

Effect of Using Baffles Inside Spiral Micromixer

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Abstract : Microfluidic technology reveals a new area of research in drug delivery, biomedical diagnostics, and the food and chemical industries. Mixing is an essential part of microfluidic devices. There is a need for fast and homogeneous mixing in microfluidic devices. On the other hand, mixing is difficult to achieve in microfluidic devices because of the size and laminar flow in these devices. In this study, a hybrid passive micromixer of a curved channel with obstacles inside the channel is designed. The computational fluid dynamic method is employed to solve governing equations. The results show that using obstacles can improve mixing efficiency in spiral micromixers. The effects of Reynolds number, number, and position of baffles are investigated. In addition, the effect of baffles on pressure drop is presented. This novel micromixer has the potential to utilize in microfluidic devices.

Keywords : CFD, micromixer, microfluidics, spiral, Reynolds number

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