# Supporting Information

## Cascade and One Pot Dehydrative Amination of Glycerol to Oxazoline

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## Contents

**Scheme S1.** Reaction mechanism for the glycerol amination.

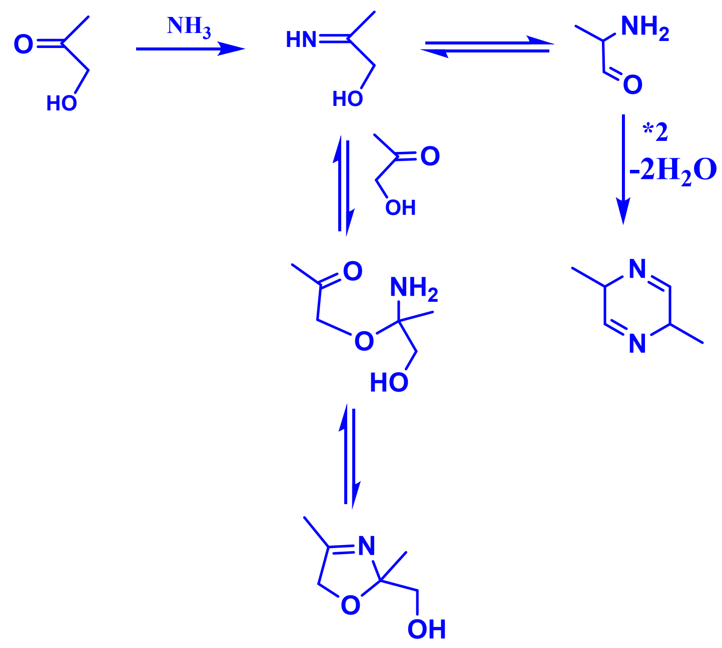


**Table S1.** Effect of catalyst on acetol conversion to oxazoline.

| Sr. No. | Con. (%) | Selectivity (%) | | | | |
|---|---|---|---|---|---|---|
| | | Oxazoline | 5-methyl imidazole | 1,2-dimethyl imidazole | Dialkyl Pipirazine | Other |
| 1[a] | 99 | 95 | 3 | 2 | 00 | 00 |
| 2[b] | 88 | 92 | 2 | 1 | 3 | 2 |

Reaction conditions: a With catalyst – Distillate (5 g), 30% aq. $NH_3$ = 15 mL, 50 $^oC$, catalyst (0.01 g), 2 h. b Without catalyst - Distillate (5 g), 30% aq. $NH_3$ = 15 mL,, 50 $^oC$, 2 h.

