**Supplementary Materials**

# Catalytic synthesis of niacin from 3-methyl-pyridine and 30%$H_2O_2$ by Cu-based zeolite

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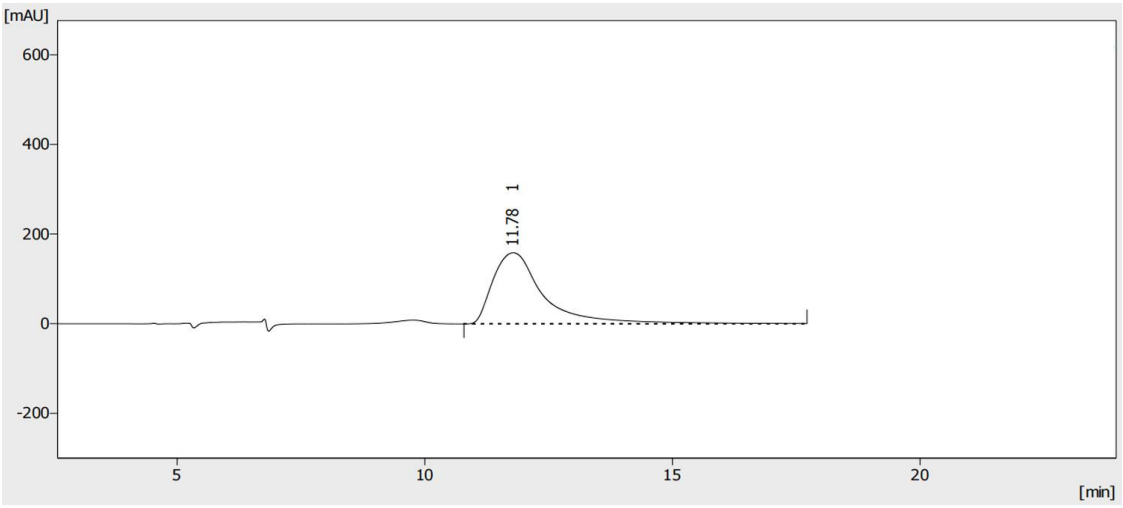
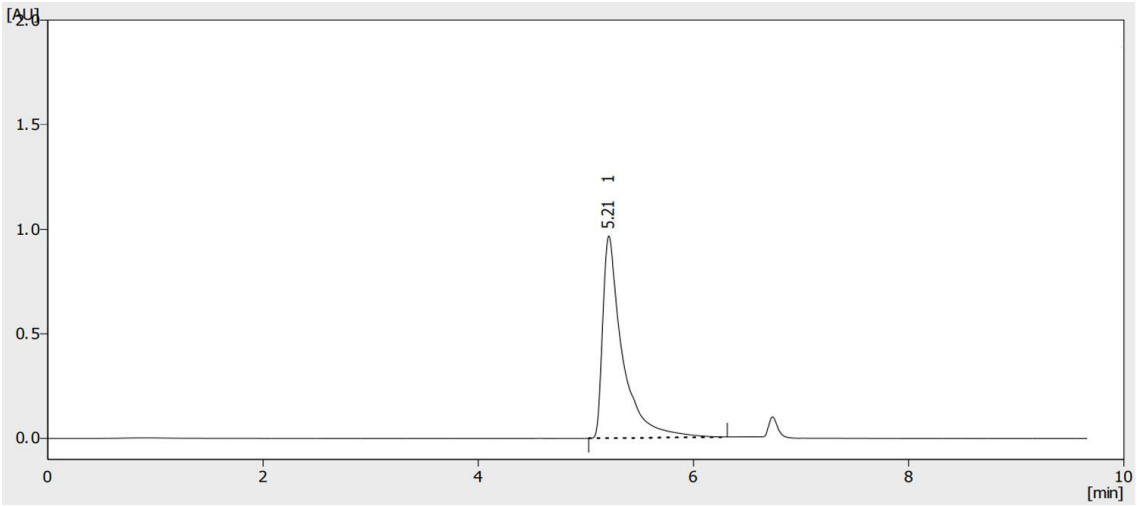
**Supplementary Table 1 .The comparison of this work with the reported work of ref[13]**

