A059 ENGR

Design of Passive Flow Splitting Module for Microfluidics

Abstract

Microfluidics is the study of the behavior of fluids when constrained to miniature dimensions as well as term given to the devices containing chambers and channels through which the fluids flow are confined. Microfluidics are applicable in many fields such as biomedical engineering, and chemical engineering where studying small scale reactions are beneficial. The purpose of this project is to design a passive flow splitting module for microfluidics. Certain microfluidic processes require specific flow rates to be generated and consistently maintained for the system to operate seamlessly. This project aims to design a component that can, without using external power, divide one incoming flow of a fluid into two outgoing streams. We are modifying existing passive flow regulator designs since current passive flow regulators have several drawbacks, such as sophisticated design and single-channel output flow. When finished, the designs created will be tested through physical and computational methods. A cycle of designing and testing will continue until a component is created that has the dimensions and proper geometry to accomplish the goal.