Supporting Information for

Uniform Cu/Chitosan Beads as Green and Reusable Catalyst for Facile Synthesis of Imines via Oxidative Coupling Reaction

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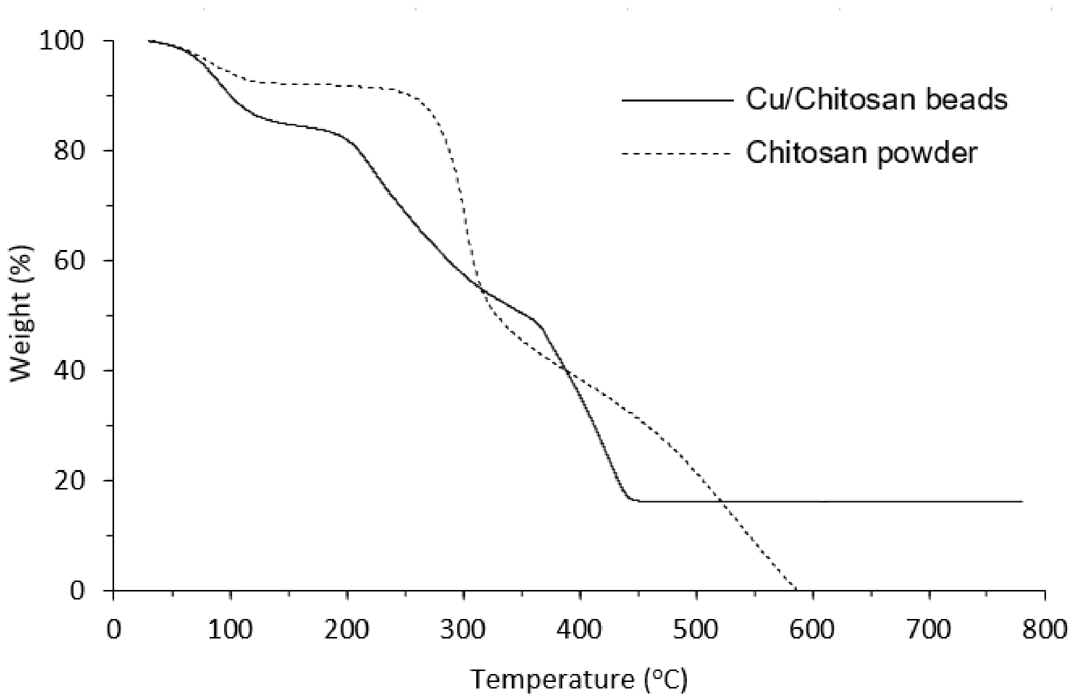


Figure S1 TGA diagrams of Cu/Chitosan beads prepared from $Cu(OAc)_2$ and Chitosan powder

