Supporting Information for

An NMR flow-tube for online NMR reaction monitoring

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Abstract

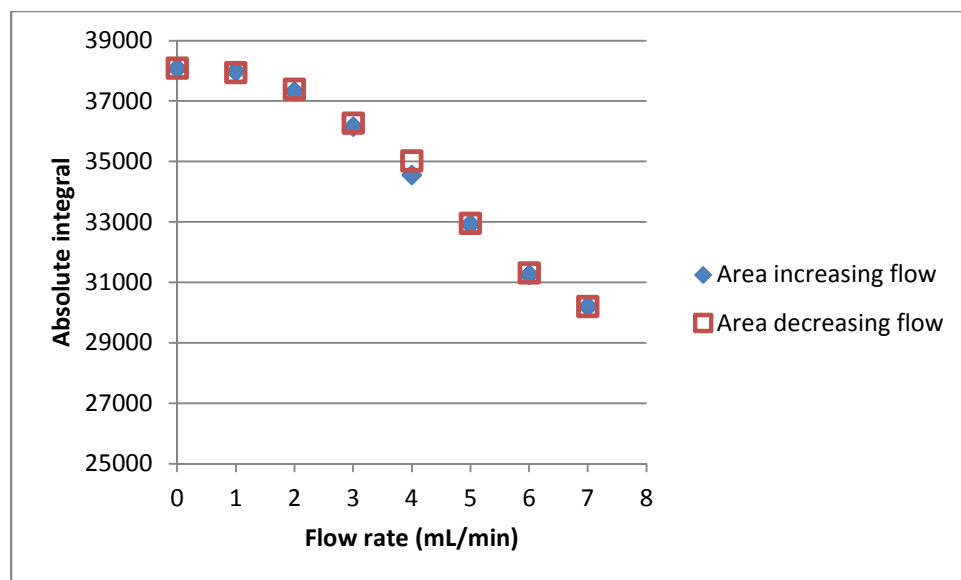Results of flow rate (Figure S-1 and S-2) and residence time distribution (Figure S-3) experiments.

Figure S-1. The effect of flow rate on the absolute integral of t-BuOH C(CH$_3$)$_3$ resonance. The flow rate was altered in 1 mL/min increments from 0 mL/min to 7 mL/min and was then decreased back to 0 mL/min. The integral was determined for both increasing and decreasing flow rates.
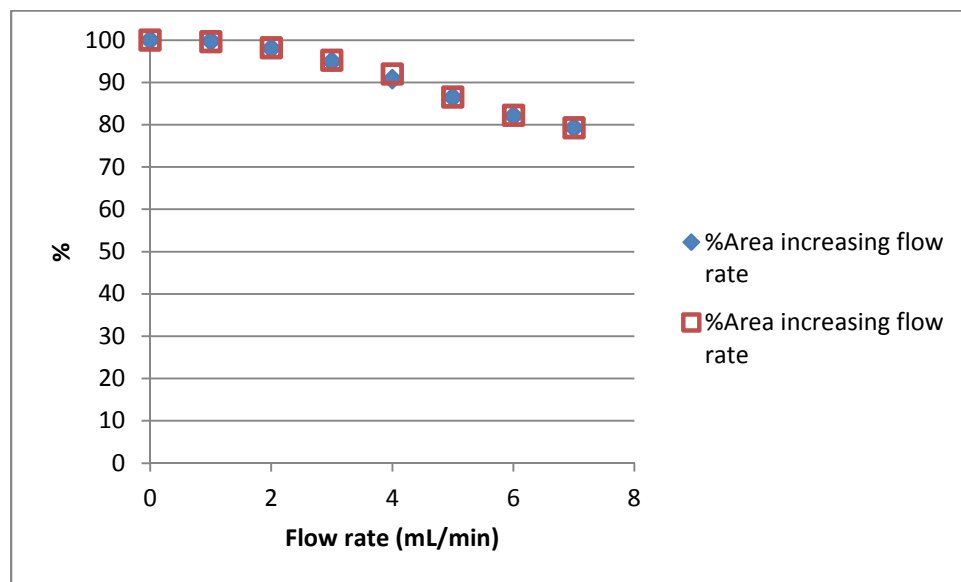

Figure S-2. The effect of flow rate on the relative % signal of t-BuOH C(CH$_3$)$_3$ resonance. The flow rate was altered in 1 mL/min increments from 0 mL/min to 7 mL/min and was then decreased back to 0 mL/min. The integral was determined for both increasing and decreasing flow rates. The relative % signal was calculated by dividing the absolute integral under flow conditions by that under non-flow and conversion to percent.
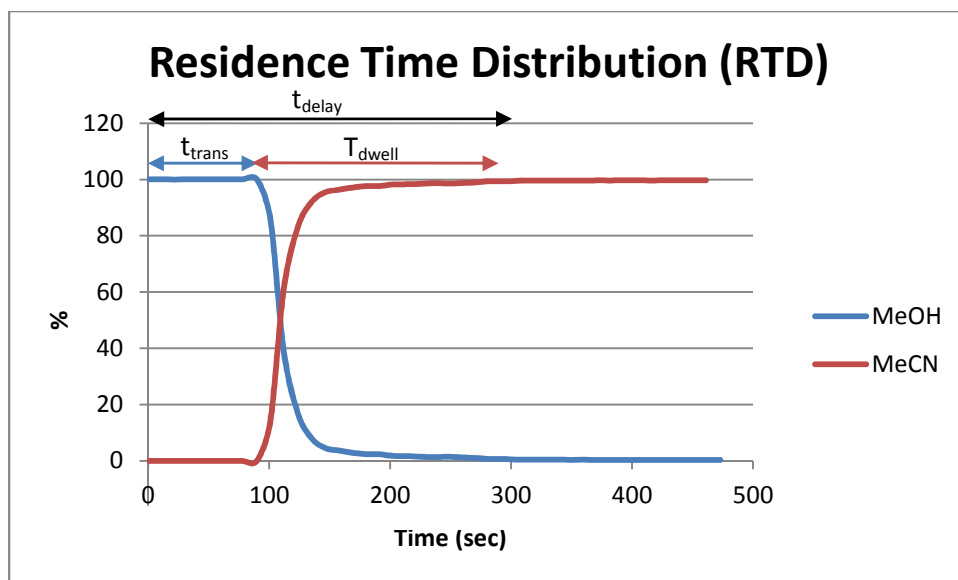
Figure S-3. Replacement of solution to measure the RTD function. The delay time t_{delay} is the sum of the transfer time t_{trans} and the residence time t_{dwell} in the flow tube.

$$\bar{t}_{res} = t_{trans} + (t_{dwell}/2)$$

$$\bar{t}_{res} = 90 + (200/2) = 190 \text{ sec} = 3.2 \text{ min}$$