

Supplementary material

**Fischer-Tropsch synthesis on Co/AlSBA-15: effects of hydrophilicity of supports to cobalt dispersion and product distributions**

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Supplementary **Table S1** represents the bulk compositions of the Co/AlSBA-15 measured by XRF analysis.

Supplementary **Figure S1** represents the wide-angle XRD patterns on the Co/AlSBA-15 after reduction at 400 °C for 12 h.

Supplementary **Figure S2** represents the CO conversions on the Co/AlSBA-15 with time on stream for around 60 h.

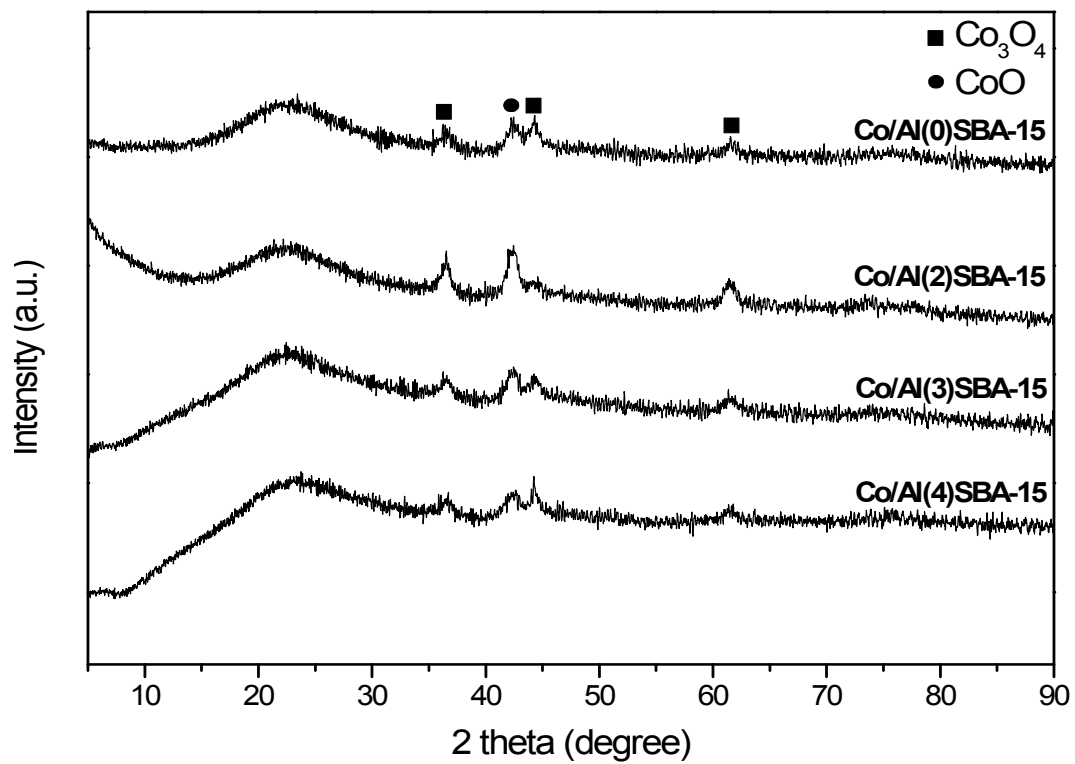
Supplementary **Figure S3** represents the NH<sub>3</sub>-TPD patterns on the fresh Co/AlSBA-15

Supplementary **Figure S4** represents wide-angle XRD patterns on the used Co/Al(0)SBA-15 and Co/Al(4)SBA-15.