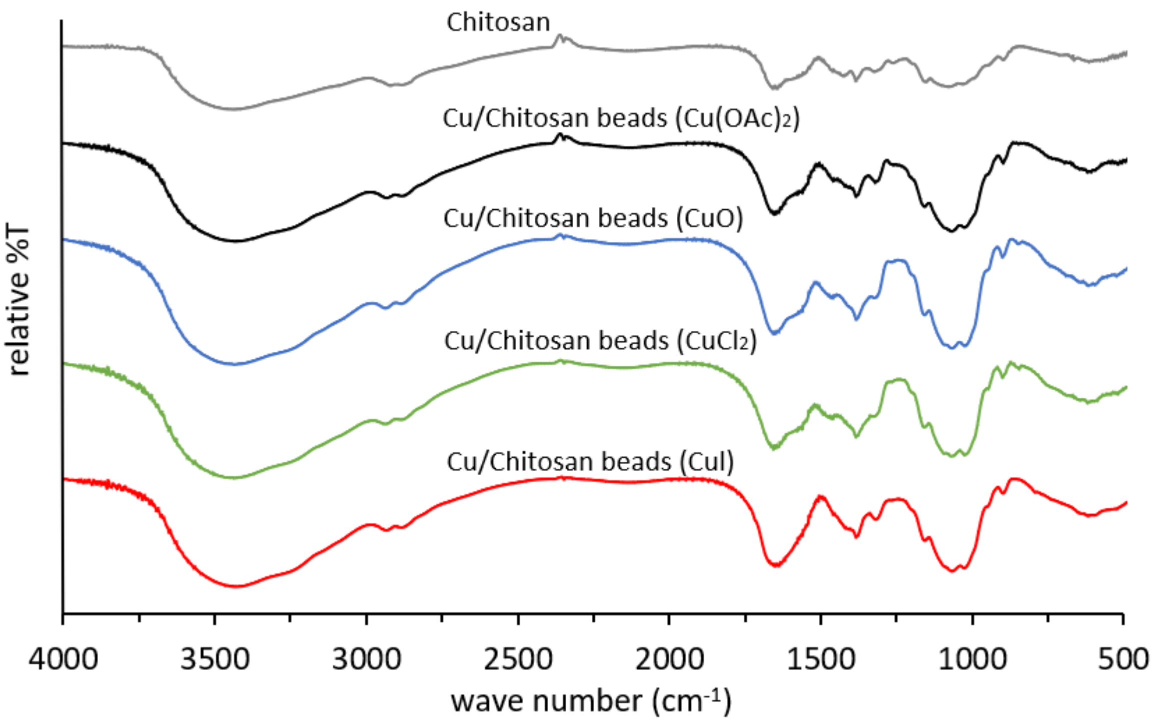


Figure S2 FTIR spectra of Cu/Chitosan beads prepared from different Cu precursors

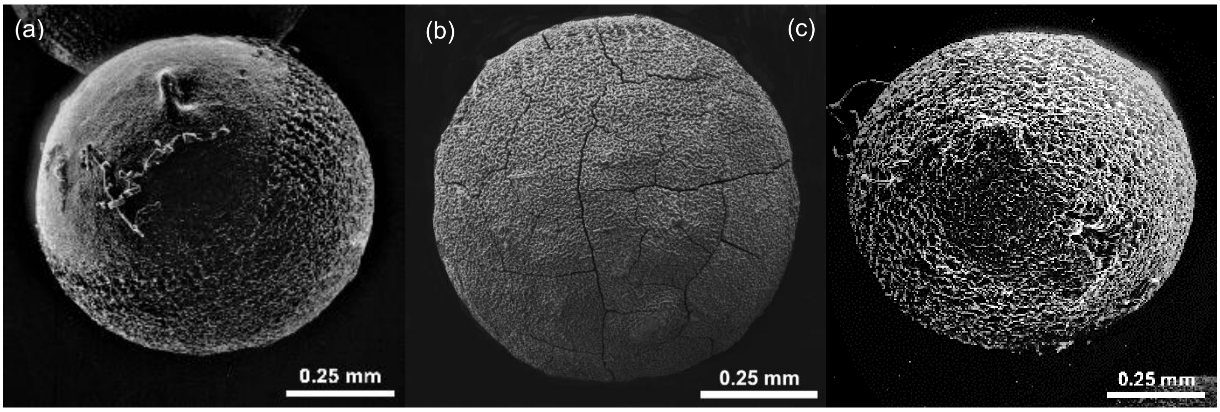


Figure S3 SEM images of Cu/Chitosan beads prepared from $Cu(OAc)_2$ with copper content of (a) 6, (b) 11, and (c) 14 %wt.

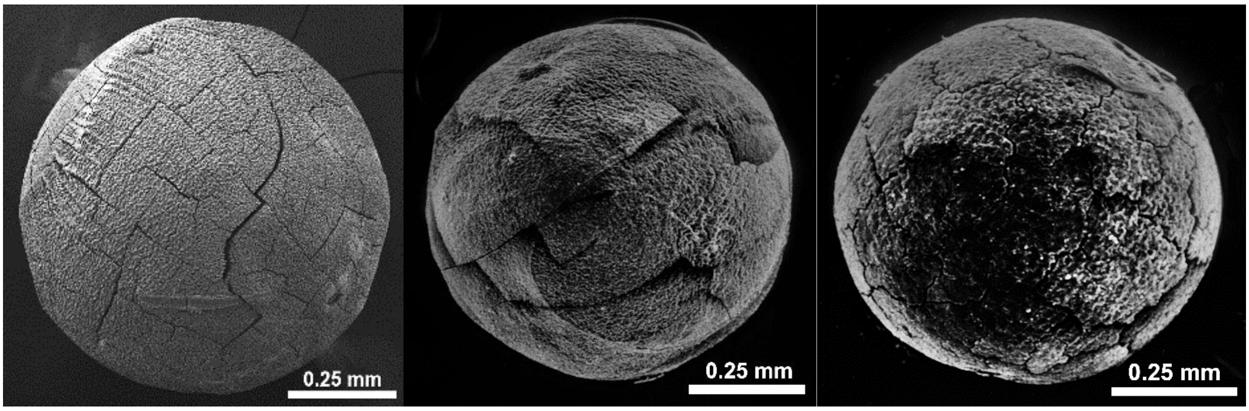


Figure S4 SEM images of Cu/Chitosan beads: (a) fresh, (b) after 1st use, and (c) after 10th use

