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Supplementary material

One-pot synthesis of Carbon-coated Fe_3O_4 nanoparticles with tunable size for production of gasoline fuels

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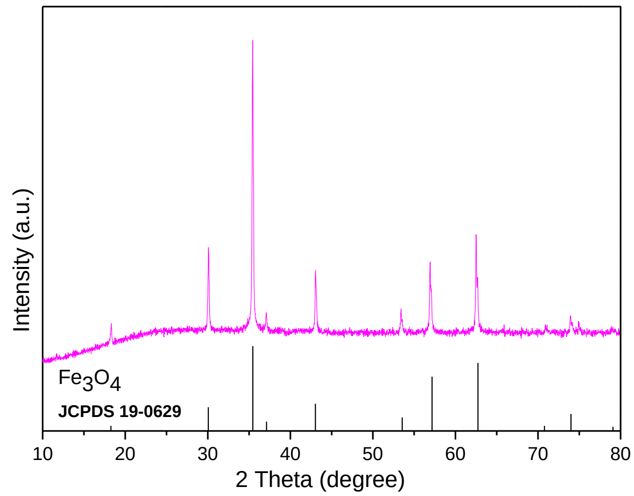

Fig. S1 X-ray diffraction patterns of the naked Fe_3O_4 catalyst

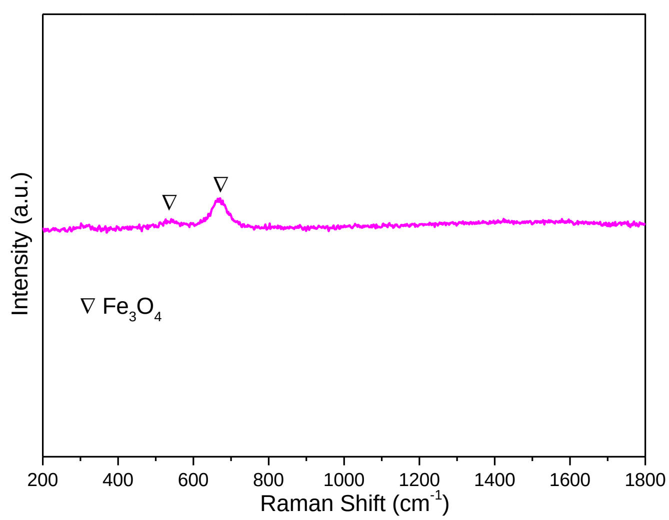

Fig. S2 Laser-Raman spectrums of the naked Fe_3O_4 catalyst

Table S1 Textural properties of the naked Fe_3O_4 catalyst

Sample	Carbon content (wt. %)	Particle size (nm) XRD	Microsphere size (nm) SEM	Surface area (m^2/g)	pore size (nm)
naked Fe_3O_4	0	60.6	300	9	22.0

