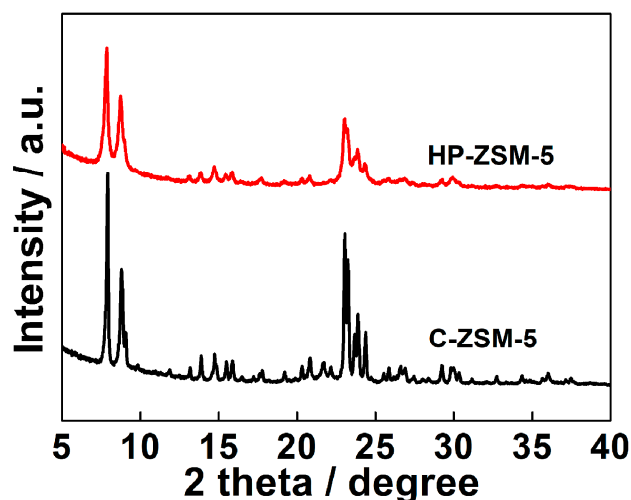


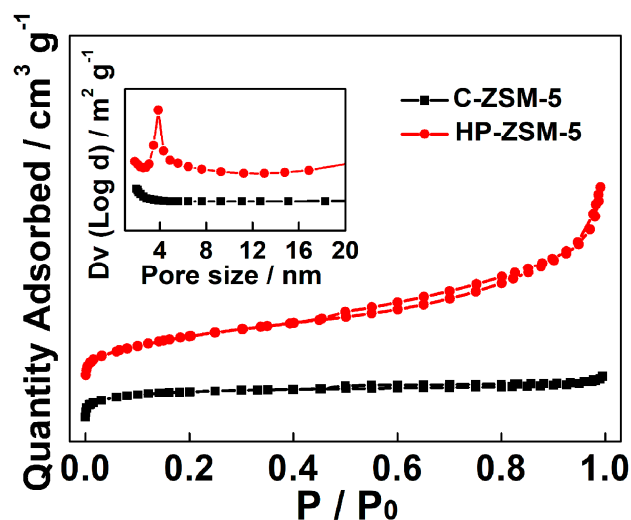
# Supplementary materials for Two possible side reaction pathways during furanic etherification

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Catalyst characterization



**Figure S1.** X-ray diffraction patterns of the catalysts. (HP-ZSM-5: hierarchical porous ZSM-5; C-ZSM-5: conventional ZSM-5.)



**Figure S2.** N<sub>2</sub> physisorption isotherms of the samples and the Barrett-Joyner-Halenda adsorption pore size distributions of the catalysts (inside).

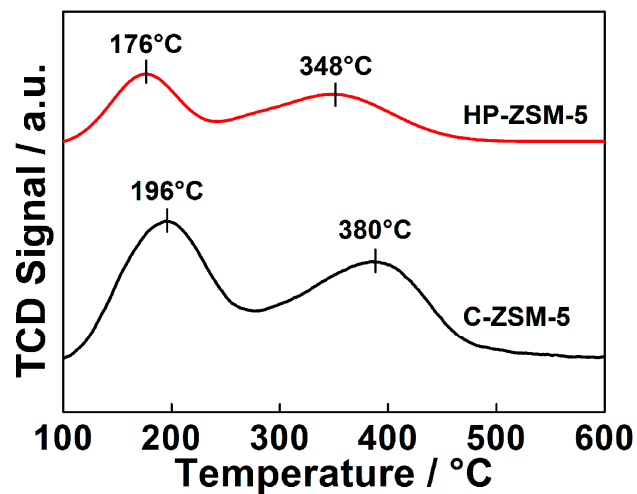


Figure S3. Temperature-programmed desorption of ammonia profiles of the samples.

### The identification of by-products

Compound 6: 2-(methoxymethyl)-5-methylene-2,5-dihydrofuran-2-ol



M+H (HRMS)=143.0697

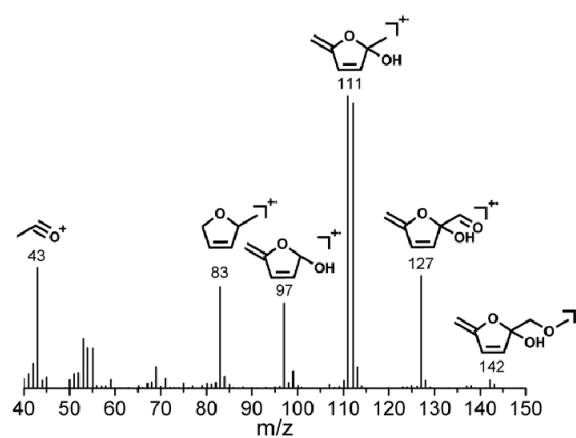
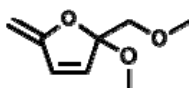
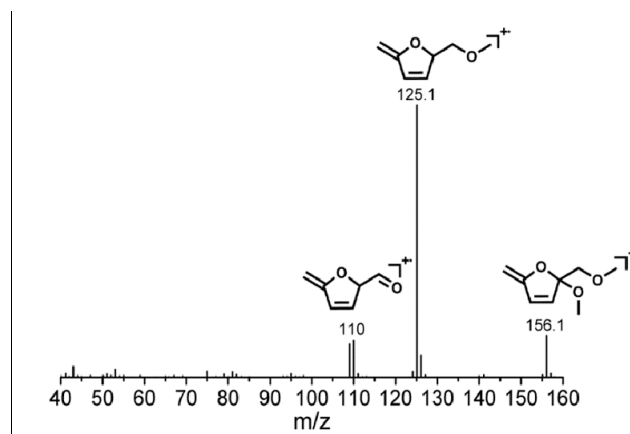


Figure S4. Mass spectrum corresponding to the peak of compound 6 in Figure 3.

Compound 7: 2,5-dihydro-2-methoxy-2-(methoxymethyl)-5-methylenefuran

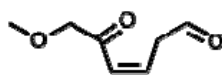


M+H (HRMS)=157.0853

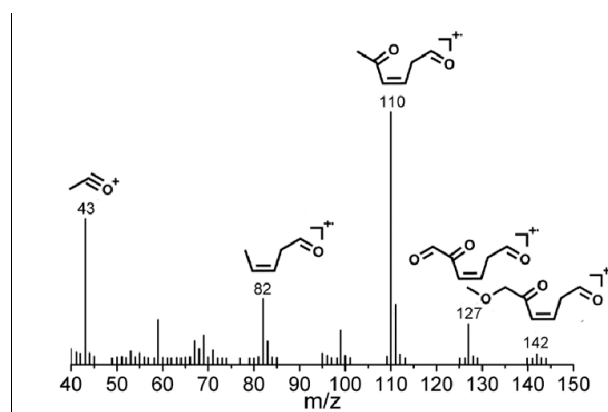


**Figure S5.** Mass spectrum corresponding to the peak of compound 7 in Figure 3.

Compound 3: (Z)-6-methoxy-5-oxohex-3-enal



M+H (HRMS)=143.0697



**Figure S6.** Mass spectrum corresponding to the peak of compound 3 in Figure 3.