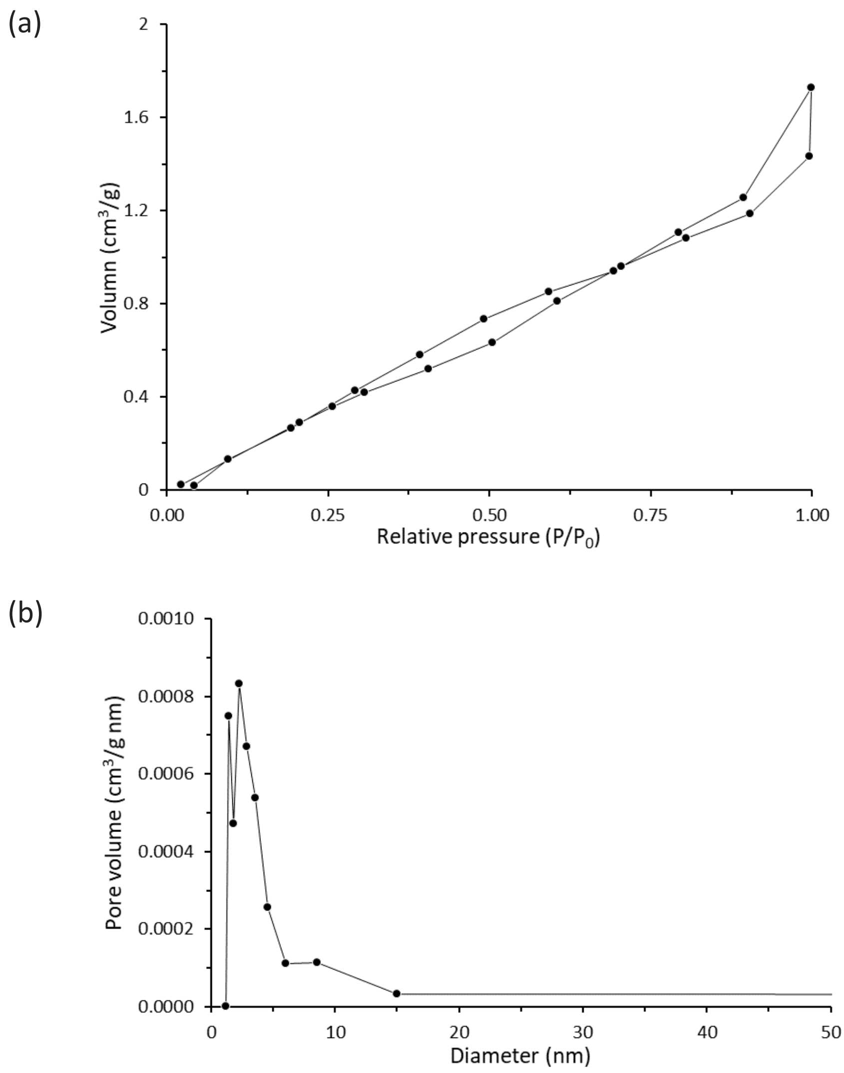
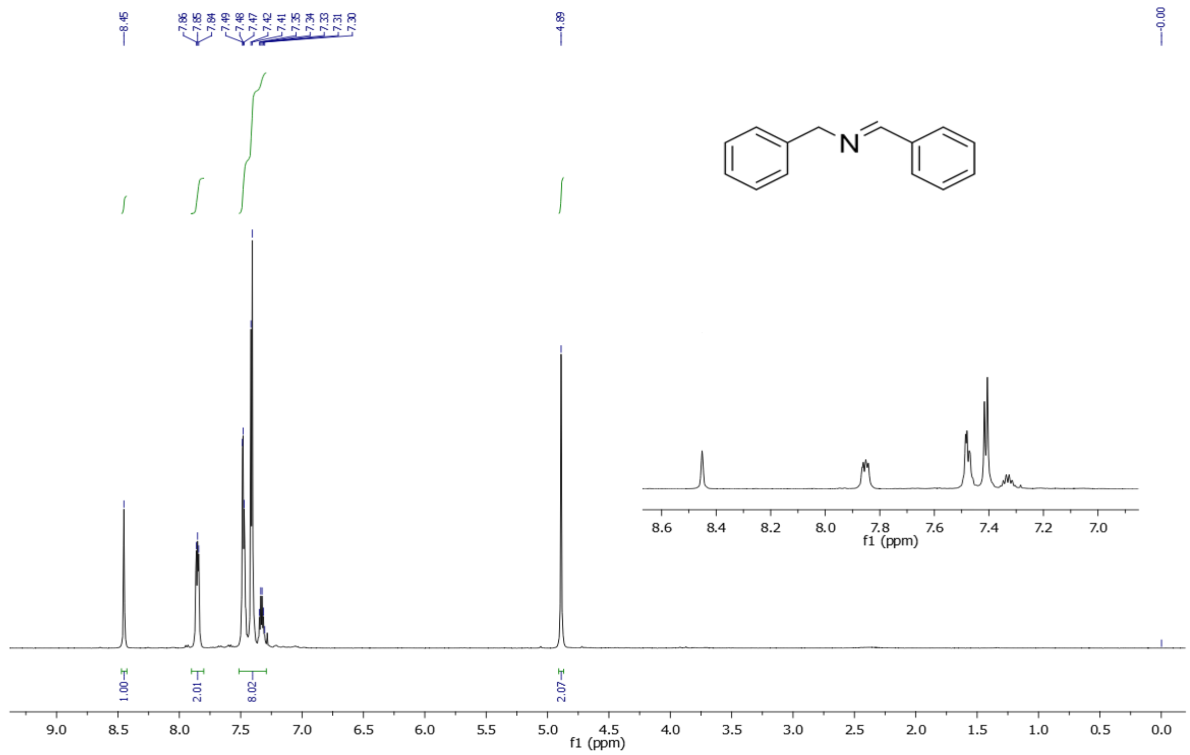


