**Supporting Information**

# Au supported defect free TS-1 for Enhanced performance on gas phase propylene epoxidation with $H_2$ and $O_2$

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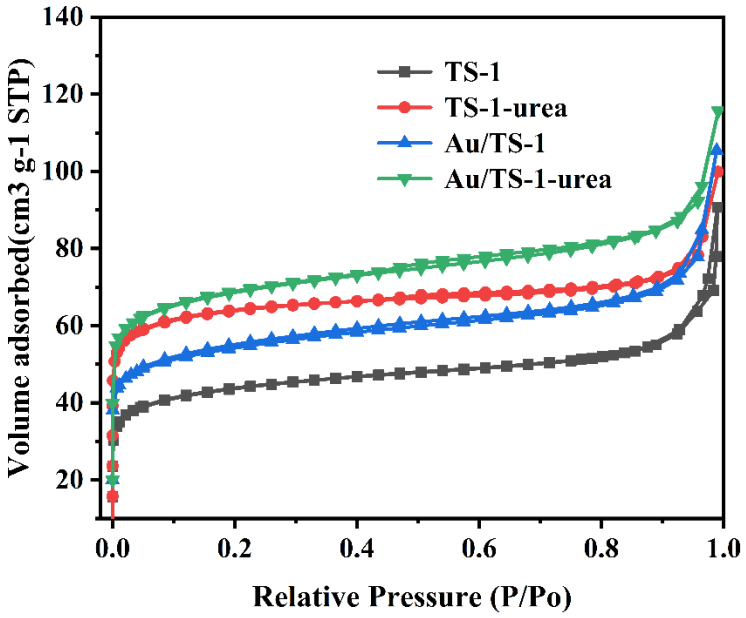


