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Collision of Nanoscale Jets GANESH BALASUBRAMANIAN, ISHWAR K. PURI, Virginia Polytechnic Institute and State University — We use Molecular Dynamics simulations to investigate the collision of nanojets and the overall strain rate from the resulting velocity distribution. Liquid is retrained between two walls, one of which has an orifice of 5nm radius. Liquid is squeezed by the solid wall and forced out of the pore to form a nanojet. We focus on the interaction of two such opposing jets, whose exits lie on the same axis and are separated by few tens of molecular diameters. The averaged velocity distribution shows an initial rise from the jet exit to a few molecular layers and then linearly decays to half the separation distance between the exits. The length over which the velocity uniformly reduces conforms to the continuum results for strain rate. The transient nature of strain rate varies since pressure across the orifice changes with time. Strain rate results for different rates of squeezing at different times are presented. Further, to investigate the applicability of a mesoscopic modeling for the problem, we apply Lattice Boltzmann Method and attempt to achieve a better understanding of the fluid dynamics post collision.

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