**Figure S1.** SEM images of a) Ru/AC, b) $Ru/SiO_2$ and c) $Ru/Al_2O_3$ catalyst.

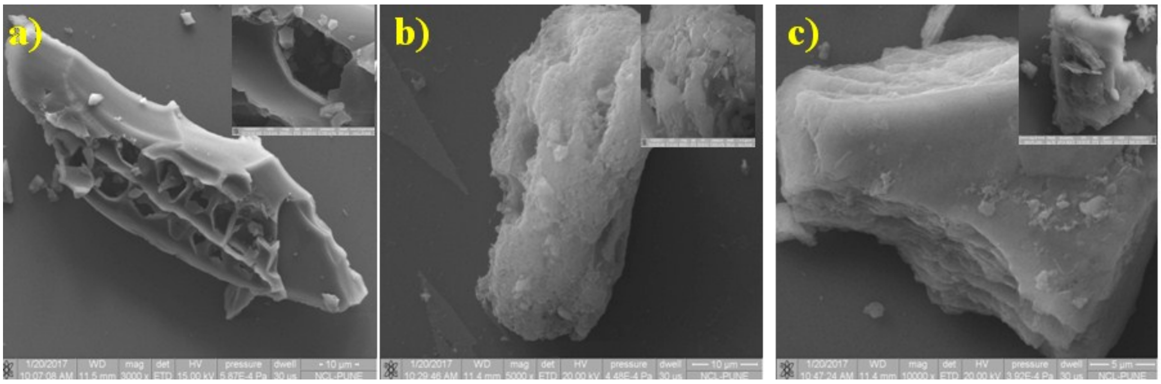


**Figure S2.** XPS spectra for