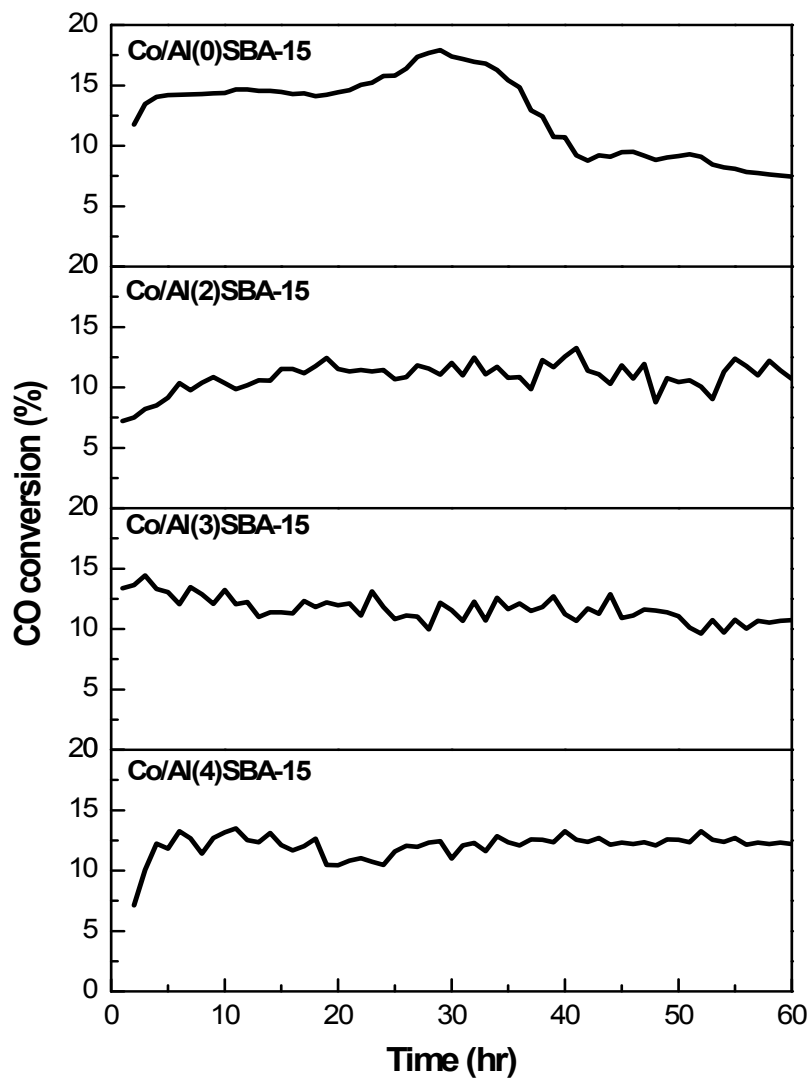
Supplementary **Figure S5** represents the deconvoluted TPR patterns of the fresh Co/AlSBA-15.

**Table S1.** Bulk compositions of the Co/AlSBA-15 measured by XRF analysis

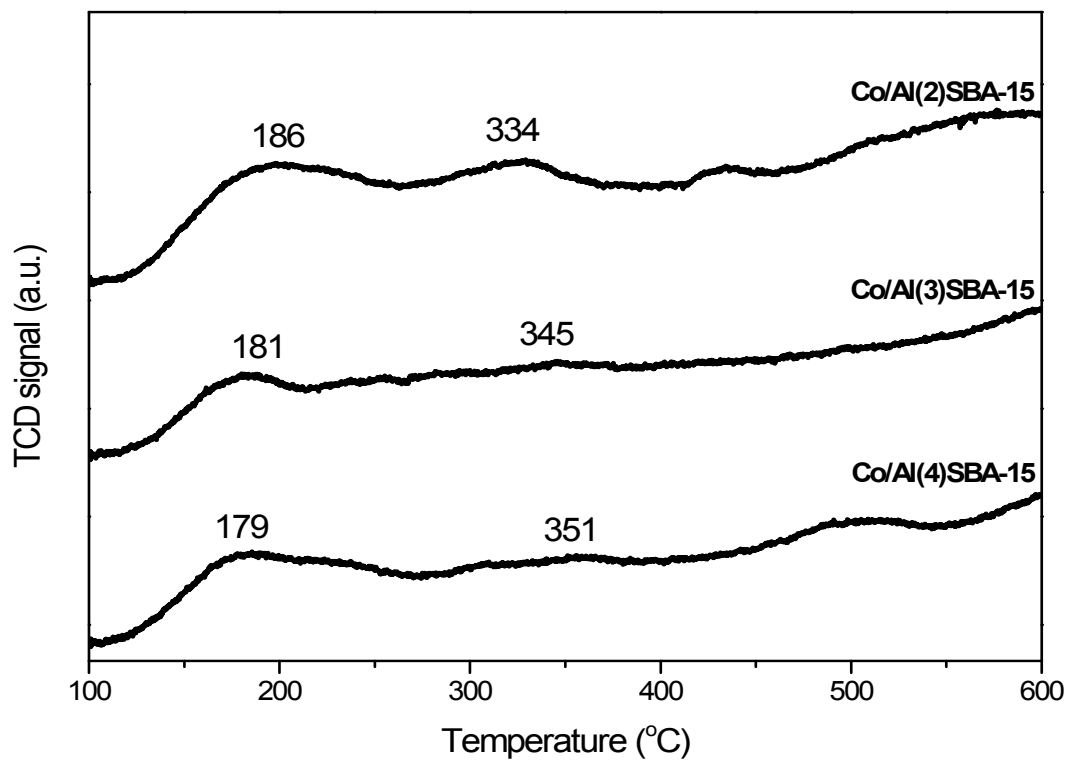
| Notation        | wt%<br>(metal oxides) |                                |                                | weight ratios<br>(metal oxides)                  |  | weight% of<br>metal cobalt |
|-----------------|-----------------------|--------------------------------|--------------------------------|--|--|----------------------------|
|                 | SiO <sub>2</sub>      | Co <sub>3</sub> O <sub>4</sub> | Al <sub>2</sub> O <sub>3</sub> | Al <sub>2</sub> O <sub>3</sub> /SiO <sub>2</sub> | Co <sub>3</sub> O <sub>4</sub> /SiO <sub>2</sub> | Co/AlSBA-15                |
| Co/Al(0)-SBA-15 | 64.85                 | 35.15                          | 0                              | 0  | 0.54   | 28.5                       |
| Co/Al(2)-SBA-15 | 68.39                 | 31.46                          | 0.15                           | 0.002  | 0.46   | 25.2                       |
| Co/Al(3)-SBA-15 | 68.90                 | 30.91                          | 0.18                           | 0.003  | 0.45   | 24.8                       |
| Co/Al(4)-SBA-15 | 69.44                 | 30.28                          | 0.26                           | 0.004  | 0.44   | 24.2                       |



