A novel metering component for volume management in flow-based microfluidic biochips - DTU Orbit (07/10/2019)

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Microfluidic biochips are replacing the conventional biochemical analysers integrating the necessary functions on-chip. We are interested in Flow-Based Microfluidic Biochips, where a continuous flow of liquid is manipulated using integrated microvalves. Using microvalves and channels, more complex Fluidic Units (FUs) such as switches, micropumps, mixers and separators can be constructed. To support the reliable and efficient functionality of these FUs, we propose a novel component that assures accurate fluid volume metering and transport. Using vents, trapped air is expelled from the chip, which allows to align fluid to a precise location and accurately meter its volume. Furthermore, can this component be used to detect erroneous (insufficient) fluid volumes. We have fabricated several prototypes to demonstrate and evaluate the functionality of our proposed component.

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