a) Ru/AC, b) Ru/$SiO_2$ and c) Ru/$Al_2O_3$ catalyst.

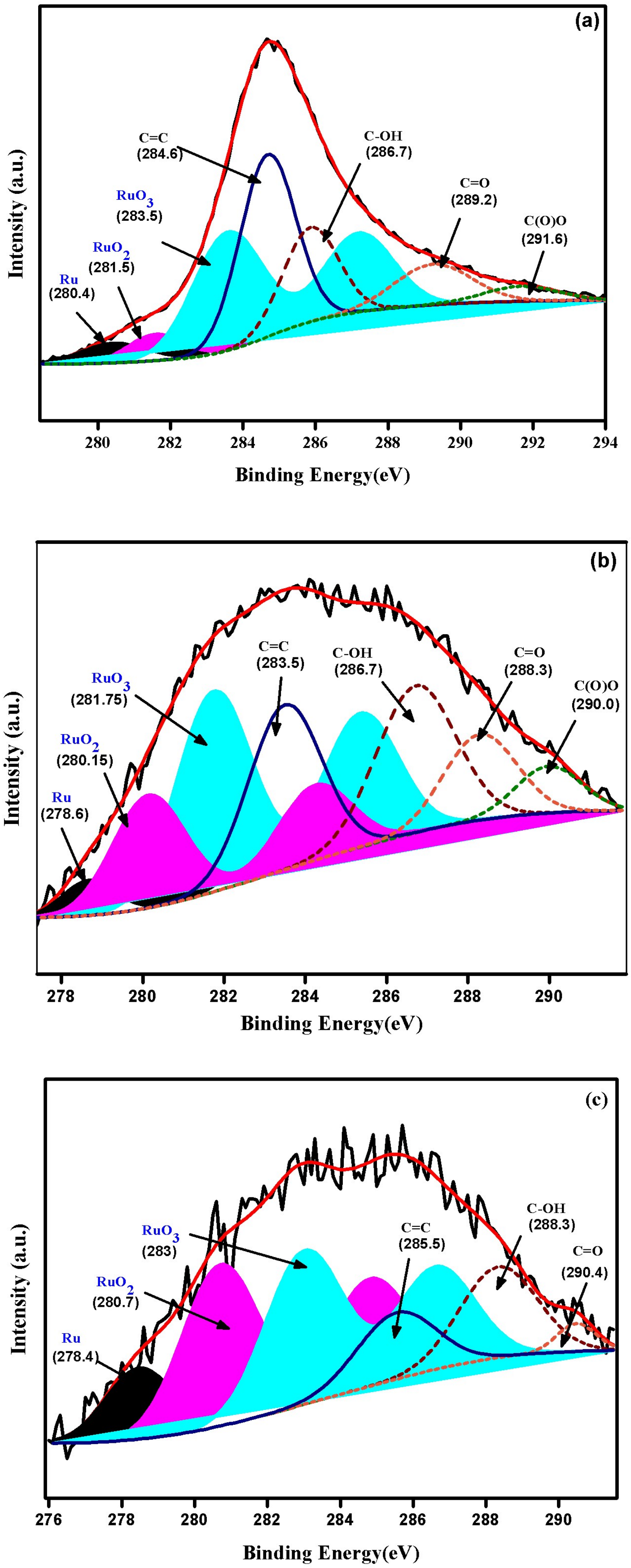
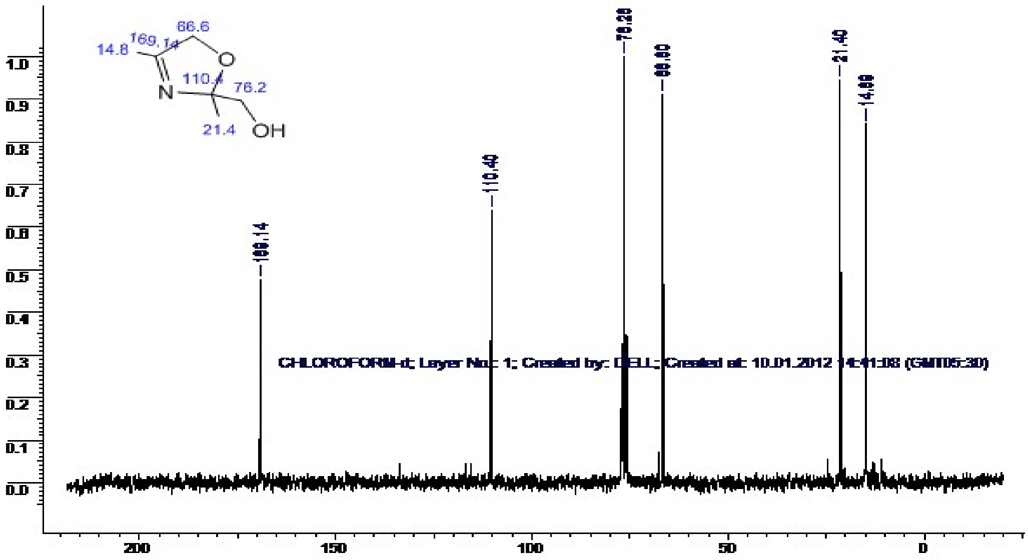
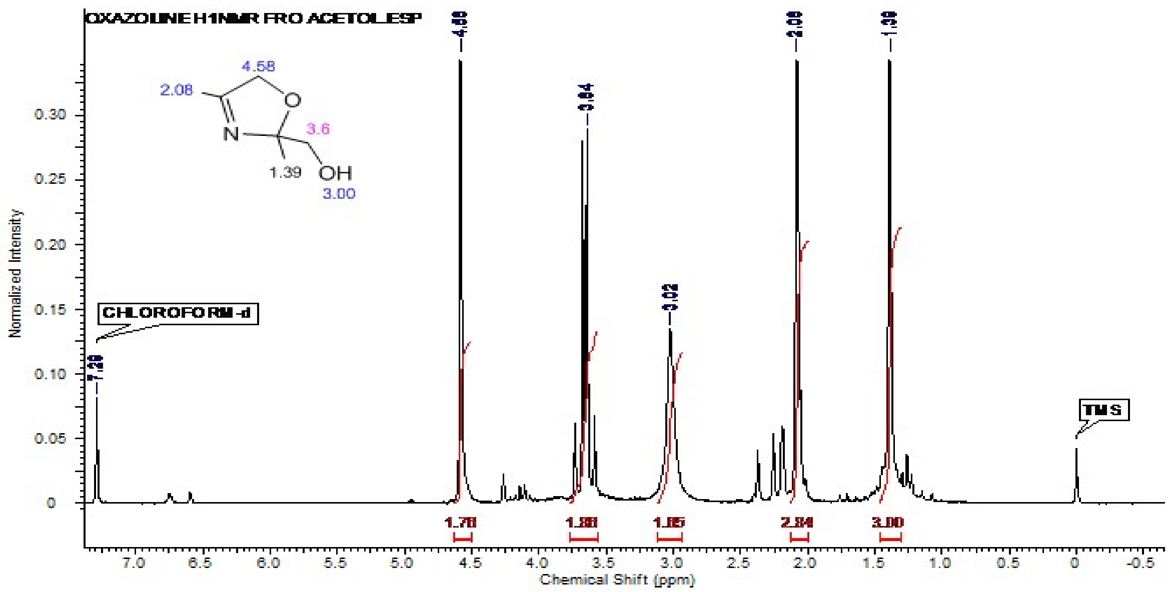


