

Hydrogen Transfer Pathways during Zeolite Catalyzed Methanol Conversion to Hydrocarbons

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Supporting Information

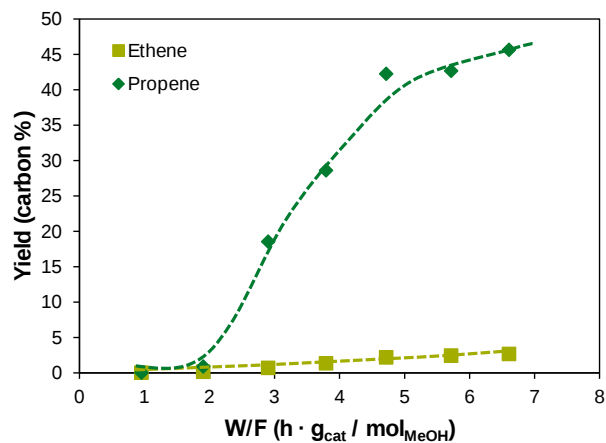


Figure S.1. Change of ethene and propene yield with contact time on H-ZSM-5 (B 68, L 23) at $p_{\text{MeOH}} = 178$ mbar and $T = 723$ K.

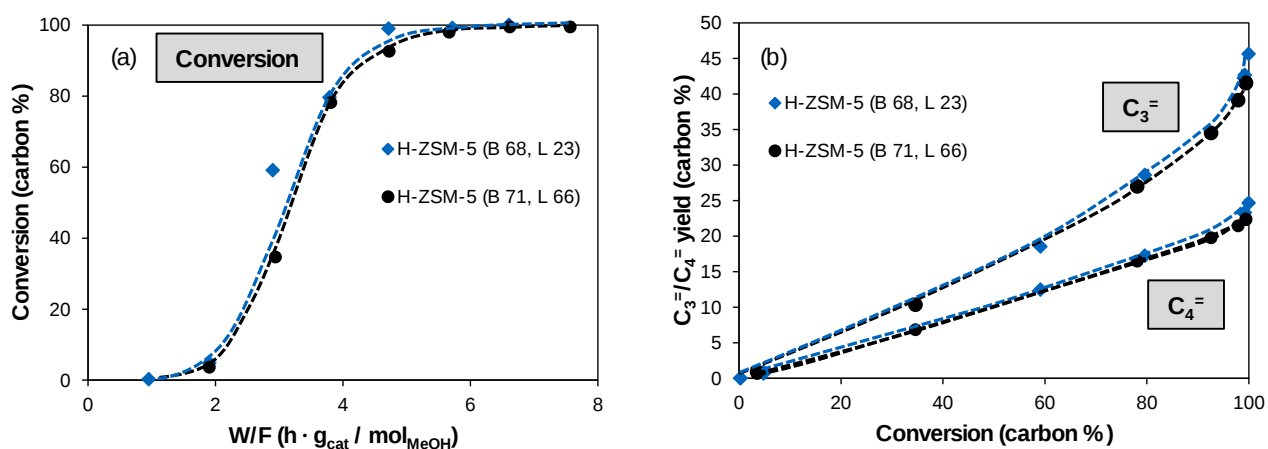


Figure S.2. Change of conversion with contact time (a) and change of the yields of propene and butenes with conversion (b) on H-ZSM-5 (B 68, L 23) and H-ZSM-5 (B 71, L 66) at $p_{\text{MeOH}} = 178$ mbar and $T = 723$ K.

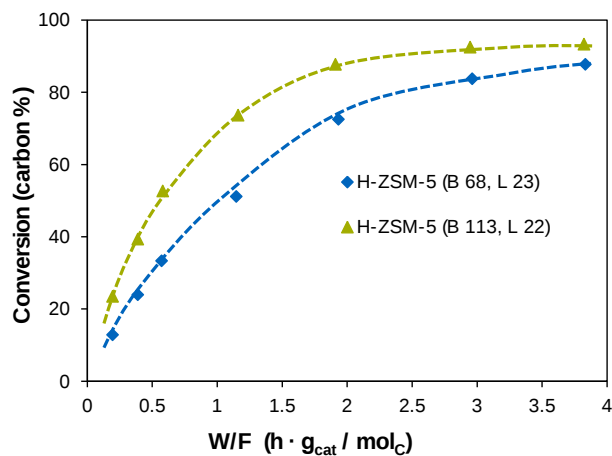


Figure S.3. Change of conversion with contact time for two samples with different BAS concentration at $p_{1\text{-hexene}} = 29.7$ mbar and $T = 723$ K.