Figure S5 (a) N_2 adsorption-desorption isotherm and (b) pore size distribution of Cu/Chitosan beads prepared from $Cu(OAc)_2$

(a)



(b)

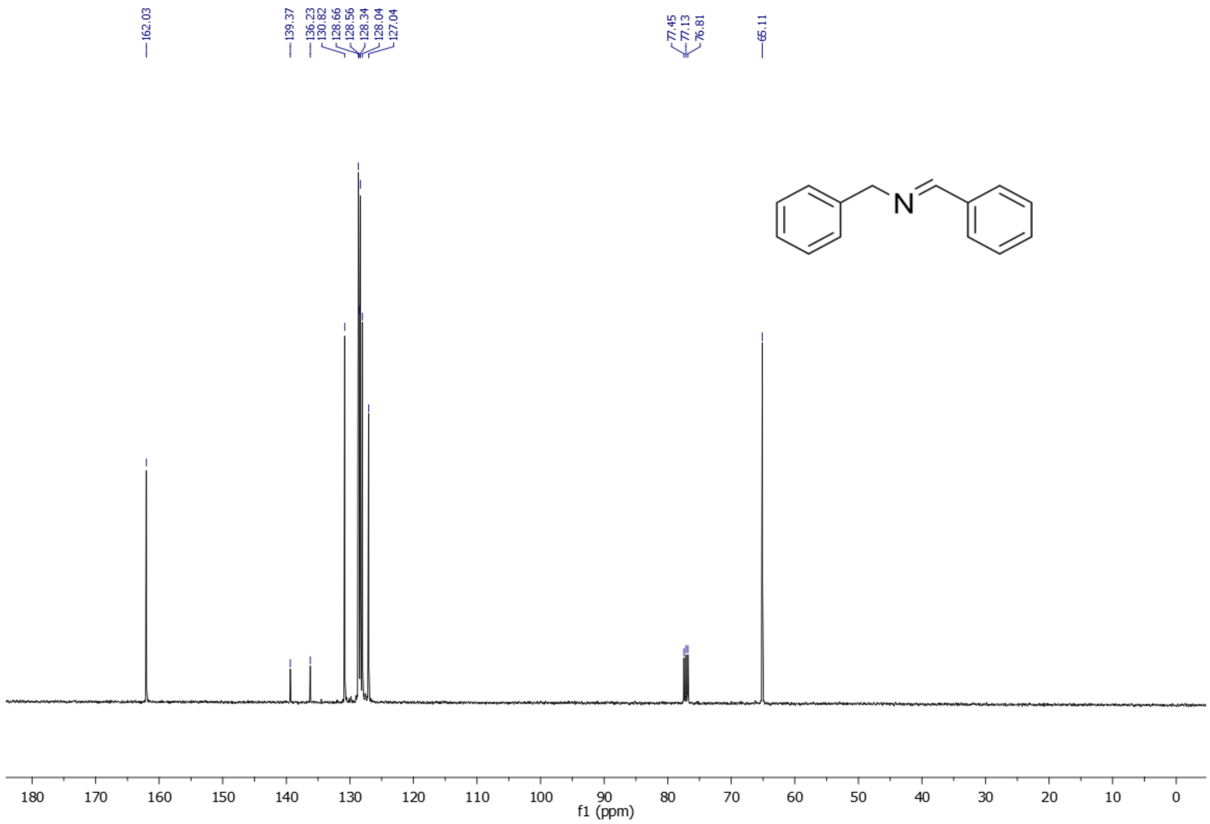


Figure S6 (a) ^{1}H and (b) ^{13}C NMR spectra of N-benzylidenebenzylamine in $CDCl_3$

Table S1 Computer-controlled sequential operational steps of the reversible-flow system (Figure 1) for preparation of Cu/Chitosan beads

Step	Description	Port number of multi-selection valve port	Flow rate ($\mu L\ s^{-1}$)	Operation (volume)
	Aspiration of H_2O carrier into syringe pump (repeat steps 1-2 twice)			
1	Syringe pump valve in; aspirate of the H_2O	1	50	Aspirate (5000 µL)
2	Syringe pump valve out; dispense of the H_2O	4	50	Dispense (5000 µL)
	Aspiration of air, Cu/Chitosan solution into holding coil			
3	Switched 3-port switching valve; dispense of air plug	4	10	Aspirate (200 µL)
4	Aspirate of Cu/Chitosan solution plug	4	10	Aspirate (4000 µL)
	Dispersion of Cu/Chitosan solution, air to the tip of tubing			
5	Switched 3-port switching valve; dispense of Cu/Chitosan solution and air plug	4	10	Dispense (4200 µL)
	Cleaning of holding coil by 0.2 M HCl solution and H_2O (repeat steps 6-9 twice)			
6	Syringe pump valve in; aspirate of the 0.2 M HCl solution plug	3	50	Aspirate (5000 µL)
