547e Effect of Microchannel Configuration and Bend Geometries on Dispersion in Micro-Channel Reactors

Adarsh D. Radadia, Richard Masel, Mark shannon, and Keith Cadwallader

The objective of this paper is to understand how microchannel bend geometry and channel configurations affect the performance of a microchannel reactor operating under laminar conditions. In particular, the performance of serpentine and spiral microreactors are compared for a simple test reaction 2 NH3 → N2 + 3 H2. The same channels when used in micro GC give different results for separation of compounds. It is expected that the spiral geometry will give better mixing than serpentine geometry. The paper will present RTD measurements done using methane pulses injected using a fast injection system and a fast FID. The channel reactor performance is characterized at various temperatures and is expected to show significant difference in performance as the bend geometry and channel configuration varies.