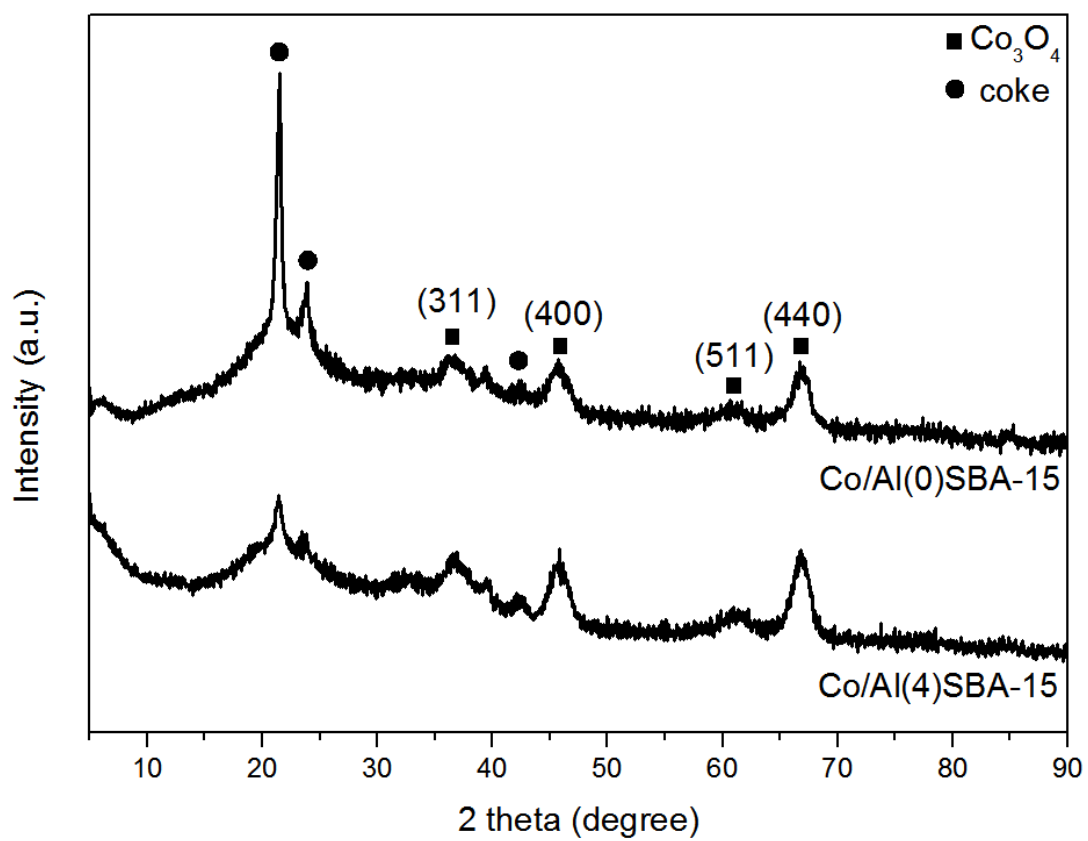
**Figure S1.** Wide-angle XRD patterns on the Co/AlSBA-15 after reduction at 400 °C for 12 h



