Electronic Supplementary Material (ESI) for Catalysis Science & Technology.
This journal is © The Royal Society of Chemistry 2022

Supporting information

Effect of Zr Promoter on Precipitated Iron-Based Catalysts for High-Temperature Fischer-Tropsch Synthesis of Light Olefins

*Yi Yang,[a] Weixin Qian,[a] Haitao Zhang,[a] Zhonghao Han,[a] Hongfang Ma,[*a] Qiwen Sun,[b] and Weiyong Ying[a]*

[a] Engineering Research Center of Large Scale Reactor Engineering and Technology, Ministry of Education, State Key Laboratory of Chemical Engineering, School of chemical engineering, East China University of Science and Technology, Shanghai 200237, China.

[b] State Key Laboratory of Coal Liquefaction and Coal Chemical Technology, Shanghai 201203, China

[*] **Corresponding Author**

E-mail: mark@ecust.edu.cn

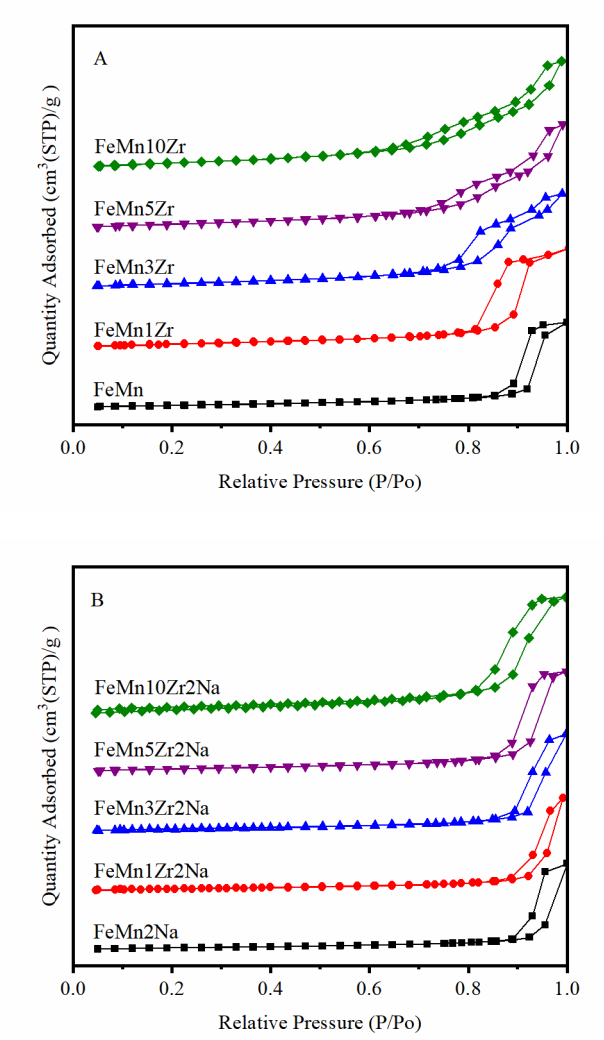

Figure S1. Ar-physisorption isotherms of (A) FeMnxZr catalysts, (B) FeMnxZr2Na catalysts.