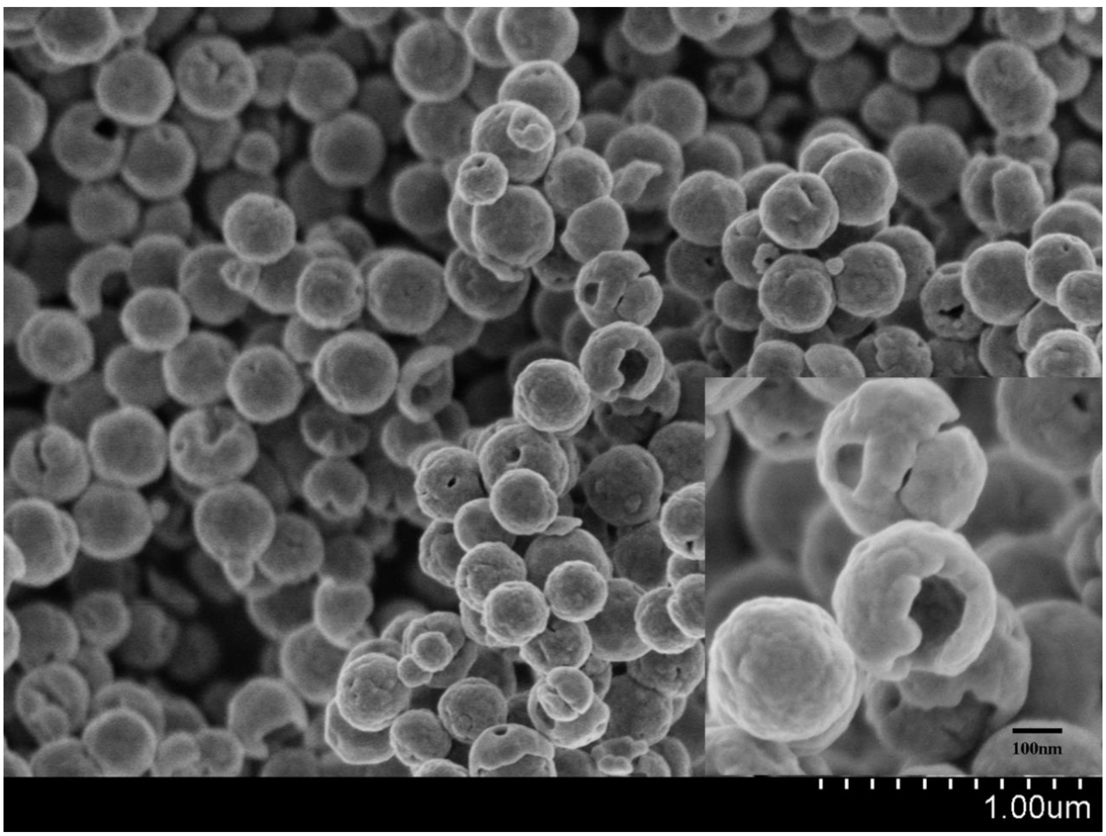

Fig. S3 SEM image of the naked Fe_3O_4 catalyst

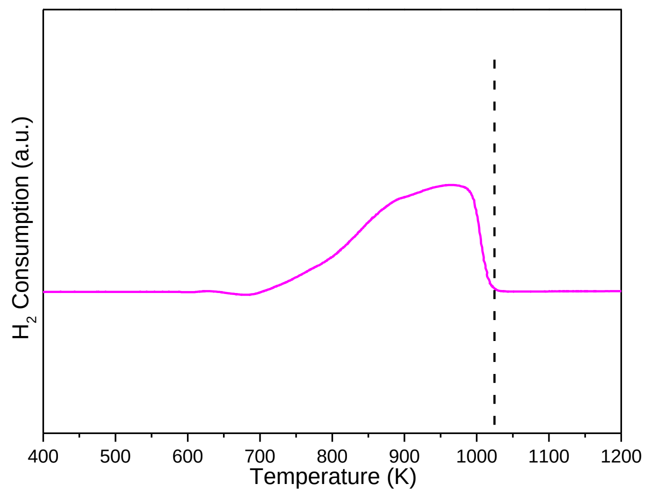

Fig. S4 H_2-TPR profiles of the naked Fe_3O_4 catalyst

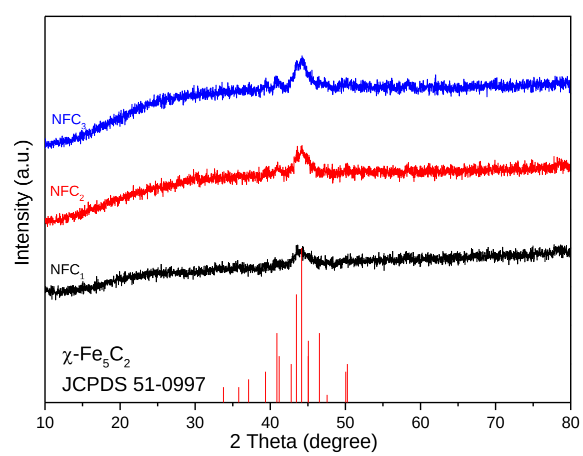

Fig. S5 X-Ray diffraction patterns of the catalysts in situ activated with syngas (H_2/CO=1) at 573 K for 12 h