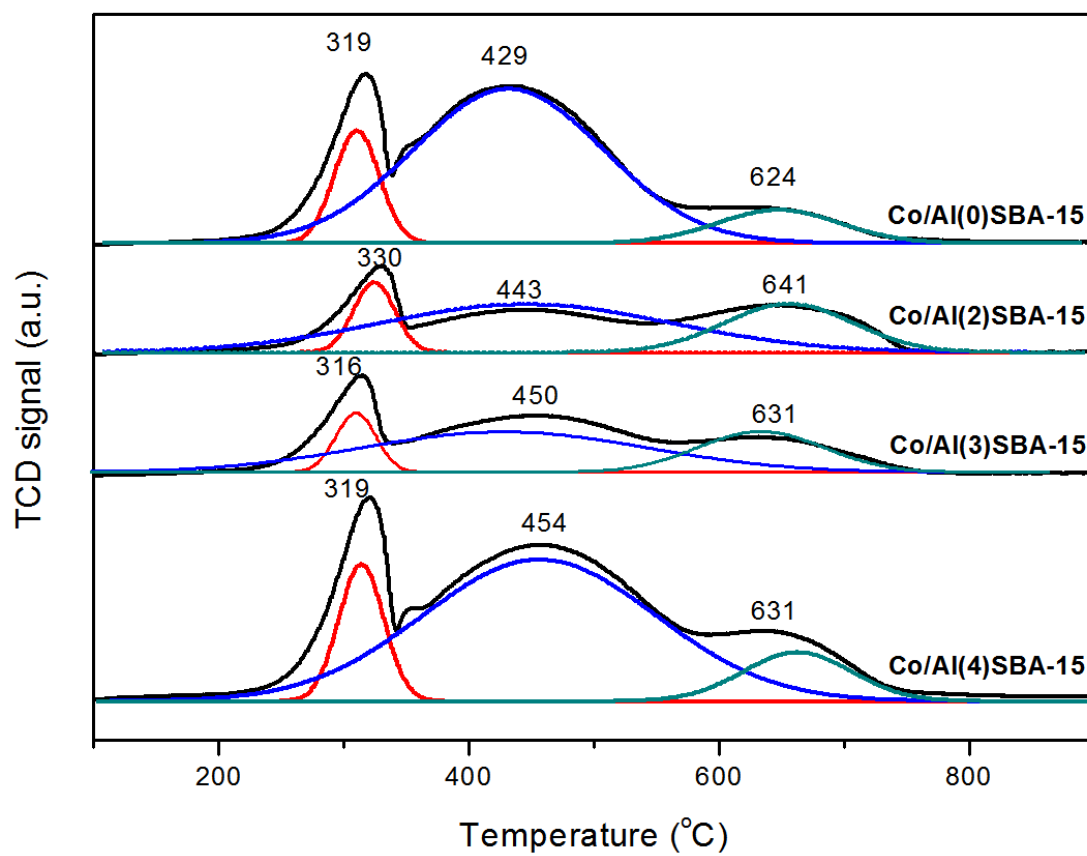
**Figure S2** represents the CO conversions on the Co/AlSBA-15 with time on stream for around 60 h.



**Figure S3.** NH<sub>3</sub>-TPD patterns on the fresh Co/AlSBA-15



**Figure S4.** Wide-angle XRD patterns on the used Co/Al(0)SBA-15 and Co/Al(4)SBA-15



**Figure S5.** Deconvoluted TPR patterns of the fresh Co/AlSBA-15