

Supporting Information

**Investigating the Sole Olefin-Based Cycle in Small-Cage
MCM-35-Catalyzed Methanol-to-Olefins Reactions**

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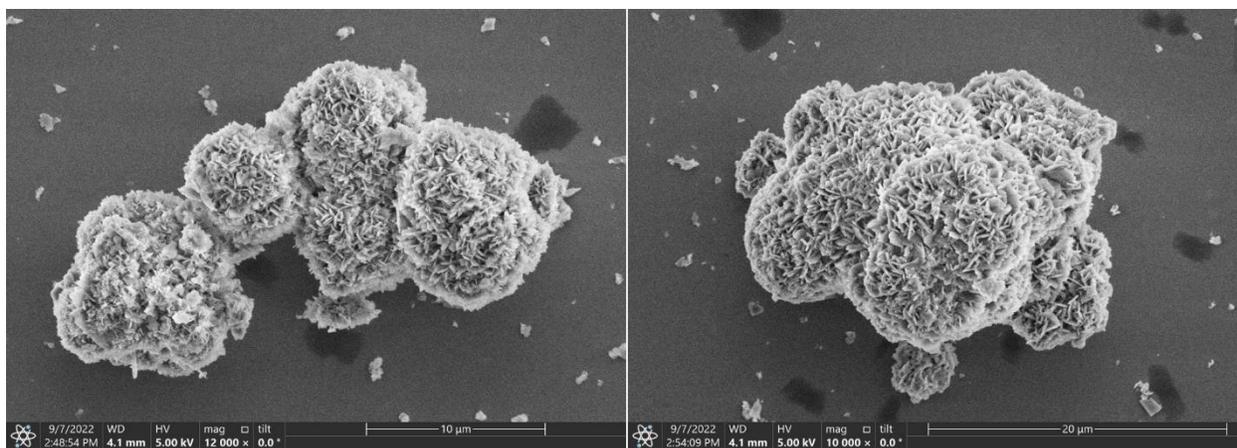


Figure S1. SEM images of MCM-35.



Figure S2. Cage sizes of RHO, SAPO-34 and MCM-35 zeolites.

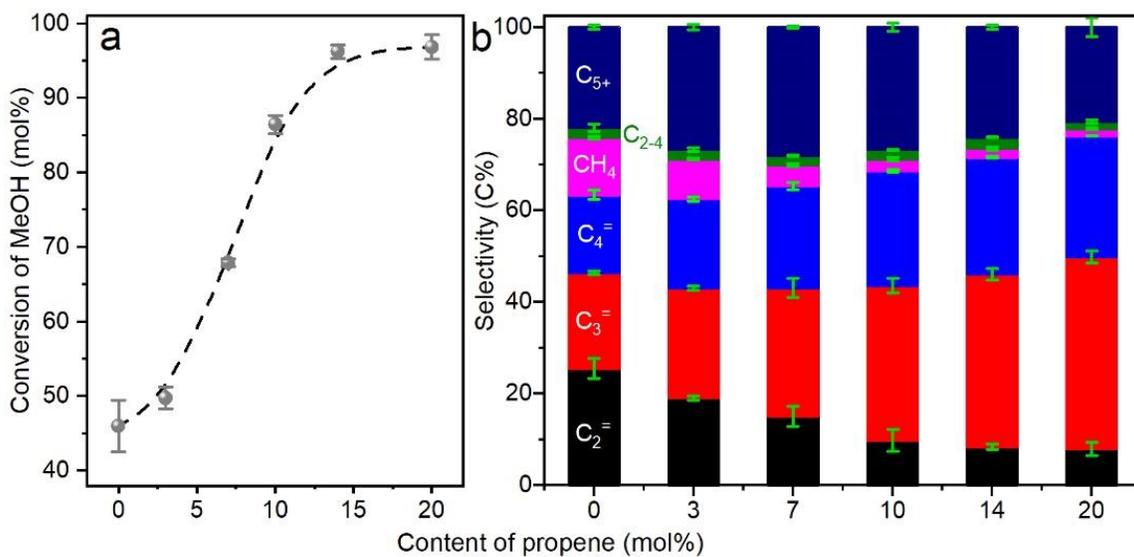


Figure S3. Conversion (a) and product distribution (b) of MTO on MCM-35 zeolites with varied amount of propene cofed in methanol. MTO reactions were performed at 500 °C and analyzed at 10 min time-on-stream.