7	Syringe pump valve out; dispense of 0.2 M HCl solution plug	4	50	Empty
8	Syringe pump valve in; aspirate of H_2O plug	1	50	Aspirate (5000 µL)
9	Syringe pump valve out; dispense of H_2O plug	1	50	Empty

Table S2 Effect of reaction conditions on the oxidative self-coupling reaction of benzylamine[a]

Entry	Solvent	Oxidizing agent	Temp. (°C)	Catalyst loading	Conv. (%)	Yield[b] (%)
1	**Neat**	TBHP	80	10 mg	>99	55
2	**Toluene**	TBHP	80	10 mg	70	71
3	**Acetonitrile**	**TBHP**	**80**	**10 mg**	**>99**	**98**
4	**Dimethyl formamide**	TBHP	80	10 mg	62	62
5	**Dimethyl sulfoxide**	TBHP	80	10 mg	56	51
6	**Ethyl acetate**	TBHP	80	10 mg	49	46
7	**Ethanol**	TBHP	80	10 mg	91	28
8	**Water**	TBHP	80	10 mg	>99	24
9	Acetonitrile	**ambient**	80	10 mg	12	12
10	Acetonitrile	**O_2**[c]	80	10 mg	16	14
11	Acetonitrile	**H_2O_2**	80	10 mg	62	46
12	Acetonitrile	TBHP	**30**	10 mg	13	10
13	Acetonitrile	TBHP	**70**	10 mg	25	22
14	Acetonitrile	TBHP	**90**	10 mg	97	96
15	Acetonitrile	TBHP	80	**5 mg**	76	73
16	Acetonitrile	TBHP	80	**15 mg**	96	94
17	Acetonitrile	TBHP	80	**20 mg**	95	95

[a]Reaction condition: benzylamine (0.5 mmol), solvent (2 mL), oxidizing agent (1 mmol), 30 min [b]GC yield calculated using hexamethylbenzene (10 mg) as internal standard [c]using oxygen gas bubble as the oxidizing agent