

Abstract Submitted  
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**Low Reynolds number flow over slanted grooves in a micro-channel**<sup>1</sup> SUNGCHAN YUN, KWAN HYOUNG KANG, Pohang University of Science and Technology (POSTECH), ELECTROMICROFLUIDICS LABORATORY TEAM — A pressure driven flow over a micro-patterned geometry generates a transverse velocity component to the principal direction of flow. In the analysis of the flow inside a micro-channel, for simplicity of analysis, an effective slip velocity is applied to represent the transverse velocity developed by the slanted grooves. However, since the slip model is based on a periodically placed infinite length of linear grooves, the validity of model is limited only for shallow-depth grooves or thin channels. In this work, we investigated flow patterns near grooves in a closed channel based on three-dimensional numerical analysis, and the numerical results are verified experimentally through flow visualization. We found that the flow pattern becomes somewhat complicated, as the depth or width of the grooves is increased, which cannot be accounted for by the simple slip model. Based on the numerical results, we determined the range of depth and width of the grooves in which the effective slip model can be applied.

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Sungchan Yun  
Pohang University of Science and Technology (POSTECH)

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