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**Transporting Microparticles Using a Conveyor Belt of Artificial Cilia** AMITABH BHATTACHARYA, Department of Chemical Engineering, University of Pittsburgh, GAVIN BUXTON, Department of Science, Robert Morris University, ALEXANDER ALEXEEV, Department of Mechanical Engineering, Georgia Institute of Technology, O. BERK USTA, Harvard Medical School, ANNA C. BALAZS, Department of Chemical Engineering, University of Pittsburgh — We present results from simulations of particle transport in a fluid microchannel via a regular array of actuated cilia. For each cilium, one end is tethered to the wall, while the other end is actuated by an external periodic force. This leads to a time-asymmetric, cyclic motion for each cilium. We study the motion of a microparticle in the fluid due to the cilia actuation. An adhesive force between the particle and cilia enables a transport mechanism for the particle in which the particle is passed from one cilium to the next cilium in the array. The particle is also dragged forward by flow in the channel, induced by the time-asymmetric motion of the cilia. The simulations are performed using the Lattice Boltzmann Method for the flow, with a chain of point-forces, connected by springs, used to represent each cilium. We will present the parameter regime where the most effective transport of the particle occurs due to the combination of cilia-particle adhesion and fluid motion.

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