Table S.1. Reaction of 1-methoxypropane on pure LAS-MFI at 623 K, $p_{1\text{-methoxypropane}} = 178$ mbar and W/F ($\text{h} \cdot \text{g}_{\text{cat}} / \text{mol}_{1\text{-Methoxypropane}}$) = 0.39.

Compound	Yield (%)
Propene	4.02
Propane	0.02
DME	0.15
MeOH	0.81
1-Methoxypropane	94.43
Others	0.59

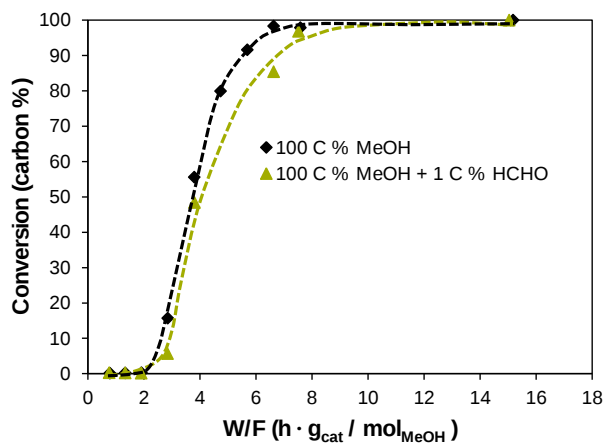


Figure S.4. Change of conversion with contact time for the pure MeOH feed and the feed containing 1 C % HCHO on H-ZSM-5 (B 68, L 39) at $p_{\text{MeOH}} = 100$ mbar and $T = 723$ K.

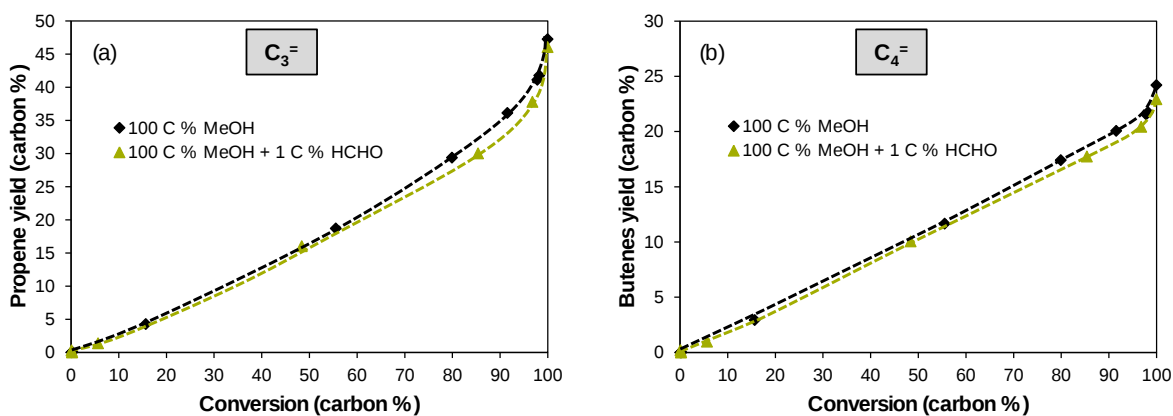


Figure S.5. Yields of propene (a) and butenes (b) as a function of conversion for the feeds of methanol and methanol co-fed with 1 C % HCHO on H-ZSM-5 (B 68, L 39) at $p_{\text{MeOH}} = 100$ mbar and $T = 723$ K.

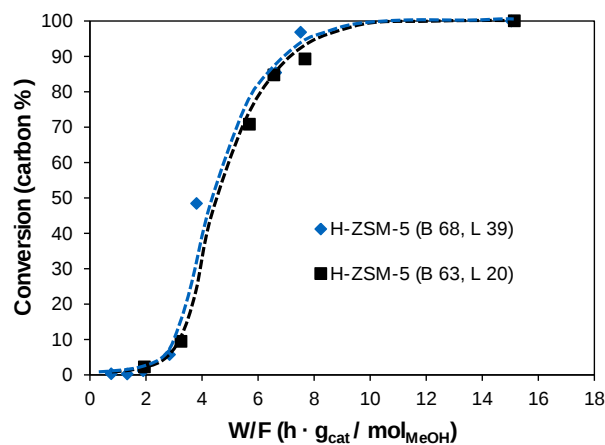


Figure S.6. Conversion as a function of contact time on H-ZSM-5 (B 68, L 39) and H-ZSM-5 (B 63, L 20) for a feed containing methanol and 1 C % HCHO at $p_{MeOH} = 100$ mbar and $T = 723$ K.