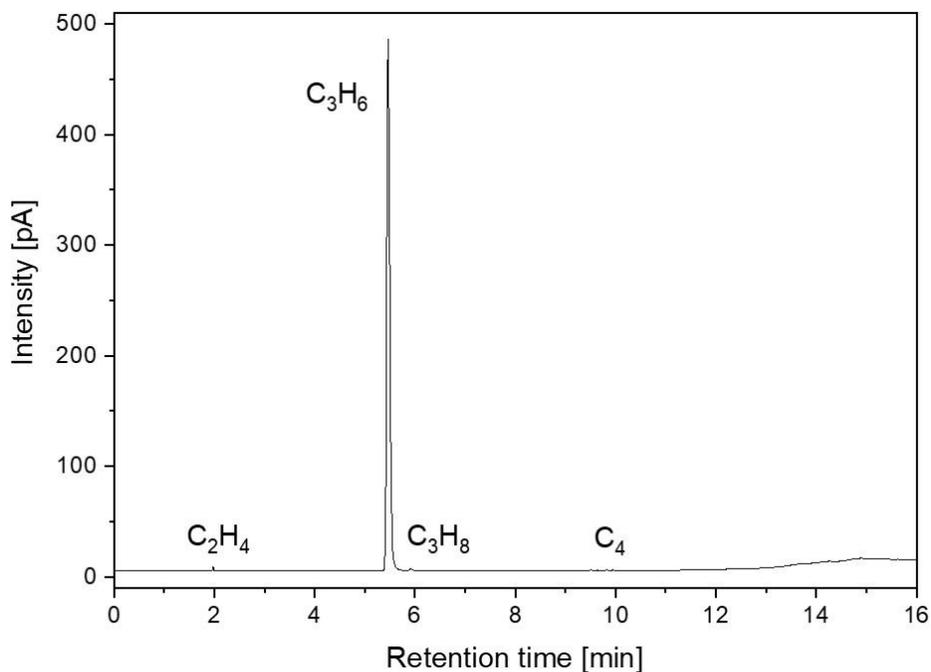


Figure S4. Reaction of propene with MCM-35 catalyst. The flow rate of propene is 2 mL/min and the catalyst amount is 100 mg.

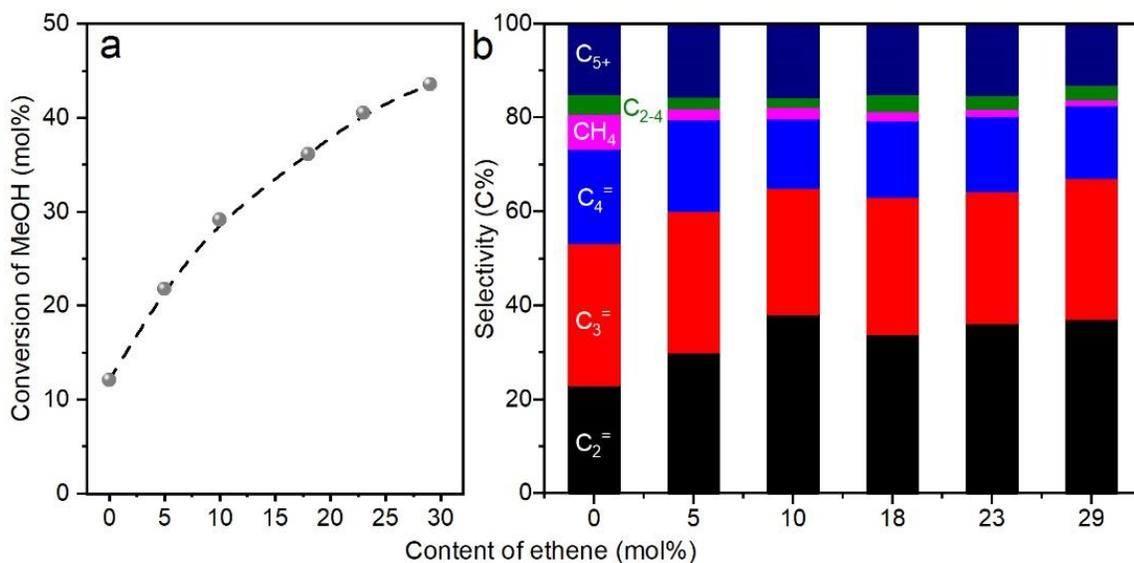


Figure S5. Conversion (a) and product distribution (b) of MTO on MCM-35 zeolites with varied amount of ethene cofed in methanol. MTO reactions were performed at 400 °C and analyzed at 10 min time-on-stream.

