Supplementary Information

Pt_3Mn/SiO_2 + ZSM-5 Bifunctional Catalyst for Ethane Dehydroaromatization

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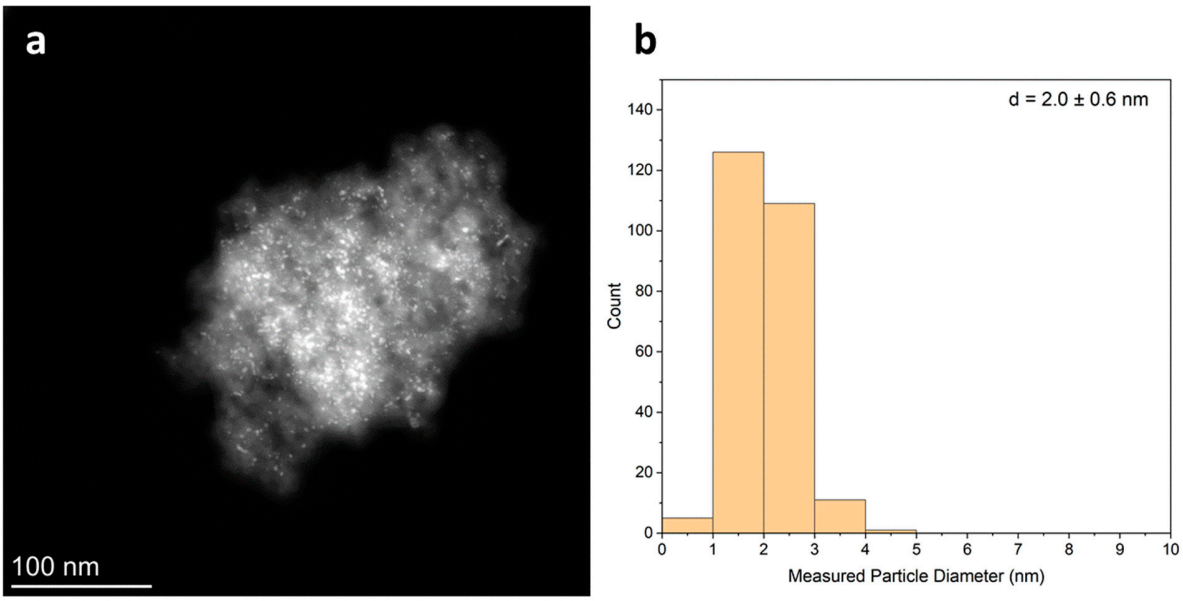


Figure S1. (a) STEM images of Pt_3Mn/SiO_2 and (b) the corresponding particle size distribution.

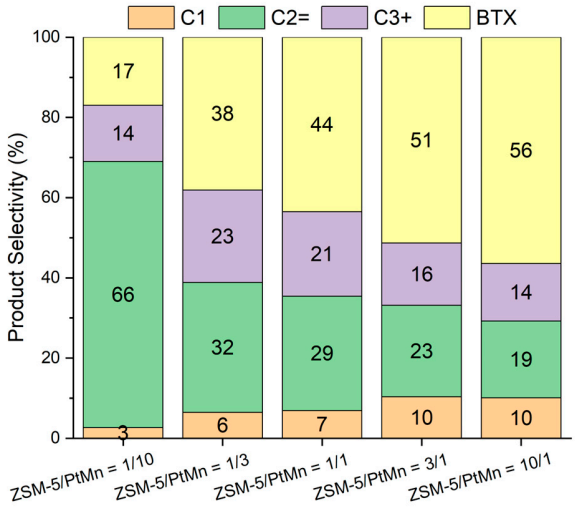


Figure S2. The product distribution of different ratio catalysts. The ethane conversion is ranging from 15% to 18%. Reaction condition: cat., 0.2-0.8 g; temperature, 600 °C, pressure, 101 kPa; pure ethane.

