Abstract Submitted
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Extremely-low-frequency dielectrophoretic particle focuser in an "infinite" microchannel.[1] AMIRREZA MALEKANFARD, Clemson Univ, WUZHOU ZU, APOLLO WOLFERSBERGER, XIANGCHUN XUAN, Clemson University — Insulator-based dielectrophoresis is an emerging technique that has been demonstrated for the passive focusing of particles under direct current electric fields. Increasing the number of insulators results in an enhanced focusing as the particle exposure to the dielectrophoretic force is extended. In this work, we explore the possibility of expanding the particle exposure to dielectrophoresis via the use of extremely low frequency (ELF) alternating current electric field. In other words, instead of increasing the number of insulators and hence the length of the microchannel under the conventional direct current electric field, we use the ELF electric field to pass the particles through the same insulator multiple times to achieve the dielectrophoretic focusing in a practically infinite microchannel. We demonstrate this focusing with both polystyrene particles and biological cells in a ratchet microchannel.

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