Flows of a polymer liquid in channels with patterned and flat walls are considered by methods of Molecular Dynamics. We investigate the influence of corrugation, wettability and pressure inside the patterned channels onto slippage and friction at the solid-liquid interface. Owing to the friction at the edges of the substrate grooves, the friction coefficient of the liquid in Cassie state differs from the macroscopic expectation. It may even lead to the friction exceeding the one at flat substrates and reduce the slippage.

We also demonstrate that a single setup of the flow is insufficient for correct application of Navier partial-slip boundary condition, as it has two independent parameters, the slip and the hydrodynamic position. The later specifies the position where viscous and frictional stresses are balanced, and is a function of the pressure along the channel. Therefore, two independently created flows should be used to define the hydrodynamic parameters of the liquid unambiguously.