catalysts

an Open Access Journal by MDPI

IMPACT FACTOR 3.9

CITESCORE 6.3

# Nano Catalysts for Fischer–Tropsch Synthesis

Guest Editor:

**Dr. Morris D. Argyle**
Chemical Engineering Department, Brigham Young University, Provo, UT 84602, USA

Deadline for manuscript submissions:
**closed (15 October 2019)**

## Message from the Guest Editor

Fischer-Tropsch synthesis is a crucial technology to convert low-value carbon sources into high-value liquid hydrocarbons. Previous research has shown that the turnover frequency for supported cobalt catalysts increases with increasing cobalt crystallite size up to a critical diameter of approximately 6 nm and then becomes constant for larger crystallites. Simultaneously, selectivity to desired heavier hydrocarbons improves. However, for iron catalysts, an opposite trend of increasing rate of hydrocarbon formation with decreasing iron carbide particle size from 7 to 2 nm have been observed. These reports of the vital dependence of reaction rate and selectivity on active phase dimension and morphology, such as the relative importance of crystallite edges and corners compared to planes, highlight the critical relevance of nano-size effects to Fischer-Tropsch catalysis and have spawned investigations into synthesis and stabilization of optimized catalysts. This Special Issue is dedicated to exploration of these and related effects on improved rate, selectivity, and stability of nanoparticle Fischer-Tropsch catalysts and to deepen mechanistic understanding of their performance.