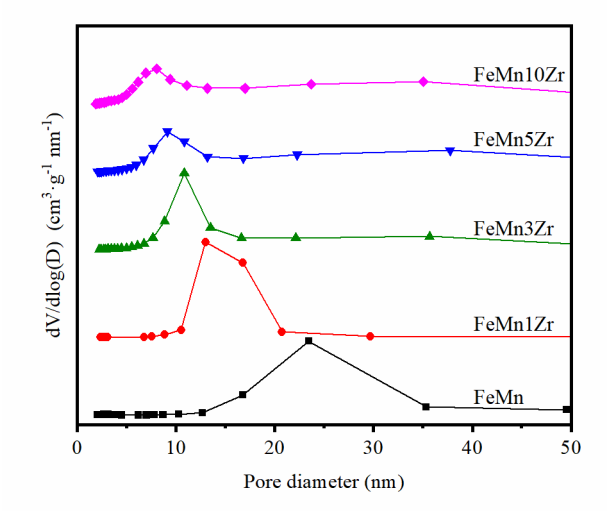

Figure S2. Pore diameter distributions of the fresh FeMnxZr catalysts

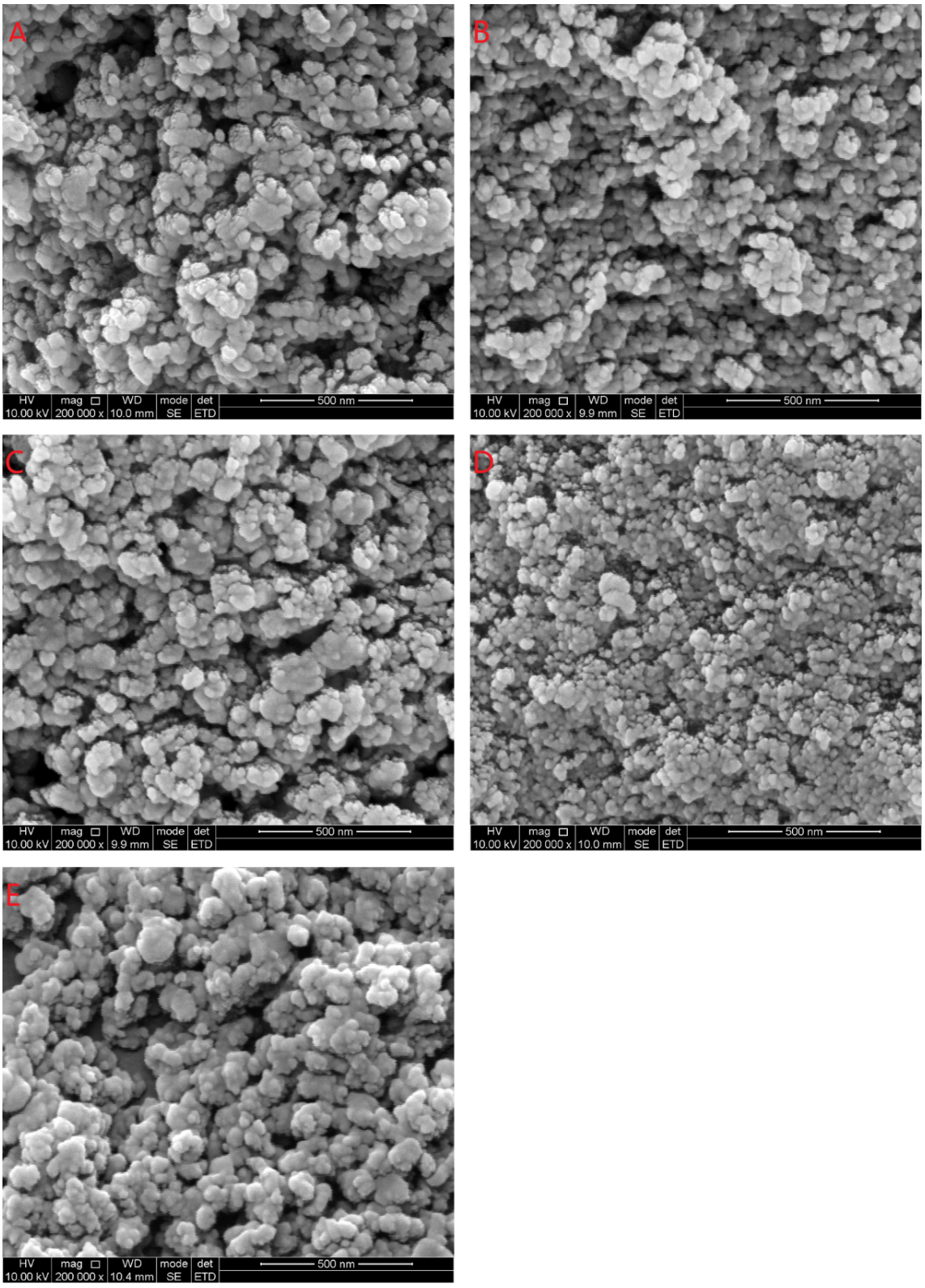

Figure S3. SEM images of fresh catalysts (A) FeMn, (B) FeMn1Zr, (C) FeMn3Zr, (D) FeMn5Zr, (E) FeMn10Zr.

