

FSS microchannel fluid flow profile investigation at high and low Re number

Abstract

The fundamental understanding of dynamic fluid flow behavior in different geometry channel is crucial due to transport phenomena influence on the key design and process control of the microfluidic systems. Recently, the Computational Fluid Dynamics (CFD) technology has received priority to fully understand the performance of the microfluidic design. In this paper, simulation of liquid flow over forward facing step (FFS) microchannel has been explored using CFD-Ansys software. This work focused on velocity profiles for low and high Reynolds (Re) numbers. Different step heights were used as main parameter. The results revealed a parabolic profile across the x-axis channel. Besides that, recirculation zone is detected near the step for $Re=500$. An increase for step height value contributed to higher fluid flow velocity.

Keywords

Forward facing step; Microfluidic; Velocity profile