Supplementary Material
Chemoosomotic Flow in a Soft Conical Nanopore: Harvesting Enhanced Blue Energy

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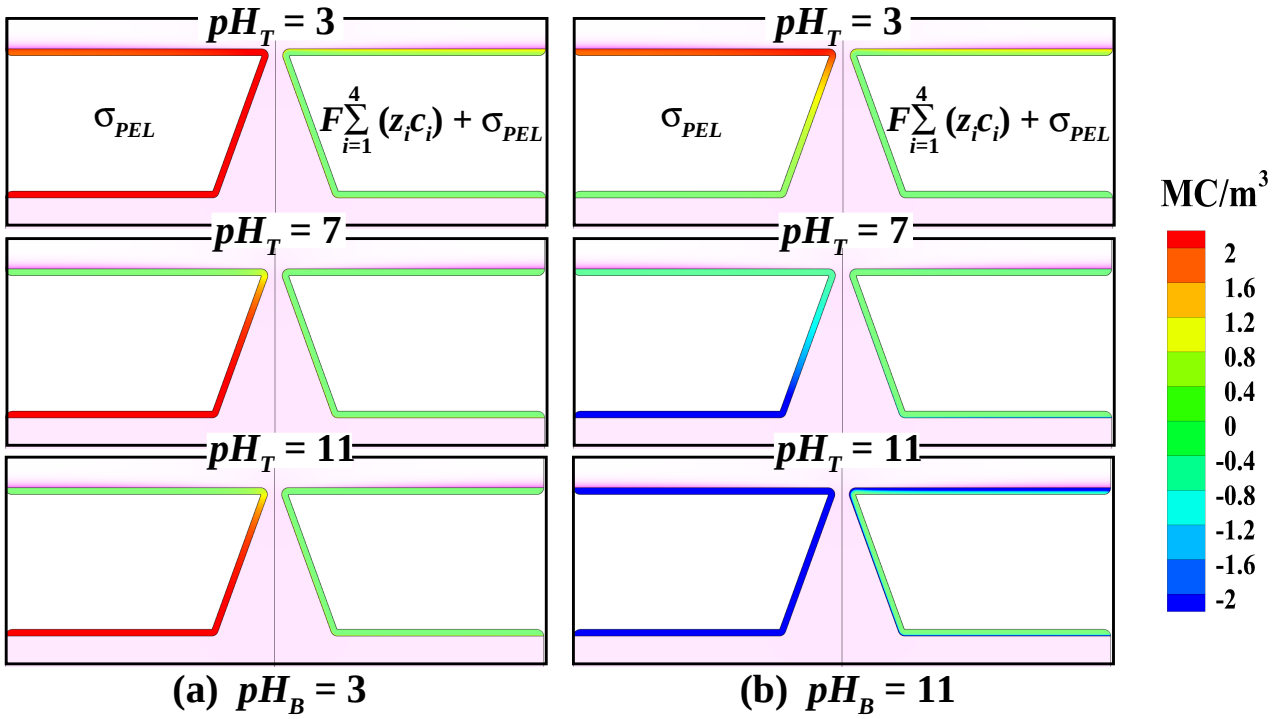

Figure S1: pH-dependent space charge density σ_{PEL} (left side) and total space charge density $F\sum_{i=1}^{4} z_i c_i + \sigma_{PEL}$ (right side) are shown for two extreme values of (a) $pH_B = 3$ and (b) $pH_B = 11$ with $pH_T = 3, 7, 11$; $c_B = 10^3$ mM, $c_T = 10$ mM.

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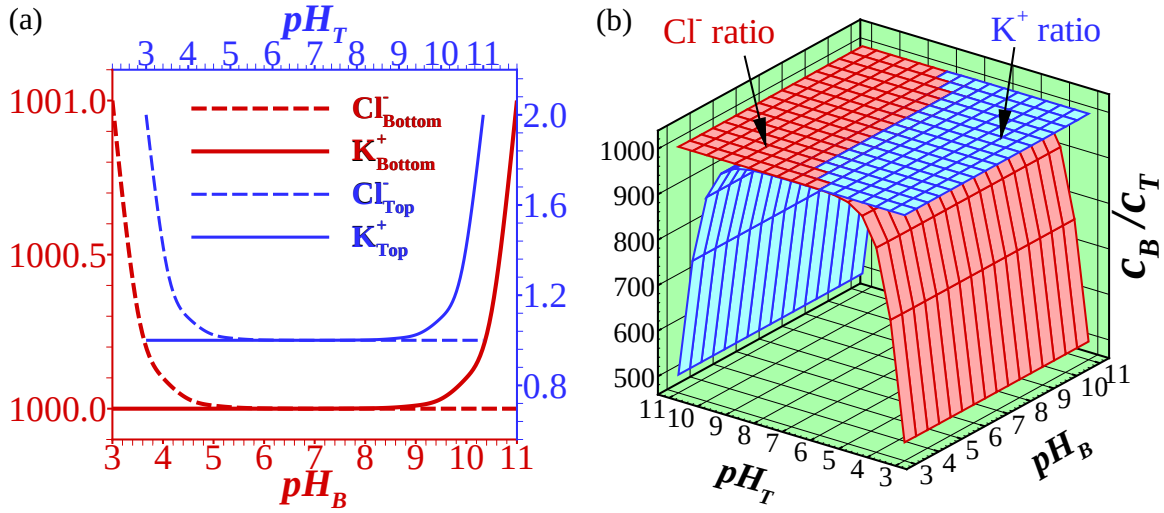

