

Supplementary Materials: Approximate Solution for Electroosmotic Flow of Power-Law Fluids in a Planar Microchannel with Asymmetric Electrochemical Boundary Conditions

WooSeok Choi, Sungchan Yun * and Du-Soon Choi *

Maximum Velocity Differences

Table S1 and S2 shows the maximum velocity error u_{er} defined as $u_{er} = (u_{ma} - u_{mn})/u_{mn} \times 100$, where u_{ma} is the maximum velocity obtained from the approximate solution and u_{mn} is the maximum velocity obtained from the numerical analysis for various fluid behavior index and Debye length with a fixed zeta potential ratio.

Table S1. Flow rate error (%) between approximate solution and numerical analysis at $Z_R = 1.5$.

Fluid Behavior Index (n)	$L_D = 0.001$	$L_D = 0.01$	$L_D = 0.05$	$L_D = 0.1$
1.2	-0.13	-0.55	-1.50	-1.86
1.1	-0.09	-0.34	-0.89	-1.09
1.0	-0.04	-0.01	0.00	-0.01
0.9	0.07	0.53	1.27	1.55
0.8	0.28	1.43	3.17	3.81

Table S2. Flow rate error (%) between approximate solution and numerical analysis at $Z_R = 0.5$.

Fluid Behavior Index (n)	$L_D = 0.001$	$L_D = 0.01$	$L_D = 0.05$	$L_D = 0.1$
1.2	-0.15	-0.77	-2.07	-2.71
1.1	-0.10	-0.46	-1.21	-1.57
1.0	-0.01	-0.01	-0.01	0.00
0.9	0.13	0.70	1.71	2.19
0.8	0.42	1.86	4.24	5.33