**Figure S1.** N2 adsorption-desorption isotherms of TS-1, TS-1-urea, Au/ TS-1, and Au/ TS-1-urea.

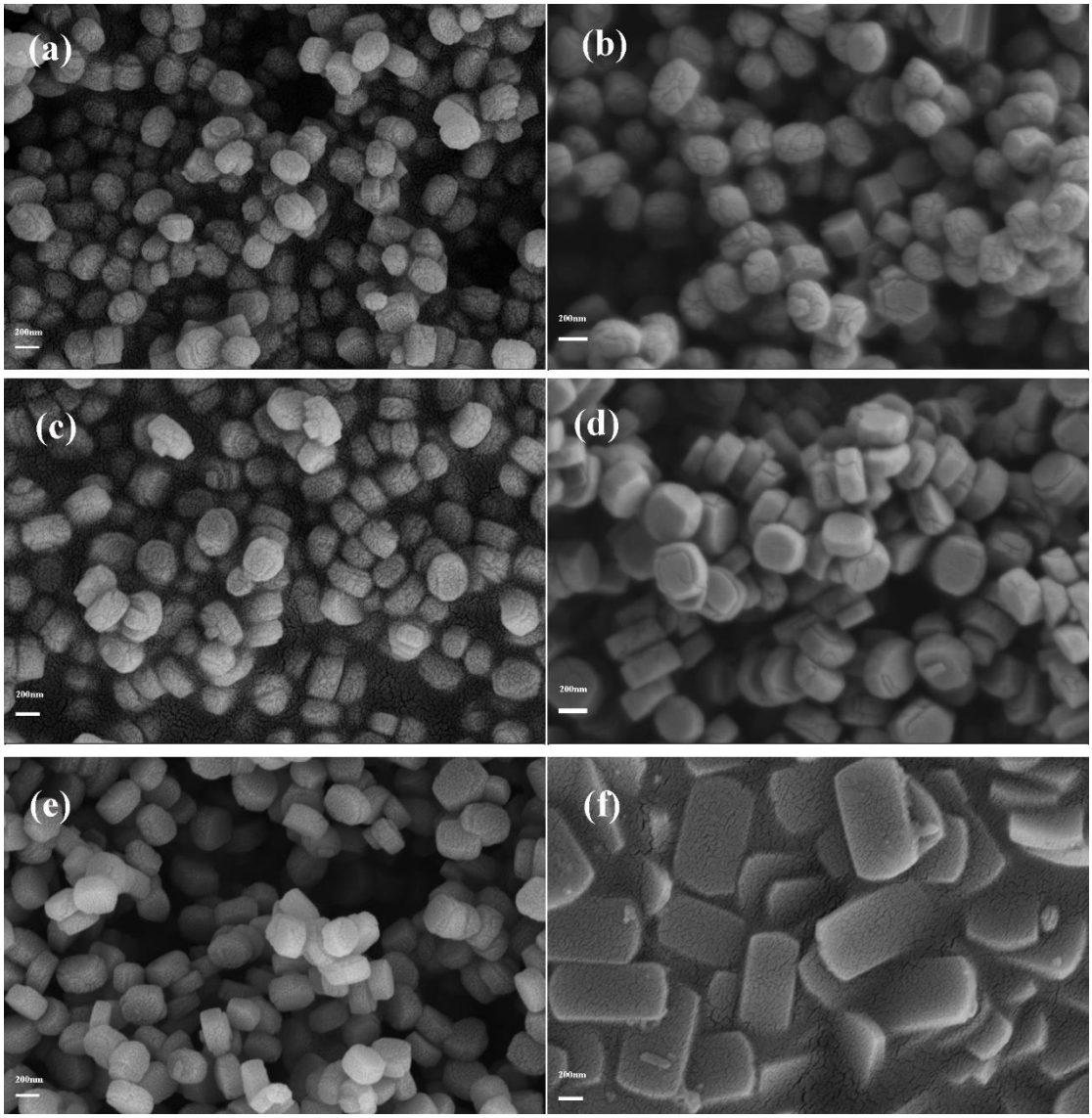


**Figure S2.** SEM images of TS-1 zeolites synthesized with different amounts of urea.

（a）TS-1, （b）TS-1-0.05urea, （c）TS-1-0.1urea, （d）TS-1-0.2urea,

（e）TS-1-0.3urea, （f）TS-1-0.4urea.

