

Over-limiting Conductance in open and confined systems.

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I will talk about what we have been doing with Isaak Rubinstein for a very long time concerning the overlimiting conductance in concentration polarization. I will address the three main mechanisms for over-limiting conductance : Non-Equilibrium Electro-osmotic Instability in open system, Electro-osmotic flow/pressure driven back flow mixing in a micro-channel adjacent to a perm-selective membrane, surface conduction induced desalination shock in nano- and micro-channels. Questions: how do these mechanisms relate? Where does a narrow channel begin? What are the ranges of parameters in which each of those mechanisms dominate? Answering these questions is the purpose of this talk.