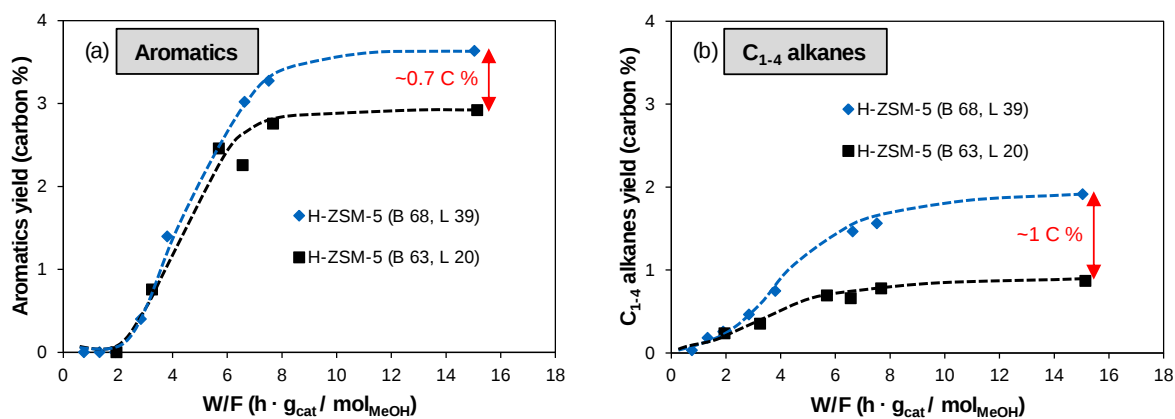


Figure S.7. Aromatics (a) and C₁₋₄ alkanes (b) yield as a function of contact time on H-ZSM-5 (B 68, L 39) and H-ZSM-5 (B 63, L 20) for a feed containing methanol and 1 C % HCHO at $p_{MeOH} = 100$ mbar and $T = 723$ K.

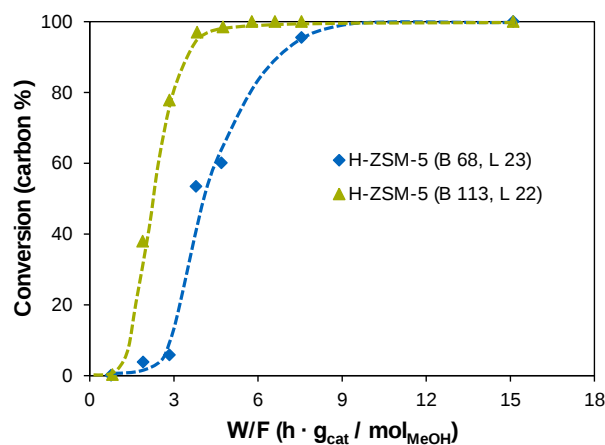


Figure S.8. Conversion profiles as a function of contact time for a feed of methanol with 1 C % HCHO over H-ZSM-5 (B 68, L 23) and H-ZSM-5 (B 113, L 22) at $p_{MeOH} = 100$ mbar at $T = 723$ K.

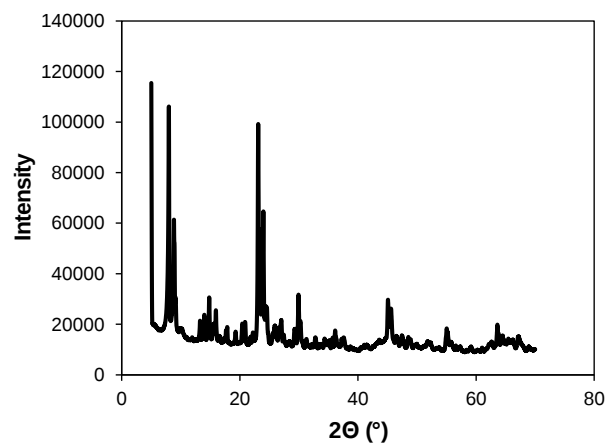


Figure S.9. Powder pattern of the sample H-ZSM-5 (B 68, L 39).