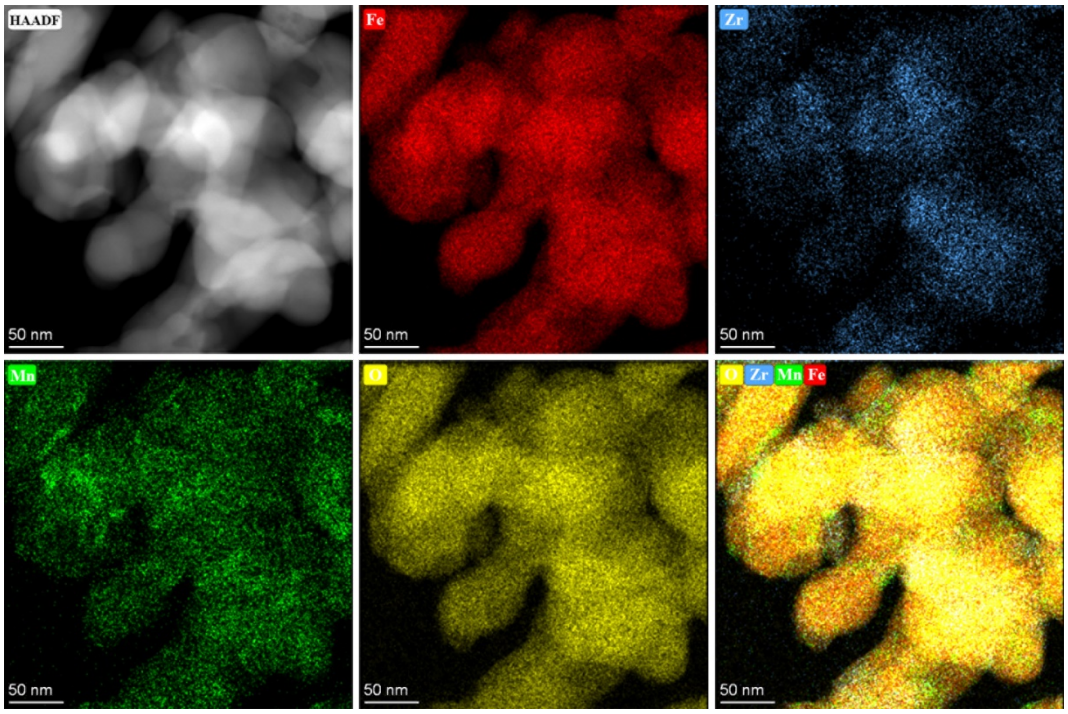

Figure S4. HAADF-STEM and corresponding EDS-mapping images of fresh FeMn5Zr catalyst.

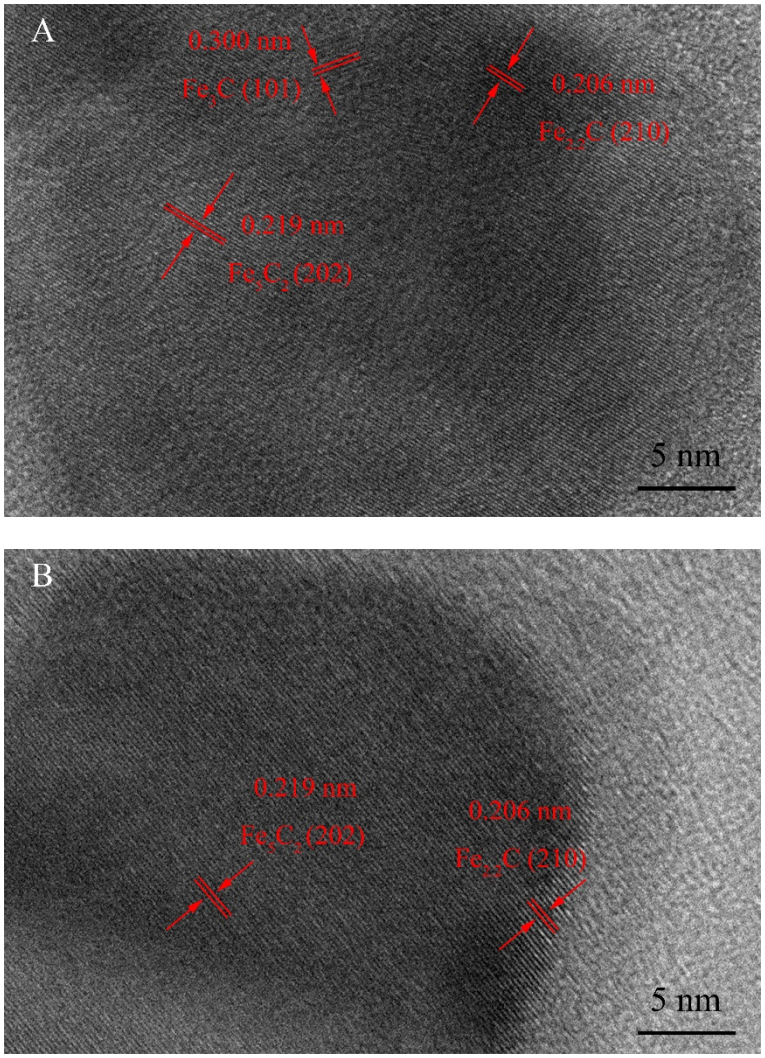

Figure S5. HRTEM images of spent catalysts (A) FeMn2Na, (B) FeMn5Zr2Na.

