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Continuous-flow Electrokinetic Particle Separation in a Bifurcating Microchannel. DI LI, XINYU LU, XIANGCHUN XUAN, Clemson University — Separating particles from a heterogeneous mixture is important and necessary in many engineering and biomedical applications. Electrokinetic flow-based continuous particle separation has so far been realized primarily by the use of particle dielectrophoresis induced in constricted and/or curved microchannels. We demonstrate in this talk that particles can be continuously separated by size when passing through a bifurcating microchannel. This sheathless label-free separation relies on the wall-induced electrical lift force that acts to focus particles to the center of the main-branch and deflect them to size-dependent flow paths in the two side-branches. We also develop a numerical model to predict and understand this separation.

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