Figure S2: At $c_B = 10^3$ mM and $c_T = 10^0$ mM, the (a) bulk concentrations and (b) concentration ratios of K^+ and Cl^- ions at the ends of the bottom and top reservoirs as a function of pH_B and pH_T.

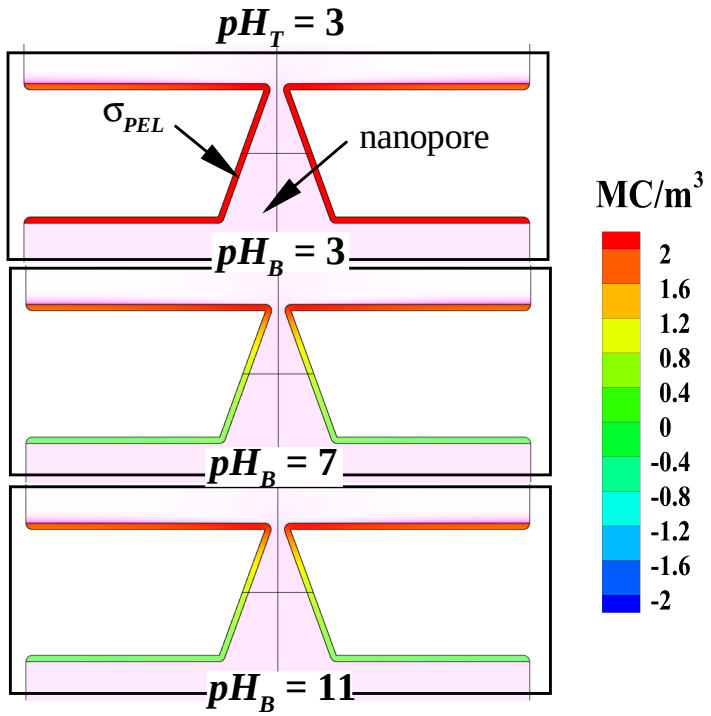

Figure S3: pH-dependent space charge density σ_{PEL} is shown at $pH_T = 3$ and $pH_B = 3, 7, 10$, $c_B = 10^3$ mM, $c_T = 10$ mM.