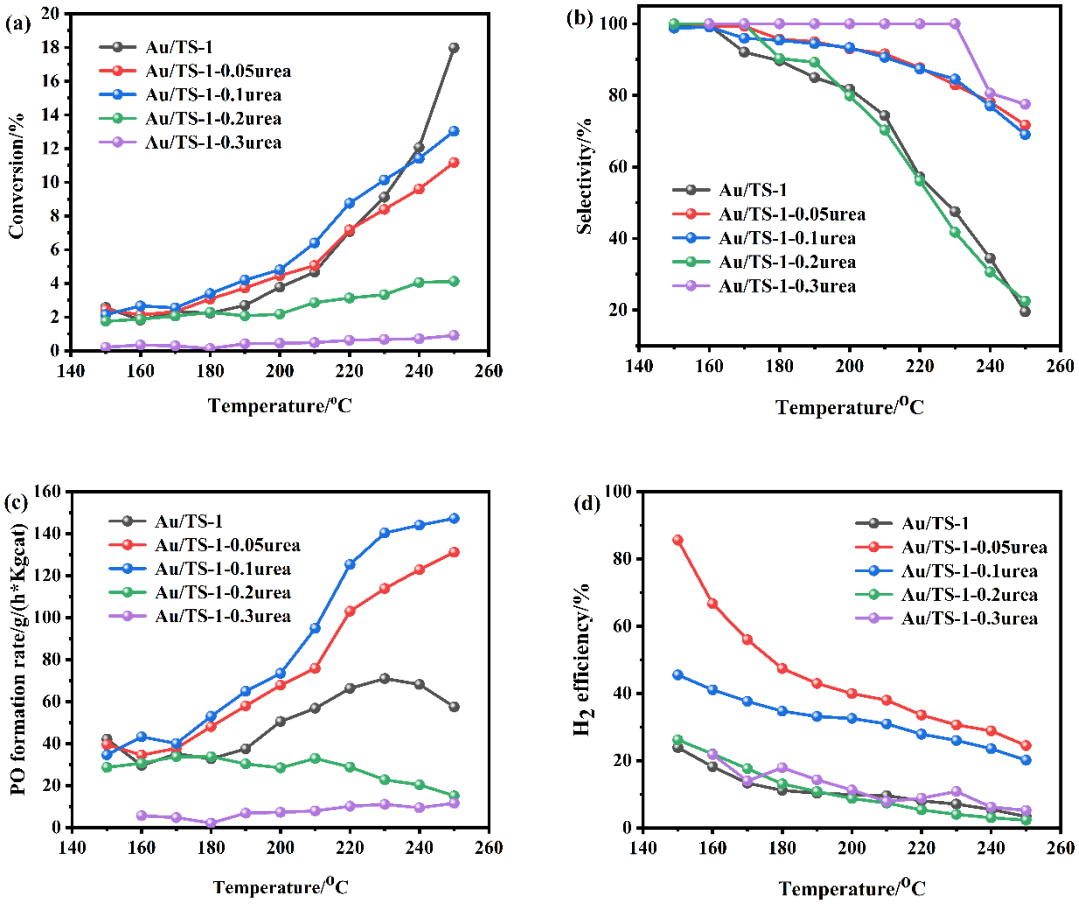


**Figure S3** Catalytic performance of zeolites synthesized with different amounts of urea.

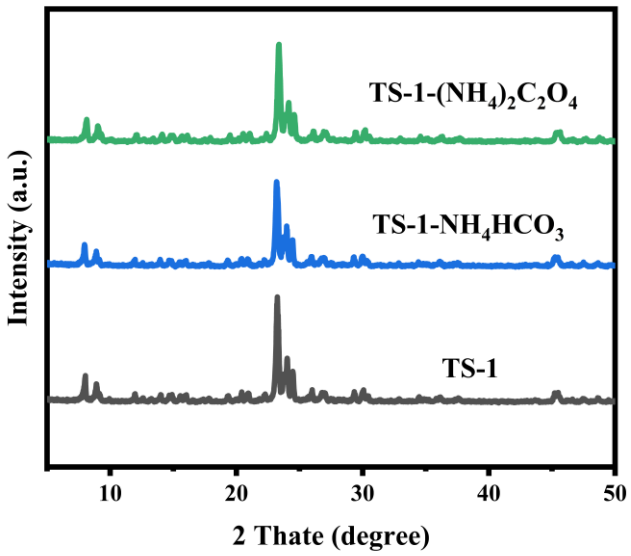


**Figure S4.** XRD patterns of TS-1, TS-1-$NH_4HCO_3$, and TS-1-$(NH_4)_2C_2O_4$, respectively.

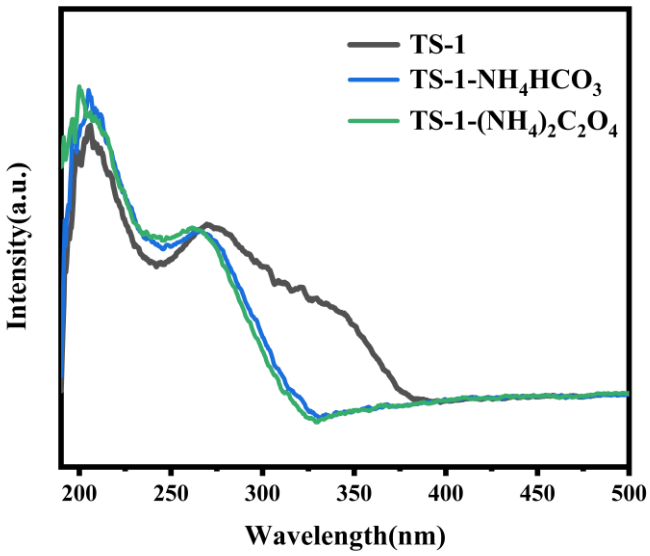


**Figure S5.** UV-vis spectra of TS-1, TS-1-$NH_4HCO_3$, and TS-1-$(NH_4)_2C_2O_4$, respectively.

