Supplementary information

Microwave-assisted impregnation of highly dispersed Mo over HZSM-5 using various Mo precursors for methane dehydroaromatization

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Table S1. Measured and nominal Mo content in synthesized Mo/HZSM-5 catalysts

Catalysts	NominalNominalcontent (wt.%)	Mo	Measured MP-AES (wt.%)	Measured EDX (wt.%)	SEM-
Mo/HZSM-5(P)	5		4.8	5.2	
MoC1	5		4.9	5.1	
МоН2	5		5.1	5.2	
MoH2-4M	5		4.6	4.7	

Table S2. Deconvolution results of ²⁹Si MAS NMR and relative population of Al in Al MASNMR spectra

catalyst	Si(nAl) site	²⁹ Si shift (ppm)	Area (rel. %)	Si/Al _{FR}	Chemical shift ppm (²⁷ Al MAS NMR)	Relative population (%)
HZSM-5	Si(0 Al)	-111.8 -116.6	36.8 49.2	15.6	57.6 -0.0	98.1 1.7
	Si (1Al)	-107.1 -104.3	7.3 6.8			
Mo/HZSM-5 (P)	Si(0 Al)	-113.7 -116.9	16.5 67.1	16.1	56.6 +5.04 +15.2	60.1 14.2 25.3
	Si (1Al)	-104.0 -102.8	10.1 6.2			
MoC1	Si(0 Al)	-110.6 -115.9	19.7 64.7	15.8	55.9 +5.03	85.6 14.4
	Si (1Al)	-106.7 -102.4	10.1 5.6			
MoH2	Si(0 Al)	-111.9 -116.3	16.6 31.8	15.3	55.1 +5.3	88.9 11.1
	Si (1Al)	-105.6 -103.3	15.4 35.5			

MoH2-4M	Si(0 Al)	-109.6 -115.8	16.8 43.6	15.9	55.3 +5.12	76.8 19.3
	Si (1Al)	-104.5 -102.3	23.4 15.7			



Figure S7(a) X-ray photoelectron spectra of freshly prepared Mo-doped HZSM-5 catalysts, and (b) carburized Mo-doped HZSM-5 catalysts (in a mixture of $CH_4:H_2$ (3:1) for 5 h at 550 °C).