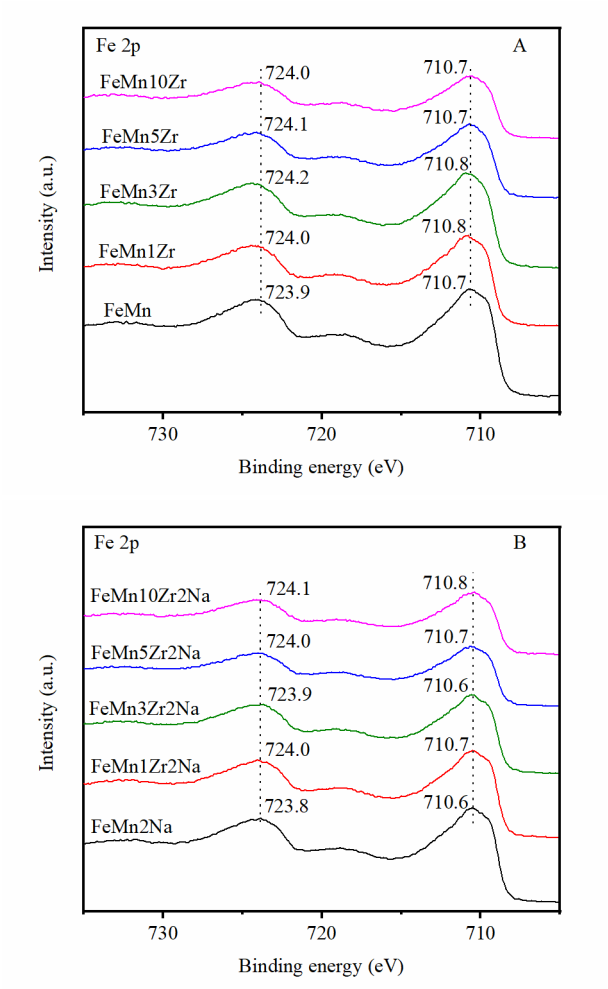

Figure S6. XPS spectra of the fresh catalysts (A) Fe 2p XPS spectra of FeMnxZr catalysts, (B) Fe 2p XPS spectra of FeMnxZr2Na catalysts.

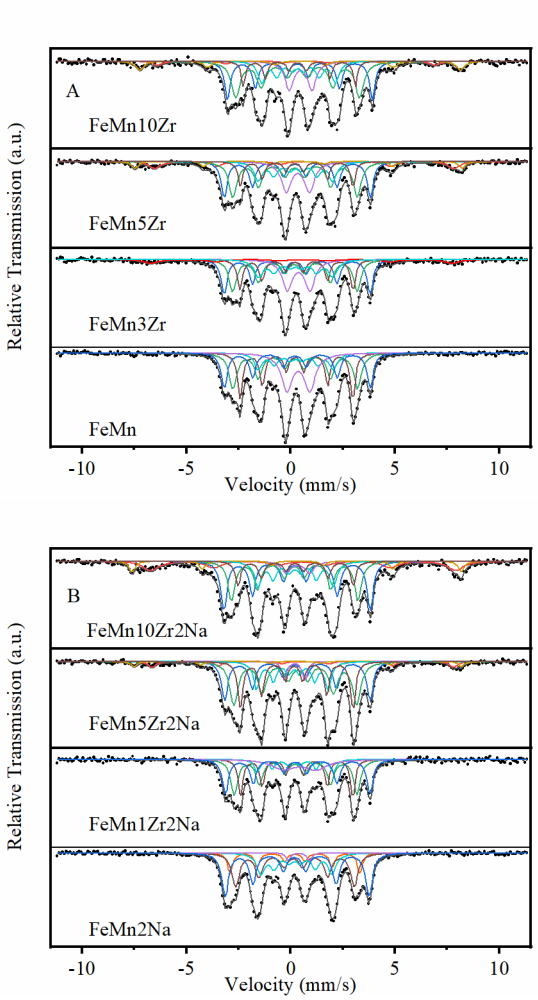

Figure S7. Mössbauer spectra of the spent catalysts (A) FeMnxZr catalysts, (B) FeMnxZr2Na catalysts.

