

Abstract Submitted
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Ac electroosmotic flows above coplanar electrodes YONG KWEON SUH, Department of Mechanical Engineering, Dong-A University — Interactive numerical method has been proposed to calculate the ac electroosmotic flows above a pair of coplanar electrodes. The thin electrical triple layer (ETL) has been modeled by an asymptotic theory developed by the authors. The model corresponds to a simple dynamic equation for the surface charge density representing the integrated charge over the inner layer. Interactive calculation of the dynamic equation and the Laplace equation for several periods of ac frequency then yielded steady-state distribution of potential and the potential drop across the Stern and inner layers. The Smoluchowski's slip velocity was then determined from those two set of data and used as the boundary condition for the calculation of the Stokes' flow above the electrodes. We have shown that our solutions compared well with the experimental data reported in the literature. We investigated the effect of various parameters on the slip velocity distribution, such as the ac frequency, the electrode length, the effective Stern-layer thickness and the adsorption coefficients.

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