

**Exercise 15**

The Villermaux-Dushman protocol was used to characterize the mixing in a circular micro-channel.

**Experimental data**

Flowrate (ml/min)	4	6	8	10	12
Absorbance (-)	0.623	0.463	0.355	0.320	0.258

**Physical properties and geometric factors**

Temperature:  $T = 298\text{ K}$

Kinematic viscosity:  $\nu = 10^{-6}\text{ m}^2 \cdot \text{s}^{-1}$

Concentration set used: 2b

Optical path length:  $l = 10\text{ mm}$

Micro-channel diameter:  $d_t = 0.5\text{ mm}$

Equal volumetric flowrates of both solutions

**Questions**

For each of the experimental data, calculate:

- The segregation index
- The power dissipation
- The mixing time

Plot the mixing time as function of the power dissipation.

Compare the  $t_{mx} = f(\varepsilon)$  data with the general relationships found for micromixers.