

## Effects of Regulated Pore Length on Fischer–Tropsch Synthesis

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In this study, several ordered mesoporous silica having various pore lengths were synthesized and employed as supports of cobalt catalysts for Fischer–Tropsch (FT) synthesis. The synthesized catalysts were characterized by N<sub>2</sub> physisorption, SEM, TEM, ICP–OES, XRD, and H<sub>2</sub>–TPR analyses. During the FT activity tests, a catalyst having shorter pore length showed increased CO conversion and C<sub>1</sub>–C<sub>4</sub> hydrocarbon selectivity. The shortened mesopore channels of the catalyst seemed to lessen diffusion resistance, resulting the increased CO conversion. Meanwhile, produced FT wax intermediates and light olefins in the shortened channel might have fewer chances to experience a further chain-growth reaction to be a longer hydrocarbon, resulting the increased C<sub>1</sub>–C<sub>4</sub> hydrocarbon selectivity. After each activity test, produced liquid and waxy hydrocarbons were collected rigorously, and product distribution was analyzed using gas chromatography with flame ionization detector.