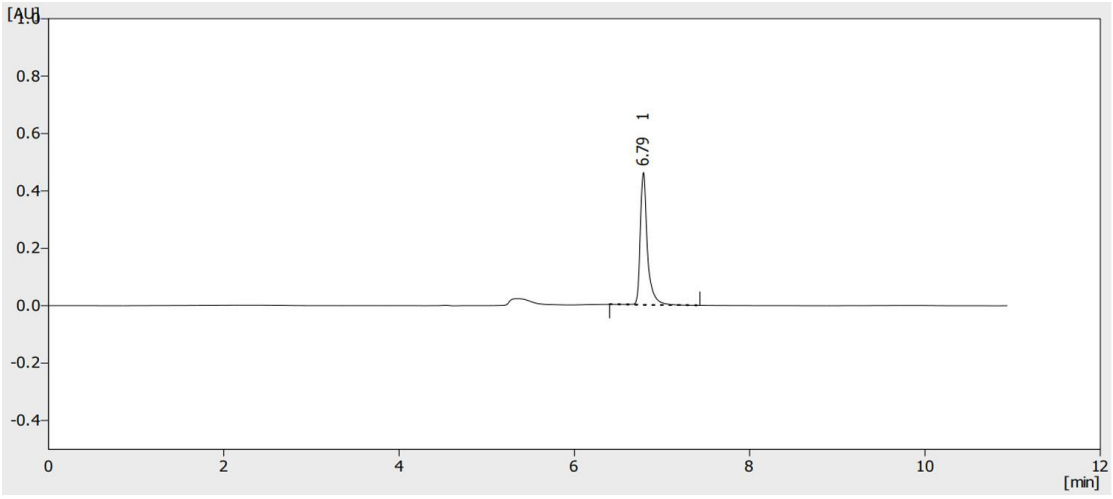
| | **$Ag/Mn_3O_4$ spinel nanorods[13]** | **Cu/13X in this work** |
|---|---|---|
| Preparation process of catalyst | Complex | Simple |
| Cost of catalyst | High | Low |
| Concentration of hydrogen peroxide (%) | 50 | 30 |
| Reaction time (hours) | 15 | 8 |
| Conversion of 3-methyl-pyridine (%) | 55 | 84 |
| Selectivity for niacin (%) | 97 | 69 |
| Niacin yield (%) | 53 | 58 |



