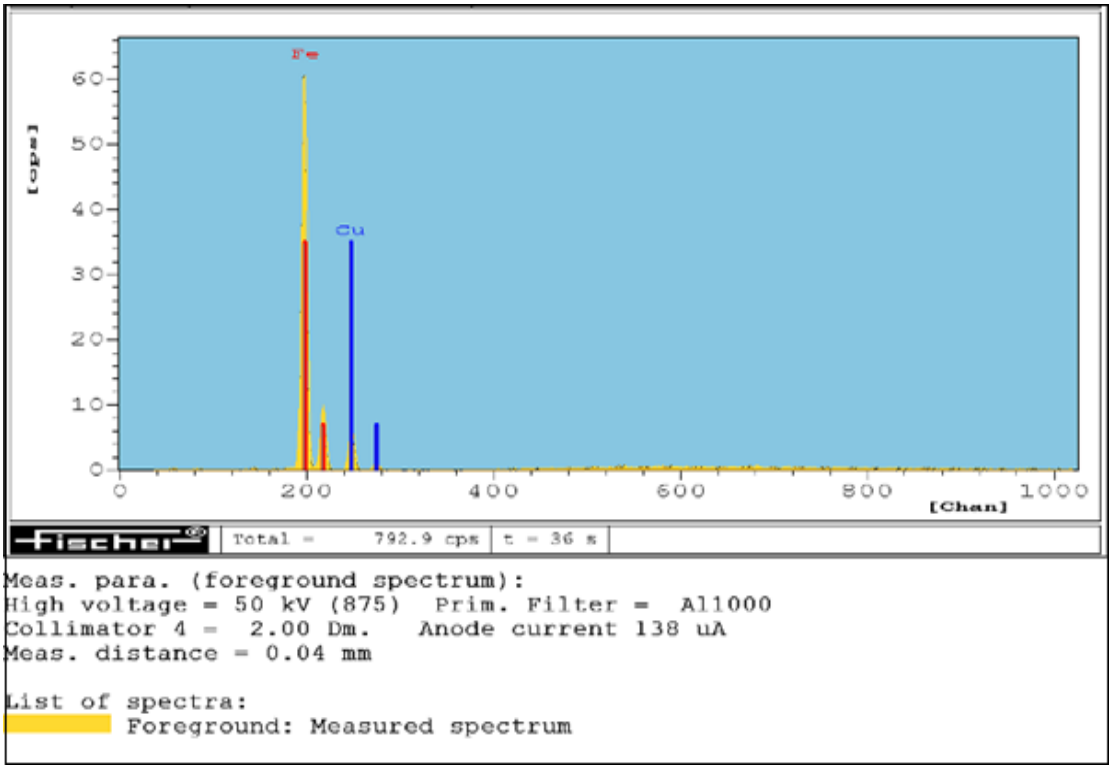

Fig. S3 ED-XRF spectrum of the nano-catalyst (Cu-2QC@Am-SiO_2@Fe_3O_4)

Table S1 Screening of various catalysts for the synthesis of carbamates *via* C-H activation of formamides[a]

Entry	Catalyst	Conversion (%)
1.	No catalyst	-
2.	Fe_3O_4	-
3.	$CuCl_2$	85
4.	$CuSO_4.5H_2O$	72
5.	CuI	66
6.	Cu-2QC@Am-SiO_2@Fe_3O_4	100

[a]Reaction Conditions: Salicylaldehyde (0.5 mmol), N,N-Dimethylformamide (25 mmol), catalyst (30 mg), TBHP (70 wt% in water, 6.0 equiv), reflux at 70°C

