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Thermal Deflection of Nanojets WEI KANG, UZI LANDMAN, School Of Physics, Georgia Institute of Technology — Generation of fluid jets of reduced sizes, down to the nanoscale [1], is a topic of continuing interest from both basic science and technological perspectives. One of the challenges pertains to the ability to control the direction of propagation of the jet. For macroscopic jets, including those with radii in the several micron range, a common method to vary the propagation direction is through the deflection of charged droplets, or as suggested more recently, via asymmetric heating that affects the surface tension and viscosity of the jet. Here we discuss a jet-bending method based on asymmetric heating of a fluid flowing in a cylindrical nozzle, where the main contribution to the deflection of the emanating nanojet is due to asymmetric evaporation near the exit, which results in a directional thrust that deflects the nanojet. Molecular dynamics simulations demonstrating bending of propane nanojets are discussed. [1] M. Moseler, U. Landman, Science 289, 1165 (2000) ; W. Kang, U. Landman, Phys. Rev. Lett. 98, 064504 (2007).

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