**Figure S3.** $^{13}$C-NMR and $^{1}$H- NMR of Oxazoline.




$^{13}$C NMR (200MHz, CHLOROFORM-d) δ 14.89, 21.40, 66.6, 76.26, 110.40, 169.14
$^{1}$HMR (200MHz, CHOLOROFORM-d) δ 1.39($CH_3$,s,3H), 2.08 ($CH_3$,s,3H), 3.02(OH,s,1H), 3.64($CH_2$,d,2H), 4.58($CH_2$,s,2H).

**Figure S4.** IR spectra of oxazoline.

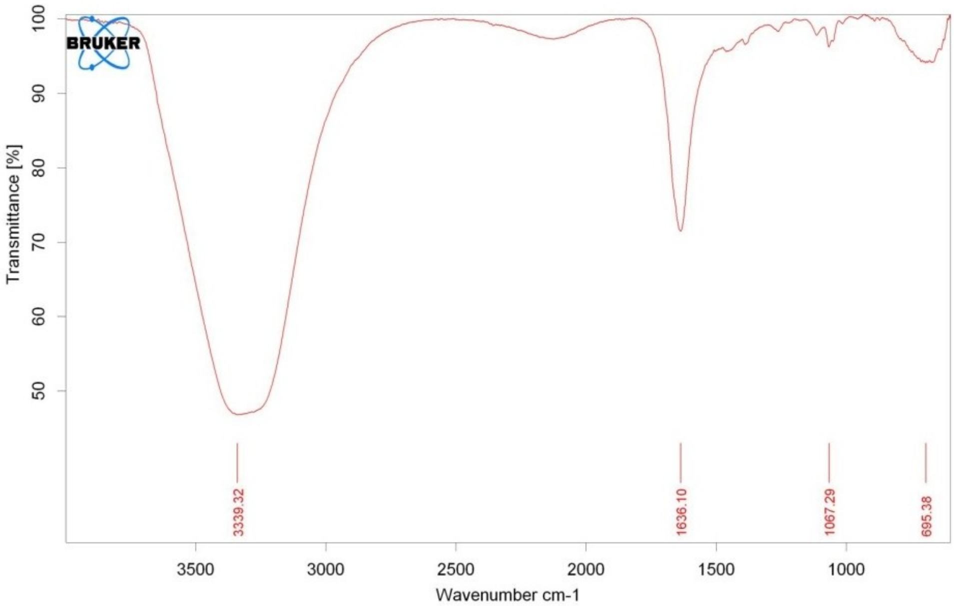


**Figure S5.** XRD patterns of different activated copper catalysts. (*) Cu$^{o}$, (#) Cu2O, (+) CuO, (ϕ) t-ZrO2.

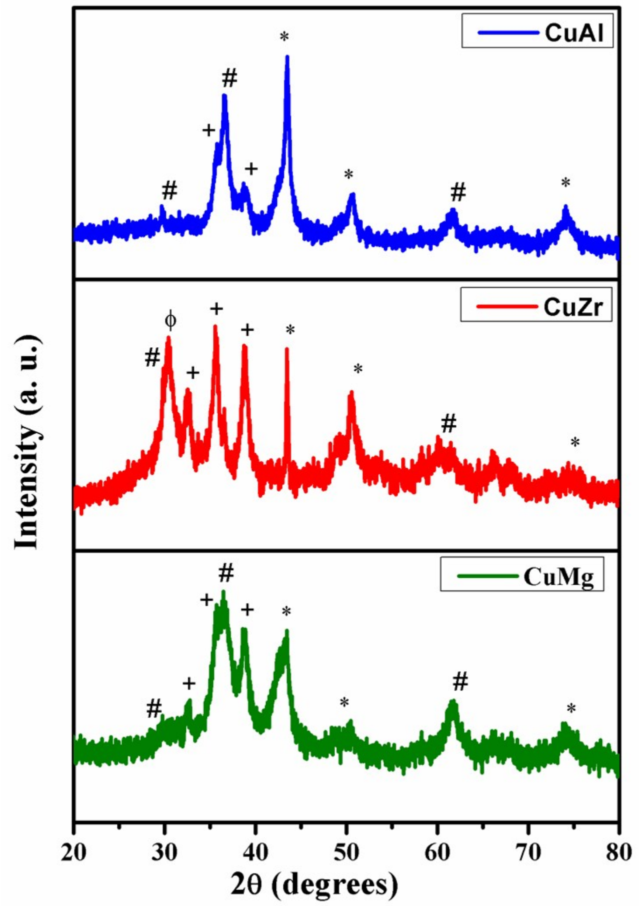