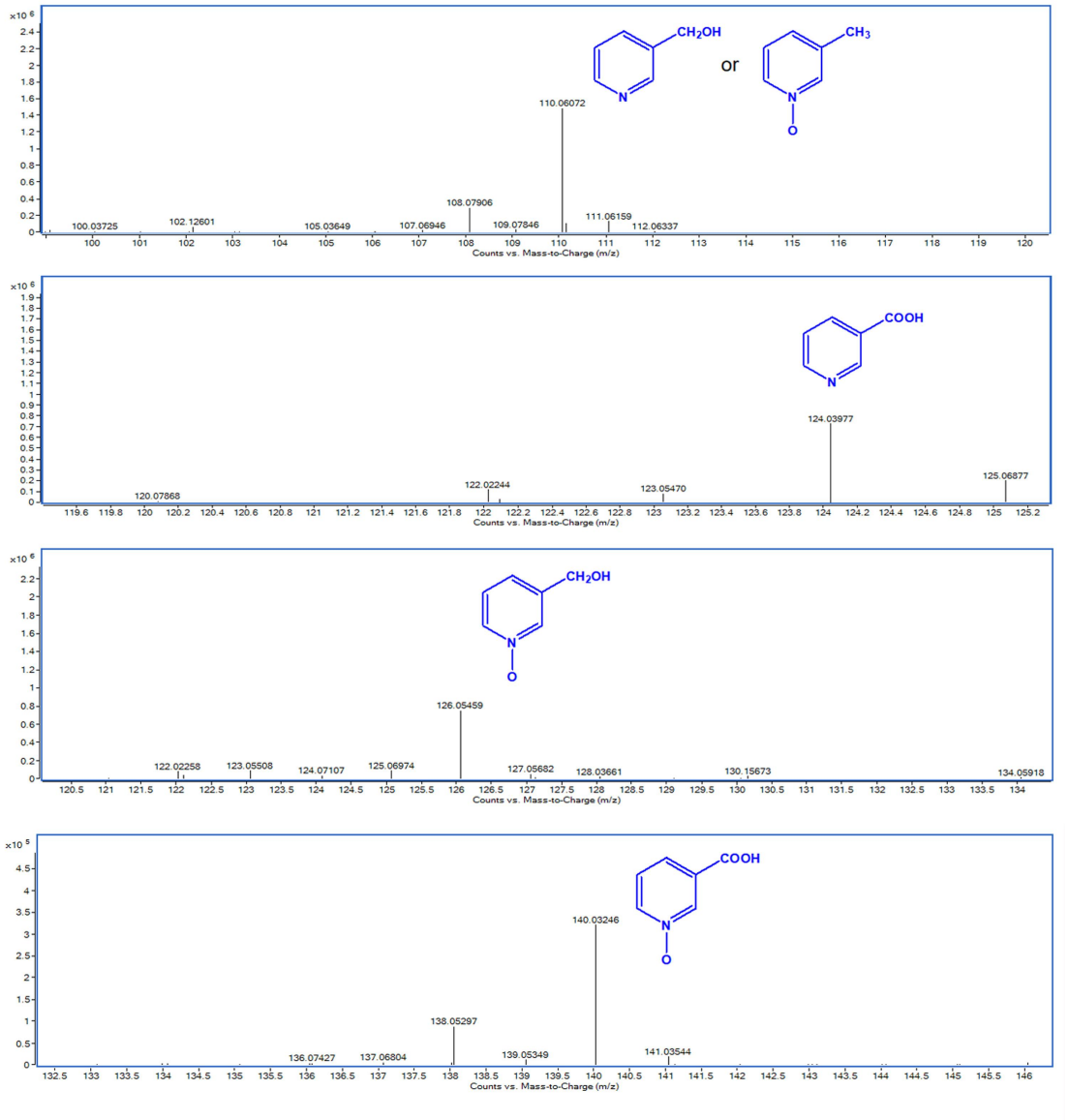

**Supplementary Figure 1.** Liquid chromatogram of 3-methyl-pyridine.



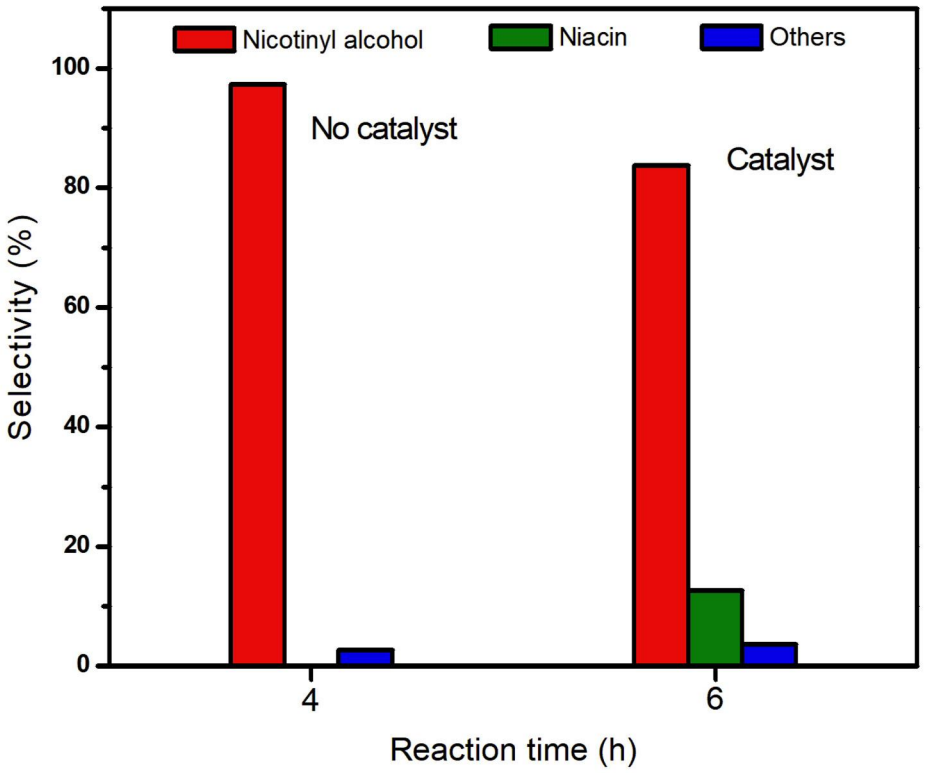

**Supplementary Figure 2.** Liquid chromatogram of niacin.



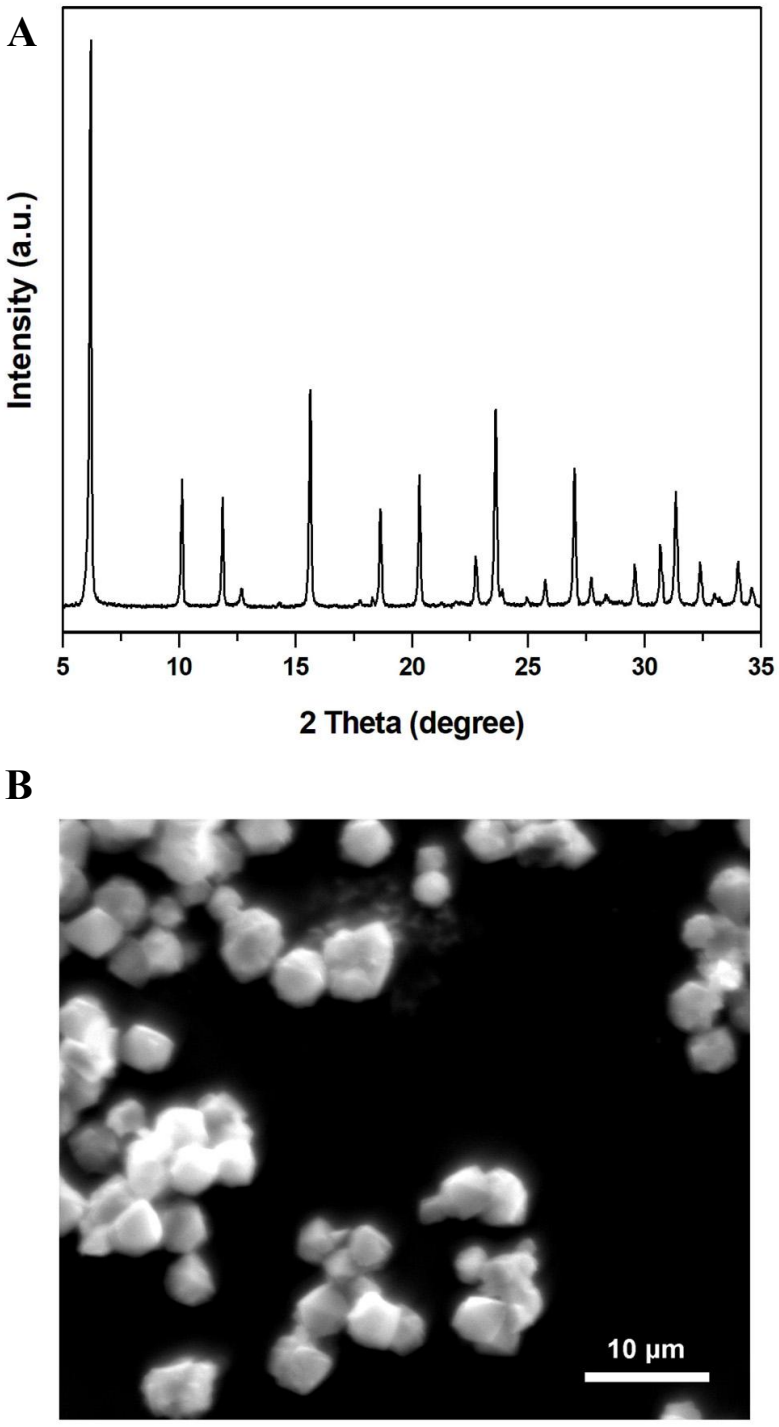

