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Probing electrokinetics in microchannels and nanochannels with electrochemical measurements¹ JARROD SCHIFFBAUER, SINWOOK PARK, GILAD YOSSFON, Technion, Israel Institute of Technology, Faculty of Mechanical Engineering, Miro-Nanofluidics Laboratory — We present a brief review of recent experimental and theoretical results concerning the use of electrochemical impedance spectroscopy (EIS,) in conjunction with other electrochemical measurements (chronoamperometry, linear sweep voltammetry,) to characterize the response of micro- and nanofluidic systems. Using these techniques, the interplay between conduction, diffusion, and convection are probed across a range of time- and length scales. The resulting information permits characterization of the respective roles of processes in both micro- and nanochannel regions of a fluidic device. Such techniques provide a useful probe of transient behavior at the micro-nanochannel interface, have great potential in biomolecular sensing applications, and may be useful in the study of surface properties at the fluid-solid interface.

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