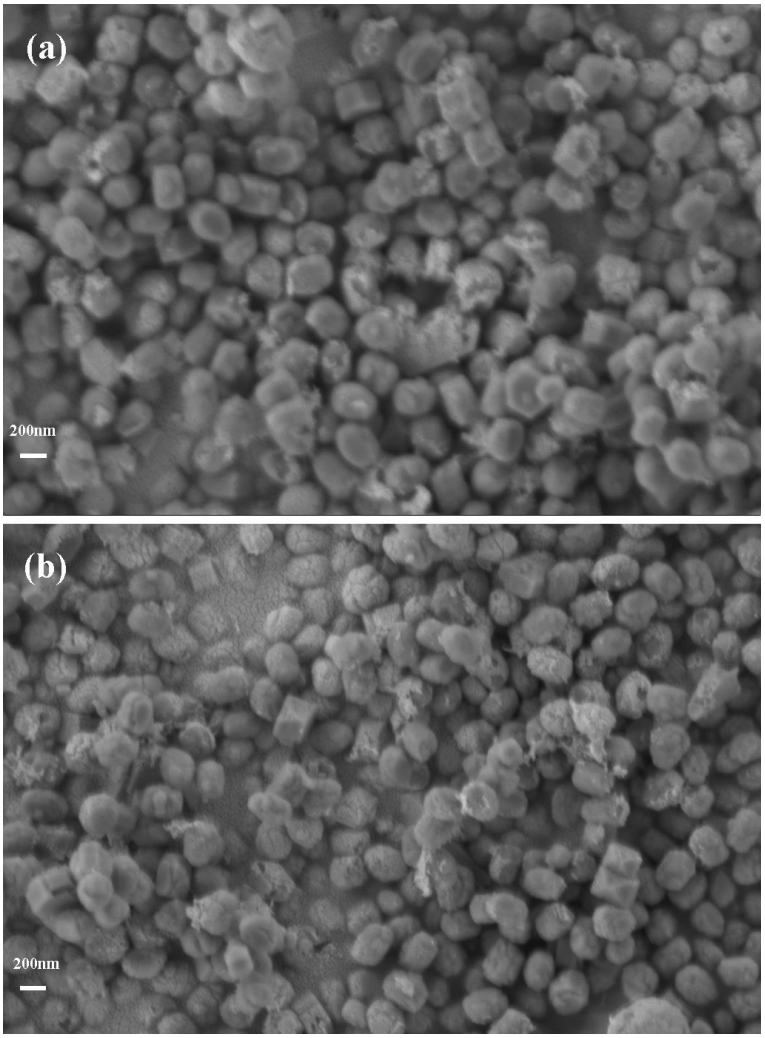


**Figure S6.** SEM images of TS-1 zeolites synthesized with different additives.

（a）TS-1-$NH_4HCO_3$, （b）TS-1-$(NH_4)_2C_2O_4$.

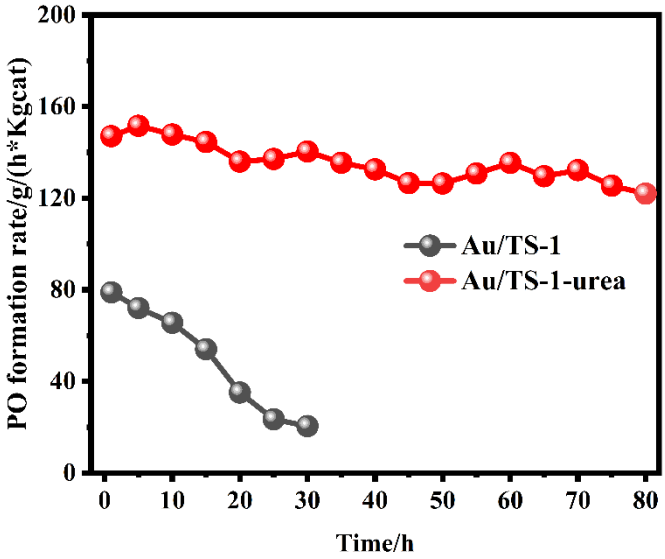


**Figure S7.** Propylene epoxidation over the Au/TS-1 and Au/TS-1-urea catalysts at different time on stream. Temperature, 230 °C.