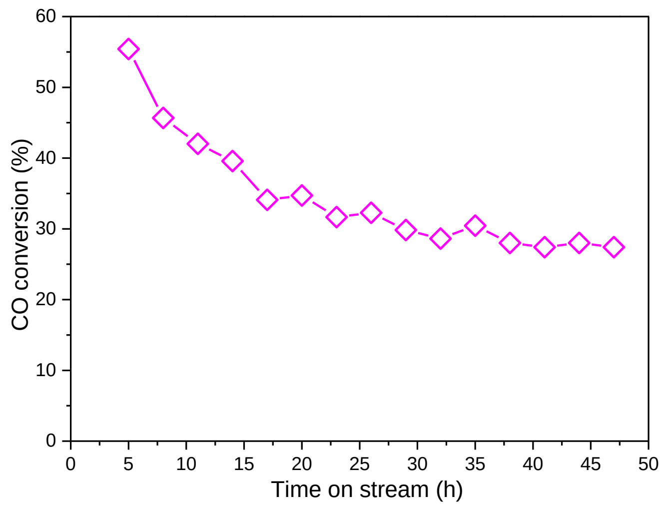

Fig. S6 CO conversion of the naked Fe_3O_4 catalyst as a function of time on stream

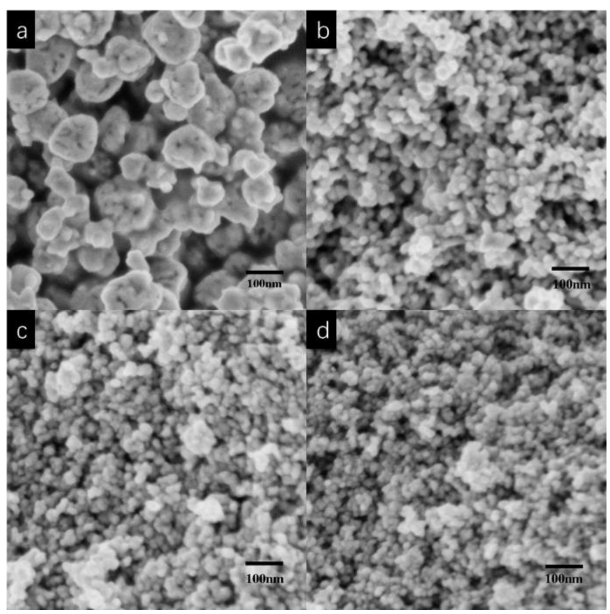

Fig. S7 SEM images of the spent catalysts (a-d, images of the naked Fe_3O_4, NFC_1, NFC_2, NFC_3, respectively).

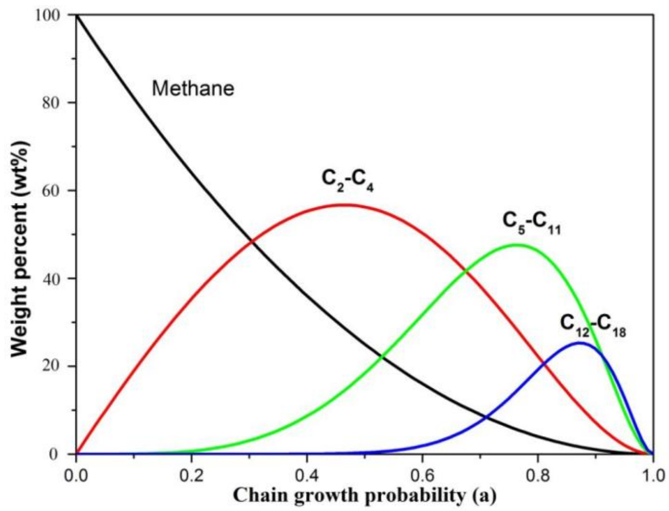

Fig. S8 Product distribution predicted by Anderson-Schulz-Flory (ASF) model

$$\ln\left(\frac{Wn}{n}\right) = n \ln \alpha + \ln\left[\frac{(1-\alpha)^2}{\alpha}\right]$$

Equation S1 Anderson-Schulz-Flory model for the product distribution