

Multi-Objective Optimization in Discrete Catalyst Dilution Zone of Fischer-Tropsch
Microchannel Reactor

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For the fabrication of effective, robust, and safe microchannel reactor, it is required to meet both heat transfer effectiveness and C_5^+ yield. There are several methods for controlling heat transfer coefficient such as reactor geometry and various types of coolant. Still, local reaction length temperature highly depends on catalyst dilution ratio nevertheless other factors affect to overall phase. In this research, catalyst was diluted, i.e., mixed with various amount of inert bead to pack the reactor channel discontinuously to manipulate the local temperature profile. Meanwhile, the C_5^+ productivity was simultaneously optimized to satisfy the economic feasibility, as well as the safety.