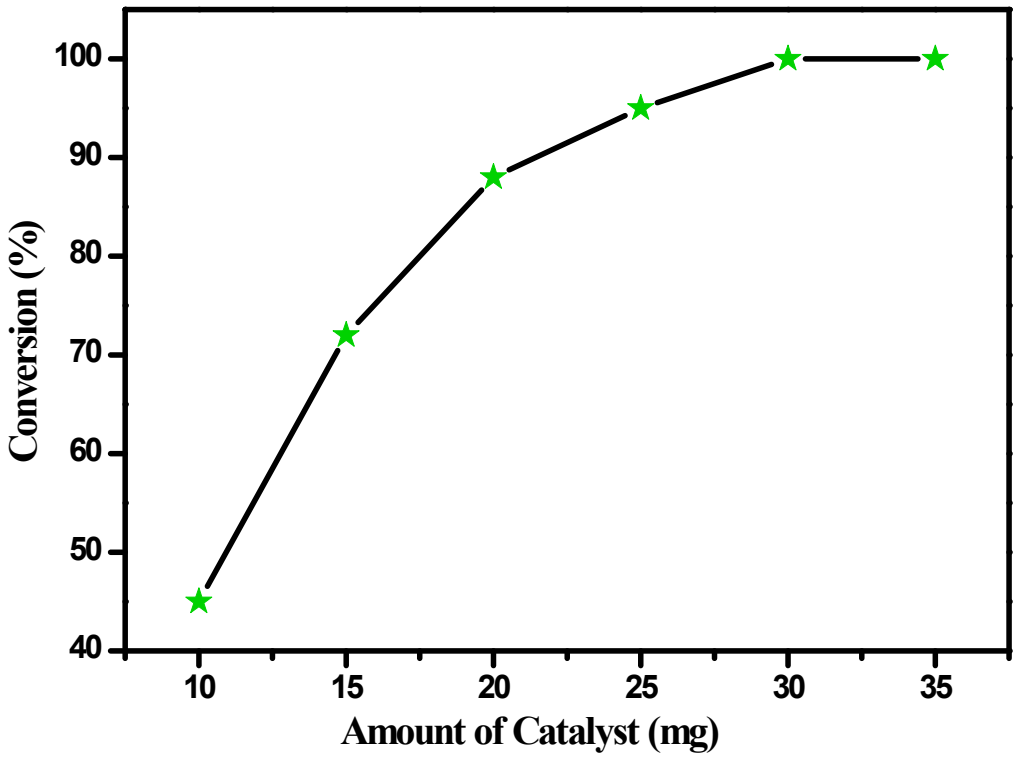

Fig. S4 Effect of variation in the amount of the catalyst on the synthesis of carbamates *via* C-H activation of formamides [Reaction conditions: Salicylaldehyde (0.5 mmol), N,N-Dimethylformamide (25 mmol), TBHP (70 wt% in water, 6.0 equiv), reflux at 70 ^{o}C]

Table S2 Effect of different oxidants on the synthesis of carbamates *via* C-H activation of formamides[a]

Entry	**Oxidant**	**Conversion (%)[b]**
1.	No oxidant	NR[c]
2.	H_2O_2	65[d]
3.	I_2	NR
4.	m-CPBA	NR
5.	TBHP	100

[a]Reaction Conditions: Salicylaldehyde (0.5 mmol), N,N-Dimethylformamide (25 mmol), catalyst (30 mg), oxidant (6.0 equiv), reflux at 70°C
[b]Conversion percentage was determined using GC-MS.
[c]No Reaction
[d]Salicylic acid was formed besides the desired carbamate.

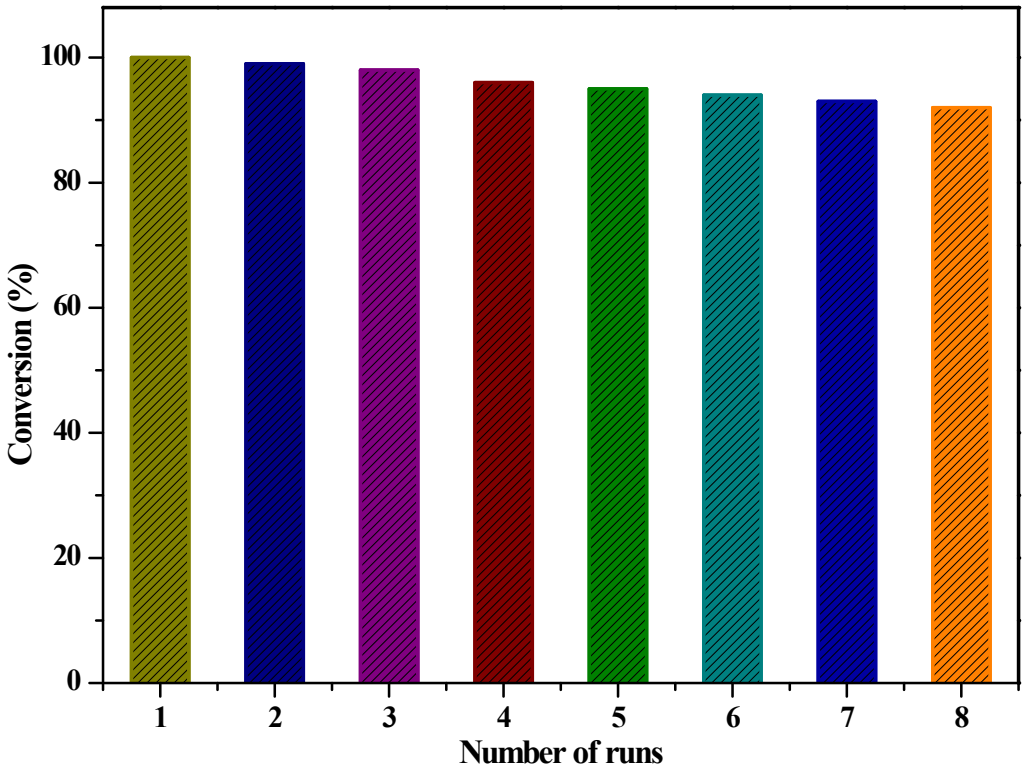

Fig. S5 Catalyst recyclability test for the synthesis of carbamates *via* the C-H activation of formamides [Salicylaldehyde (0.5 mmol), N,N-Dimethyl formamide (25 mmol), TBHP (70 wt% in water, 6.0 equiv), catalyst (30 mg), reflux at 70°C.]