Abstract Submitted
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Investigating the gas cushion model for nano-structured superhydrophobic surfaces[1] JASON REESE, SRINIVASA RAMISETTI, MATTHEW BORG, University of Edinburgh, DUNCAN LOCKERBY, University of Warwick — We investigate the water slip properties of different nano-structured surfaces using non-equilibrium molecular dynamics (NEMD) simulations. We predict the fluid slip lengths of surface coatings comprising carbon nanotubes on platinum substrates, with nitrogen gas trapped in the interstitial gaps. Our NEMD results do not support the gas-cushion model proposed by Vinogradova (Langmuir 11:2213-2220, 1995) as this does not account for the rarefied gas effects present in nano/micro gas layers. We therefore propose a slip gas-cushion model which incorporates some of the rarefied gas effects and agrees better with our NEMD slip length calculations.

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