

## Flow inside Micro-Channel Bounded by Superhydrophobic Surface with Eccentric Micro-Grooves

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**Abstract :** The superhydrophobic surface is widely used to reduce friction for the flow inside micro-channel and can be used to control/manipulate fluid, cells and even proteins in lab-on-chip. Fabricating micro grooves on hydrophobic surfaces is a common method to obtain such superhydrophobic surface. This study utilized the numerical method to investigate the effect of eccentric micro-grooves on the friction of flow inside micro-channel. A detailed parametric study was conducted to reveal how the eccentricity of micro-grooves affects the micro-channel flow under different grooves sizes, channel heights, Reynolds number. The results showed that the superhydrophobic surface with eccentric micro-grooves induces less friction than the counter part with aligning micro-grooves, which means requiring less power for pumps.

**Keywords :** eccentricity, micro-channel, micro-grooves, superhydrophobic surface

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