

M16 Flow Switching Dynamics

The M16 microfluidic plate allows for automated solution switching. The flow rate through the inlet varies with applied pressure. The dynamics of this flow is characterized below.

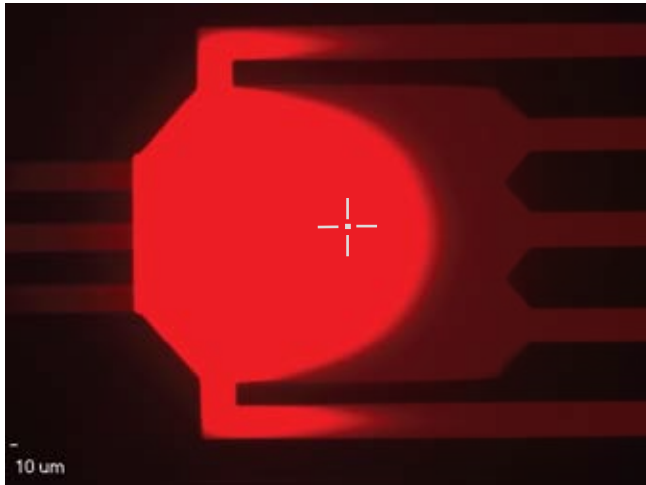


Figure 1: Fluorescence imaging of flow profile in the M16 cell chamber. (40x)

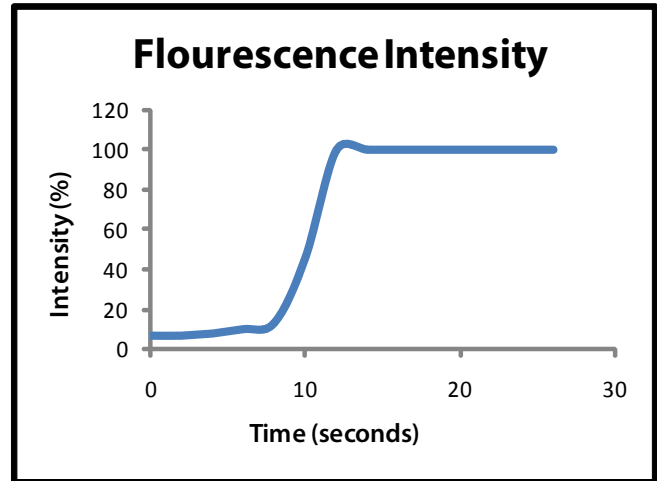


Figure 2: Timelapse fluorescence intensity at indicated point during flow switching.

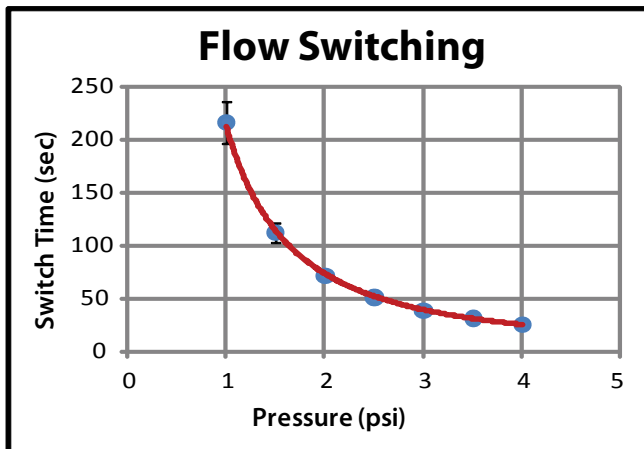


Figure 3: Time for fluid in chamber to be displaced over the pressure at which the fluid is flowed.

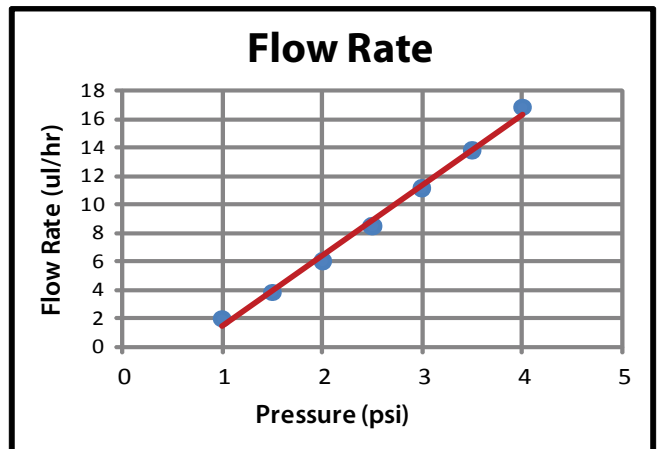


Figure 4: Flow rate of the fluid flow through the cell chamber as dependent of pressure.

Pressure (psi)	Flow Switching Time (sec)	Flow Rate (uL/hr)	Experiment Time (hrs)
1.0	216.061	1.999	150.043
1.5	112.474	3.841	78.107
2.0	71.786	6.018	49.851
2.5	51.102	8.454	35.487
3.0	38.878	11.112	26.999
3.5	31.336	13.786	21.761
4.0	25.757	16.772	17.887

Table 1: Values for flow switching time in seconds, flow rate in microliters per hours, and experiment time calculated based on a 300 uL starting volume in the inlet wells for a range of flow pressures.