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Unexpectedly efficient CO₂ hydrogenation to higher hydrocarbons over non-doped Fe₂O₃

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Graphical abstract

Highlights

- CO₂ hydrogenation to higher hydrocarbons over undoped Fe₂O₃
- Preparation method of Fe₂O₃ strongly affects CH₄ selectivity and catalyst reducibility
- Template-assisted synthesis method results in an efficient catalyst
- C₂₊- and CH₄-selectivity of only 12 % and 73 % was achieved at 40% CO₂ conversion
- The olefin fraction among C₂-C₄ hydrocarbons was 73 %

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