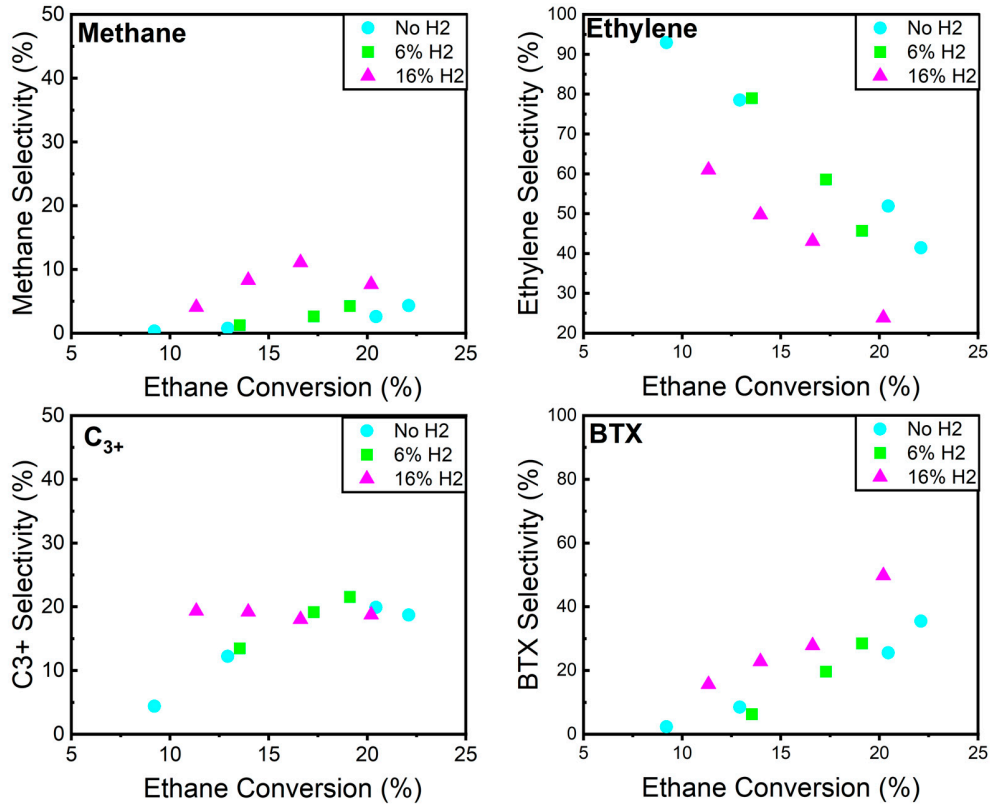


Figure S3. Product selectivity as a function of ethane conversion on ZSM-5/Pt_3Mn = 1/1 bifunctional catalyst. Reaction condition: cat., 0.2-0.8 g; temperature, 600 °C, total pressure, 101 kPa. the ethane partial pressure was constant at 35 kPa, hydrogen partial pressure ranging from 0-16 kPa, balanced with nitrogen.

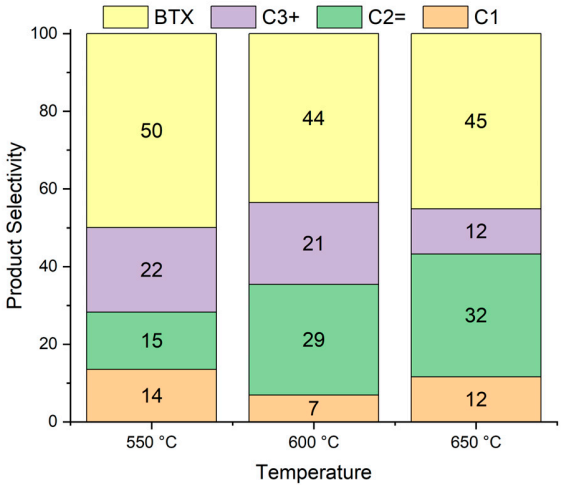


Figure S4. Product distribution for different reaction temperature at similar ethane conversion (16-18%). Reaction condition: cat., 0.2-0.8 g; temperature, 550-650 °C, pressure, 101 kPa; pure ethane, weight ratio of HZSM-5/Pt3Mn=1/1.

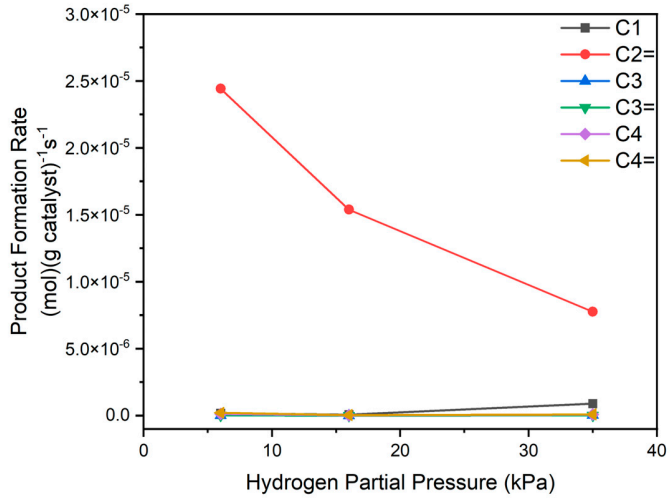


Figure S5. The product formation rate as a function of hydrogen partial pressure for ethane dehydrogenation on Pt_3Mn/SiO_2. Reaction condition: cat. 0.2g Pt_3Mn/SiO_2; 600°C; P_{ethane} = 35 kPa, P_{H2} = 2-35 kPa, balanced with N_2