**Figure S6.** $NH_3$–TPD and Py-IR profiles of different activated copper catalysts.

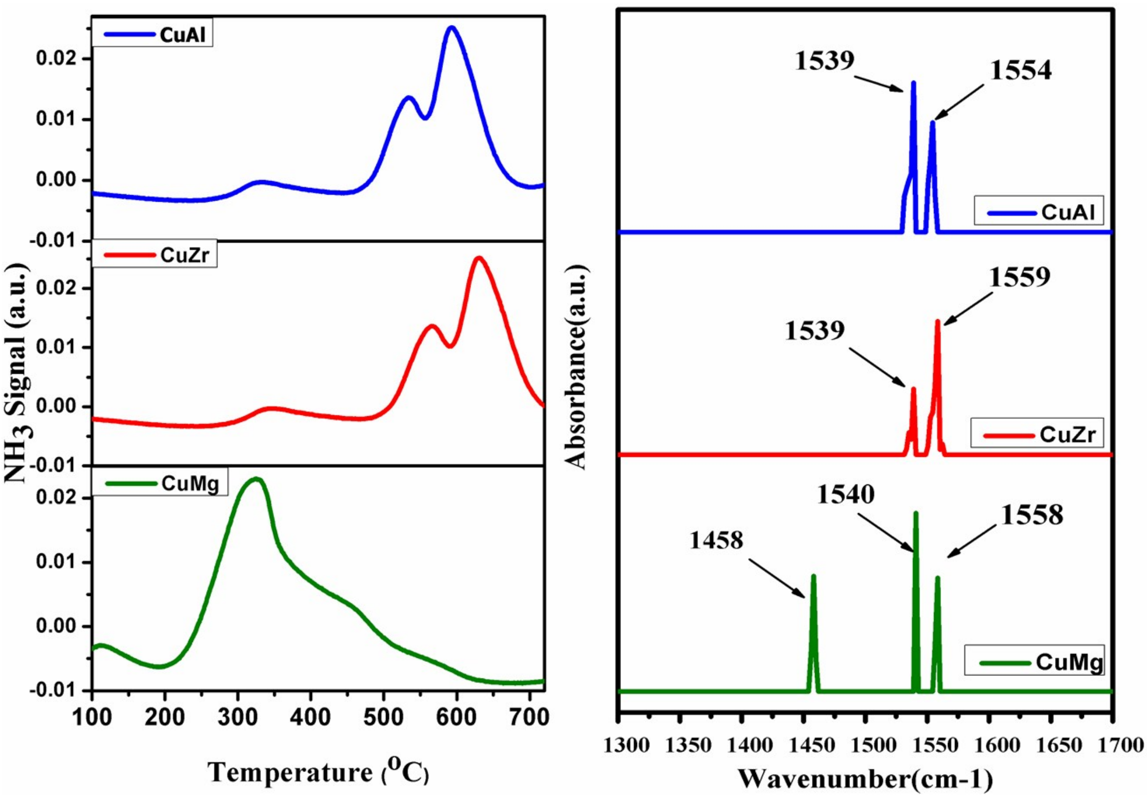
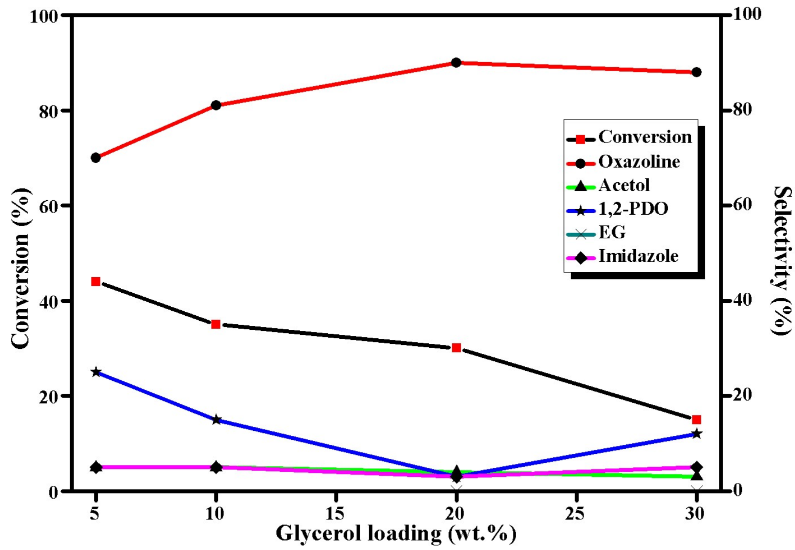
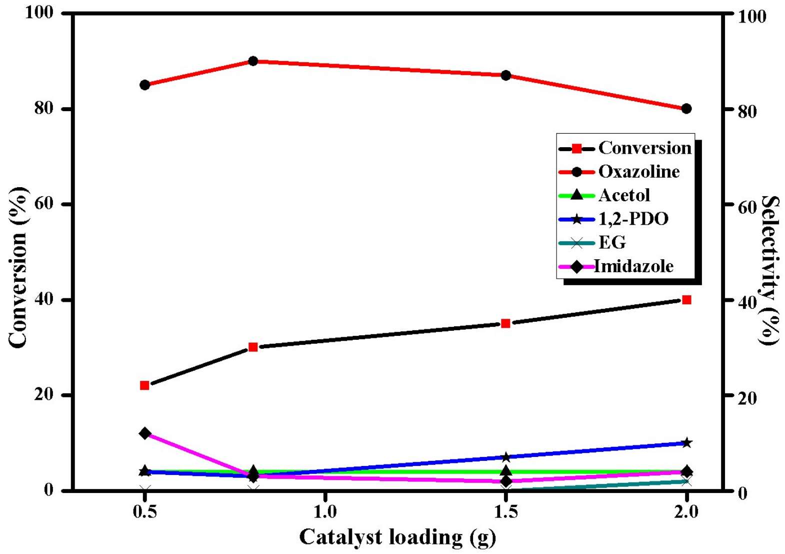


**Figure S7.** Effect of glycerol loading on dehydrative cyclised amination reaction.




Reaction conditions: 0.8 g Catalyst , 220 $^{o}$C, 15 mL 30% aq. $NH_3$, 5 h.

**Figure S8.** Effect of catalyst loading on dehydrative cyclised amination reaction.




Reaction conditions: 20 wt% glycerol aqueous solution, 220 $^{o}C$, 15 mL 30% aq. $NH_3$, 5 h.

**Figure S9.** Reactive distillation set up.