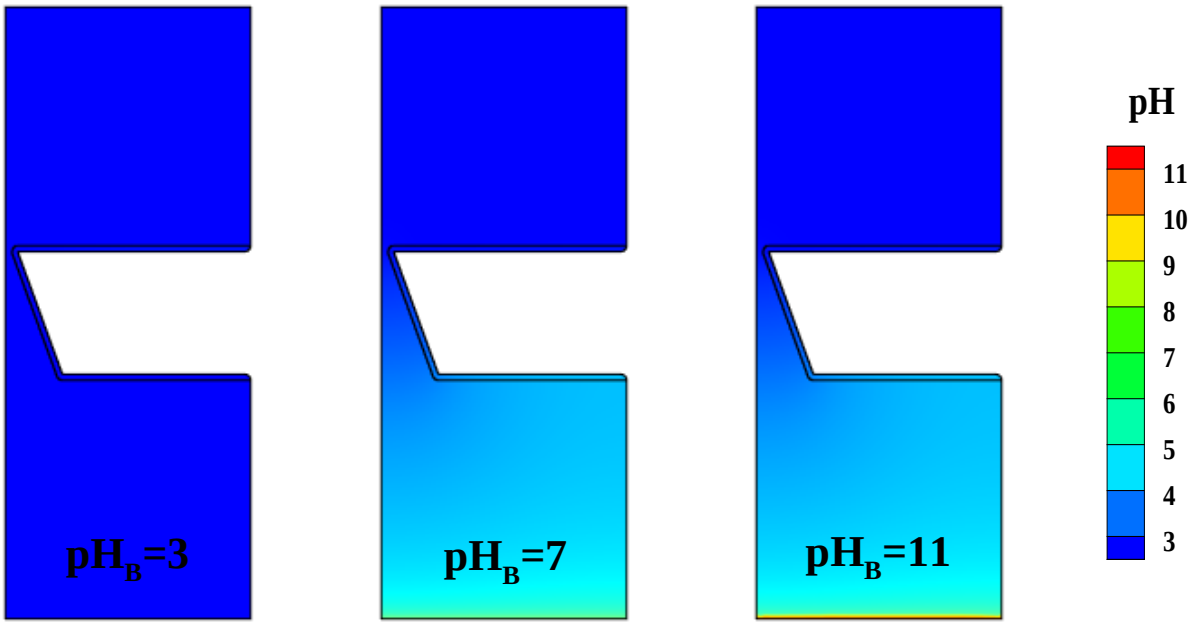

Figure S4: pH of the KCl electrolyte solution at $pH_T = 3$, $pH_B = 3, 7, 10$, $c_B = 10^3$ mM, and $c_T = 10$ mM.

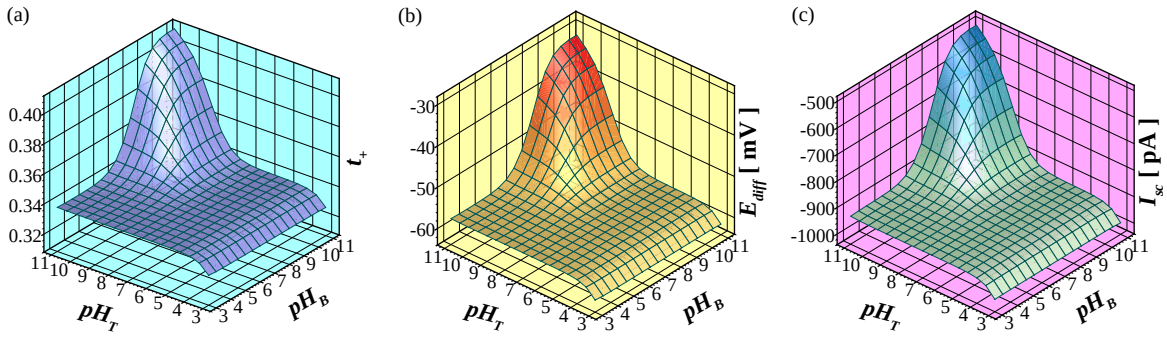

Figure S5: (a) Transference number t_+, (b) open circuit voltage E_{diff}, (c) short circuit current I_{sc} as a functions of pH_B and pH_T at $c_T = 1$ mM and $c_B = 10^3$ mM for LiCl solution.

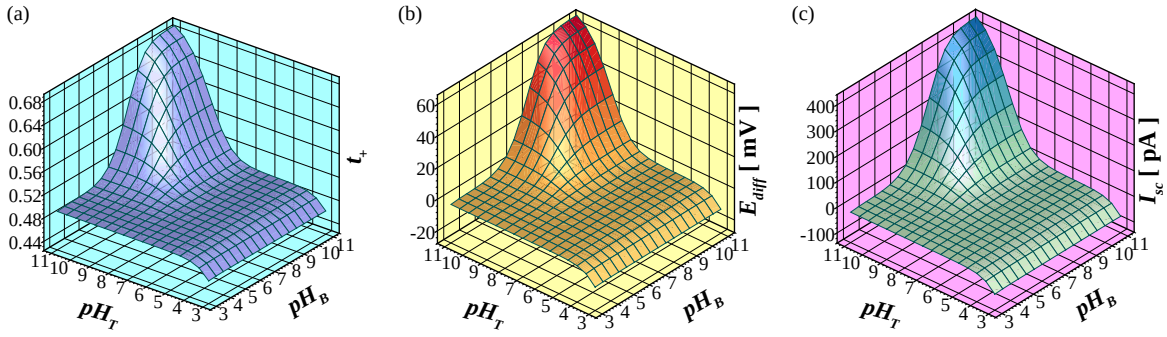

Figure S6: (a) Transference number t_+, (b) open circuit voltage E_{diff}, (c) short circuit current I_{sc} as a functions of pH_B and pH_T at $c_T = 1$ mM and $c_B = 10^3$ mM for KCl solution for cylindrical nanopore.