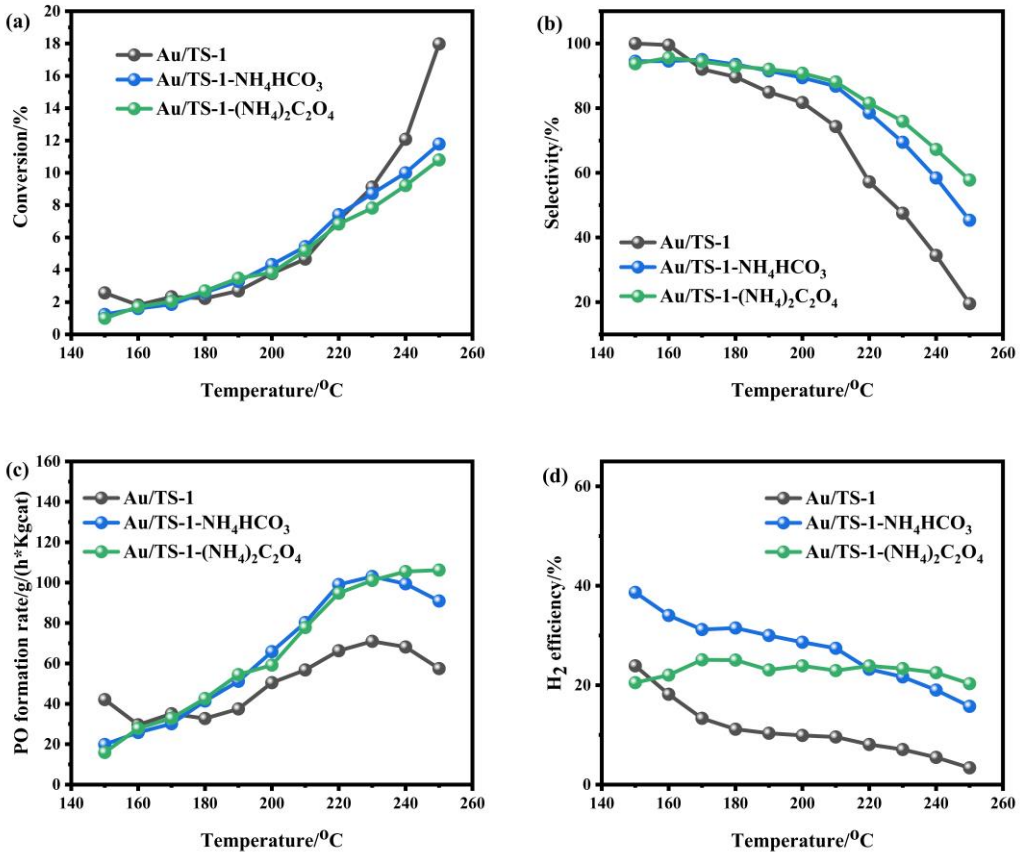


**Figure S8.** Catalytic performance of zeolites synthesized with different additives.

Table S1 Textural properties of TS-1, TS-1-urea, Au/ TS-1, and Au/ TS-1-urea.

| Samples | $S_{BET}$ ($m^2/g$) | $S_{micro}$ ($m^2/g$) | $S_{ext}$ ($m^2/g$) | $V_T$($cm^3/g$) | $V_{micro}$($cm^3/g$) |
|---|---|---|---|---|---|
| TS-1 | 138 | 89 | 43 | 0.12 | 0.046 |
| TS-1-urea | 200 | 152 | 46 | 0.15 | 0.079 |
| Au/TS-1 | 171 | 109 | 62 | 0.16 | 0.056 |
| Au/TS-1-urea | 216 | 145 | 71 | 0.18 | 0.075 |