

Abstract Submitted
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Enhancement of charged macromolecule capture by nanopores in a salt gradient TOM CHOU, UCLA — We propose a simple electrokinetic mechanism of enhanced charged particle capture to nanopores that connect two reservoirs of different ionic strength. The mechanism relies on the electrostatic potential near the pore mouths. For long pores with diameter much greater than the local screening length, we obtain accurate analytic expressions showing how salt gradients control the local conductivity which can lead to increased local electrostatic potentials and charged analyte capture rates. We also find that the attractive electrostatic potential may be balanced by an outward, repulsive electro-osmotic flow that can in certain cases conspire with the salt gradient to further enhance the analyte capture rate.

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