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Author: <input style="width: 80%;" type="text"/>	ADVANCED	Volume	Page	
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[TOP](#) > [Available Issues](#) > [Table of Contents](#) > [Abstract](#)

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[\[PDF \(4608K\)\]](#) [\[References\]](#)

Effects of Pore Size of Ru-SiO₂ Catalysts Prepared by Alkoxide Method on Fischer-Tropsch Reaction

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Uniform pore sizes of 10 wt%Ru-SiO₂ catalysts prepared by the alkoxide method were varied in the range of 4-8 nm, by adding formamide (FA) at the sol-gel preparation stage. The prepared catalysts were used to catalyze the Fischer-Tropsch (F-T) reaction in the slurry phase under the reaction conditions of $T=503$ K, $P=1$ MPa, $H_2/CO=2/1$, and $W/F=5$ g-catal.h/mol. The Ru particle sizes estimated by H₂ adsorption increased with increasing pore size, although the Ru crystallite sizes evaluated by XRD line broadening were only slightly changed. The selectivity for CH₄ decreased and the selectivity for higher hydrocarbons increased with increasing pore size of the catalysts, caused by diffusivity of the slurry solvent and/or the products in the uniform meso-pores, or uniform Ru particle size effects.

Keywords: [Alkoxide method](#), [Fischer-Tropsch reaction](#), [Particle size](#), [Pore size](#), [Ruthenium catalyst](#)



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