**Supplementary Figure 3.** Liquid chromatogram of nicotinyl alcohol.



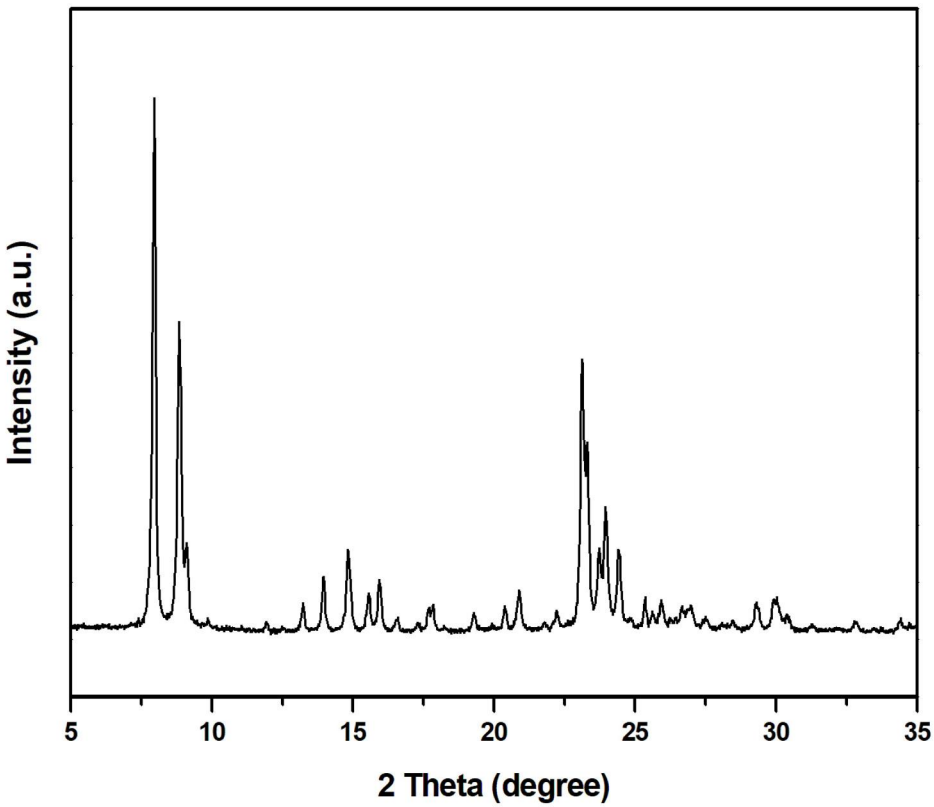

**Supplementary Figure 4.** LC-MC results of reaction mixture.




**Supplementary Figure 5.** Product distributions in the controlled experiment.




**Supplementary Figure 6.** (A) Powder XRD and (B) SEM image of Cu/13X catalyst after reaction.




**Supplementary Figure 7.** Powder XRD pattern of commercial zeolite TS-1.