**Circular Channel (straight)**

***Basic Component description***

Straight channel with circular cross section

***Component Specs***

***List Input and Output nodes***

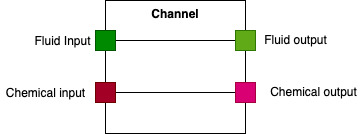


Figure 1: Example mixer diagram

One fluid output, one fluid output, input = output

One chem output, out chem output, input = output

in({P} [type] fluid input, {V} [type] chemical input)

out({P} [type] fluid output, {V} [type] chemical output)

This section will describe the individual connecting nodes of the component. The descriptions show be brief and should not contain any equations but describe the how the “signal” is changed from input to output. As well as any other information about the interaction of the nodes. We will need to describe whither the nodes are physical channels or are virtual nodes that contain information on the fluid, such as viscosity, chemical concentrations. This will need to additionally contain what type of information will be carried by the node (It would be bad to connect a node that contains chemical concentration to a fluid flow node). This will be paired with a diagram like above to visualize how the nodes are connected.

***Microfluidic Operations***

transport

***Component Geometric parameters***

(l | length, r | radius)

This section will describe the what geometric parameters exist for the component

***Virtuoso Description***

**OpenSCAD Description**

***Manufacturing Description***

This section will contain information of the process that is need to create the component. This will include information on the exposure profile, and how this changes throughout the part, and special post processing steps that need to be done.

***Component model***

This will be the complete mathematical description of the geometric parameters with the flow properties

Q = (pi\*r^4)/(8\*eta\*L)\*delta\_p

R\_hyd = (8\*eta\*l)/(pi\*r^4)

Q = flow rate

R\_hyd = hydraulic resistance

Eta = dynamic viscosity

Delta\_p = change in pressure

***References***

[1] H. Bruus. “Chapter 1: Governing Equations in Microfluidics.” *Microscale Acoustofluidics*, 2014, pp. 1-28. <https://pubs.rsc.org/en/content/chapterhtm/2014/bk9781849736718-00001?isbn=978-1-84973-671-8>