Co-processing CH_4 and Oxygenates on Mo/HZSM-5: 2. CH_4/CO_2 and $CH_4/HCOOH$ Mixtures

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Supplementary Information

The tabulated results presented in Table S.1 show the observed product distribution and conversion for co-processing CO_2/CH_4, CH_3COOH/CH_4, and $HCOOH/CH_4$ mixtures at 950 K. All data reported were recorded at 11 ks time-on-stream.

Table S.1: CH_4 conversion and product carbon selectivity for DHA reactions over Mo/H-ZSM-5 catalyst at 950 K, CH_4 flow rate 12.0 $cm^3\,min^{-1}$, CH_4:Ar = 9:1, catalyst loading 1 g with Mo:Al$_f$ = 0.25, and time-on-stream 11 ks.

Oxygenate	CO_2	AA	FA
O*/CH_4 (/10^{-5})	1.8	1.5	1.7
CH_4 conversion (%)[a]	8.6	6.3	8.2
Selectivity (%)[b]			
CO	62.0	54.1	41.2
C_2H_4	1.0	1.3	1.5
C_2H_6	1.1	1.2	1.6
C_6H_6	22.6	29.5	36.7
C_7H_8	1.0	1.4	1.7
$C_{10}H_8$	11.1	11.6	15.6
C_{10}^+	1.2	0.9	1.5

[a] $Conv_{CH_4} = \dfrac{F_{CH_4}^{Inlet} - F_{CH_4}^{Outlet}}{F_{CH_4}^{Inlet}}$ [b] $\%\,S_i = \dfrac{n_i * F_i}{\sum_i n_i * F_i}$