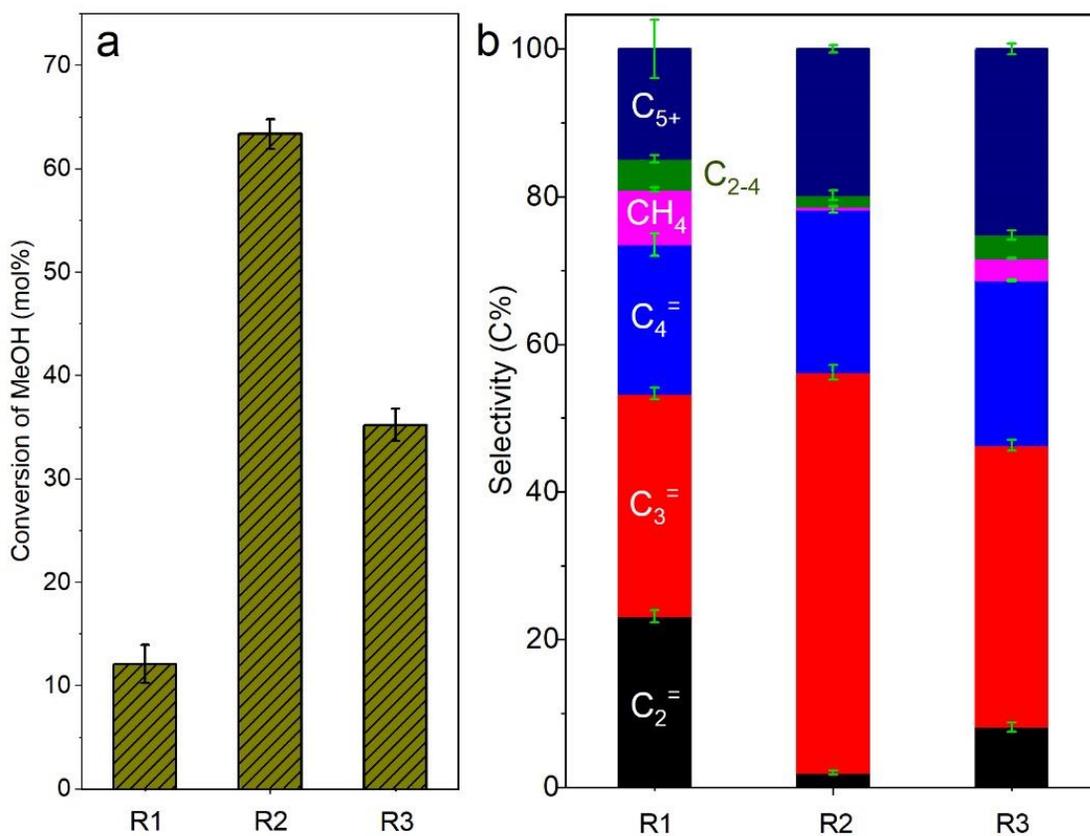


Figure S6. Conversion (a) and product distribution (b) of MTO on MCM-35 zeolites. Reaction conditions: R1 with the feedstock of pure methanol (0-10 min), R2 with the feedstock of 86

mol% methanol + 14 mol% propene (0-10 min), R3 with the feedstock of 86 mol% methanol + 14 mol% propene (0-5 min) and switched to pure methanol (5-10 min), MTO reactions were performed at 400 °C and analyzed at 10 min time-on-stream.

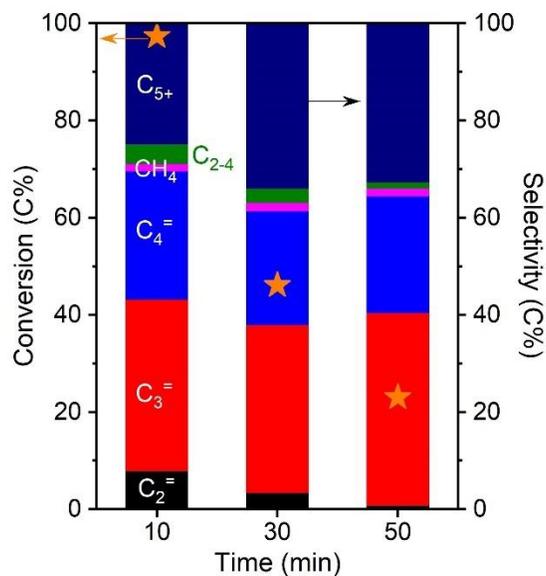


Figure S7. The evolution of methanol conversion and product selectivity in MCM-35 catalyzed MTO reaction. MTO reactions were performed at 500 °C and 20% propene was co-fed in methanol.