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Electrokinetic micropumps for microfluidics GAURAV SONI[1], CARL MEINHART[2], University of California Santa Barbara — We have designed and fabricated novel electrokinetic micropumps for producing unidirectional flows in microchannels. These pumps utilize very small voltages (15 Volts) to create significant flow velocities (100 microns/s). Low voltages reduce the problem of electrolysis and bubble formation inside the microchannels. One type of the pump is based on DC electroosmosis and requires a DC voltage drop across a serpentine wire. This serpentine shaped wire is located at the bottom of a microchannel. Application of a DC potential drop produces induced charges close to the wire surface. Induced charge moves under the influence of local electric field produced by the DC voltage. The serpentine wire is based on the design reported by Gagnon et al., 05.

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