

Abstract Submitted  
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**Microfluidic pumps based on AC electro-osmosis: non-linear effects** ARMAND AJDARI, PCT-ESPCI-CNRS, VINCENT STUDER, LPN-CNRS, CHEN YONG, LPN-CNRS, ANNE PEPIN, LPN-CNRS, PCT-ESPCI TEAM, LPN-CNRS TEAM — We report on experiments demonstrating the possibility to pump electrolyte solutions in closed microchannel loops using asymmetric arrays of micro-electrodes addressed with AC voltages. Velocities of a few mm/s can be obtained with voltages of a few Volts in this integrable pumping scheme. The variation of pumping velocity with frequency, amplitude and ionic strength demonstrate the occurrence of complex mechanisms, far beyond the quasi-linear models present in the literature. In particular a reversal of the pumping direction at high frequencies is reported, which could be of practical use.

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