Simulation of a Pressure Driven Based Subsonic Steady Gaseous Flow inside a Micro Channel Using Direct Simulation Monte-Carlo Method

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Abstract : For the analysis of flow inside micro geometries, classical CFD methods can not accurately predict the behavior of flow. Alternatively, the gas flow through micro geometries can be investigated precisely using the direct simulation Monte Carlo (DSMC) method. In the present paper, a pressure boundary condition is utilized to simulate a gaseous flow inside a micro channel using the DSMC method. Accuracy of simulation is guaranteed by choosing proper cell dimension and number of particle per cell analysis. Also, results of simulation are compared with the results of reliable references. Good agreement with results certifies the correctness of new boundary condition implemented on the micro channel.

Keywords : pressure boundary condition, DSMC, micro channel, cell dimension, particle per cell

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