

Design of T-Junction to Improve Splitting Process of Reagent in Gas-Liquid Microfluidics

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Uniform reagent distribution is an important factor in a high-throughput microfluidic system, since it can significantly improve the user interface and simplify the reagent loading process. The uniformity of the reagent distribution depends on the geometrical design, roughness of the microchannel surface, and the surface property of the microchannel. The design of the T-junction significantly affects the uniformity of the reagent distribution, and this study focuses on the geometry design of this T-junction. Two microfluidic devices were manufactured with a micromilling machine: one was a standard T-junction and one was a modified T-junction with circular corners and a separator. Fifty experiments were performed in each microfluidic device. The results showed that the modified T-junction achieved better uniformity and reduced reagent loss during the reagent splitting process. The modified T-junction design can be applied in a high-throughput microfluidic device for rapid and uniform reagent distribution.

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