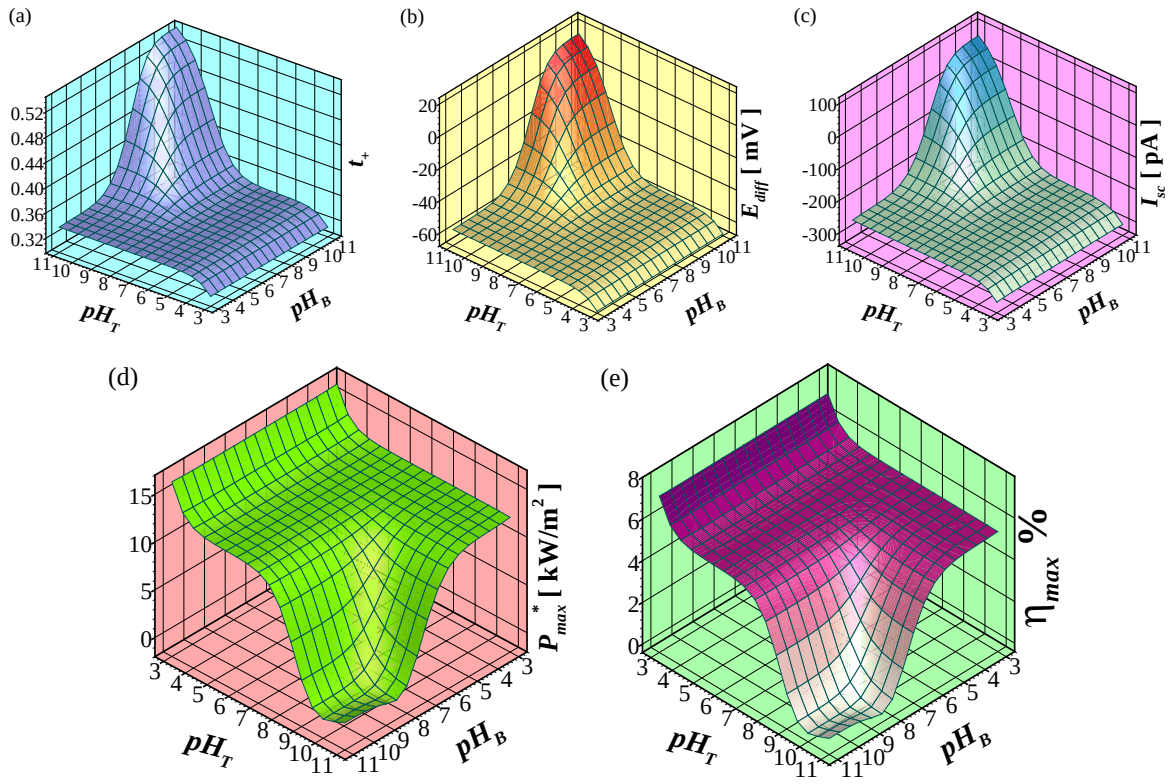

Figure S7: (a) Transference number t_+, (b) open circuit voltage E_{diff}, (c) short circuit current I_{sc}, (d) maximum power density P^*_{max}, and (e) maximum efficiency η_{max} as a functions of pH_B and pH_T at $c_T = 1$ mM and $c_B = 10^3$ mM for LiCl solution for cylindrical nanopore.

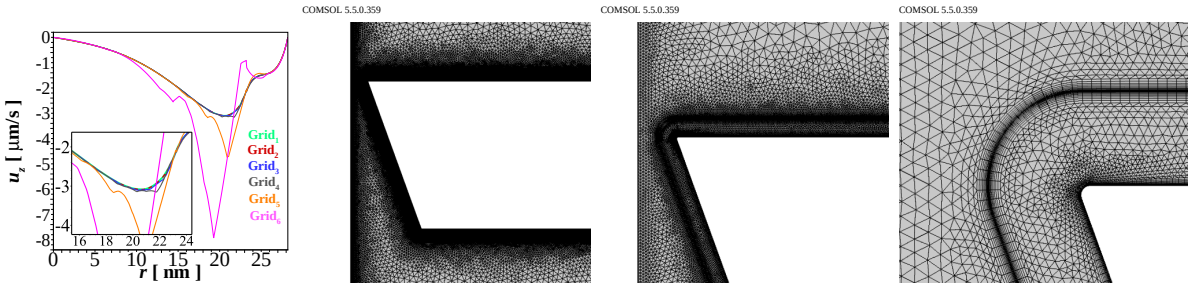

Figure S8: (a) Axial velocity profiles at the middle of the computational domain for a different sets of grid distributions. Here the different grids (1 to 6) corresponds to 81625 (53565+28060), 68963(=50303+18660), 31560(=21960+9600), 21074(=14454+6620), 14300(=9840+4460), and 10717(=7657+3060) elements (triangular+quads). (b-d) Optimal grid distribution (Grid$_2$) in the vicinity of the conical nanopore is presented; (c) and (d) zoomed in near the tip region.