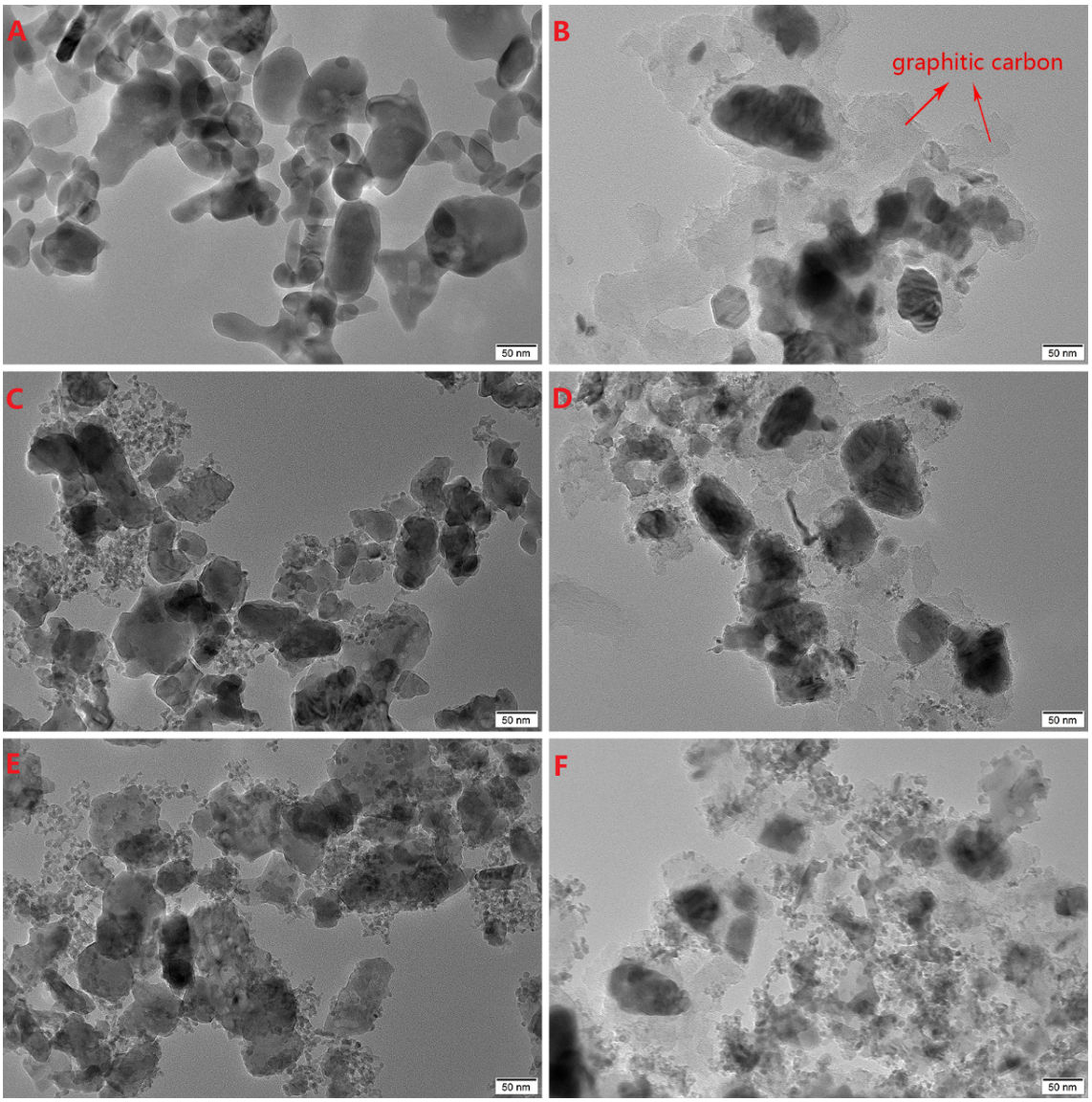

Figure S8. TEM images of (A) fresh FeMn2Na catalyst, (B) spent FeMn2Na catalyst, (C) fresh FeMn5Zr2Na catalyst, (D) spent FeMn5Zr2Na catalyst, (E) fresh FeMn10Zr2Na catalyst, (F) spent FeMn10Zr2Na catalyst.