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A concept of concentration choice for electrical double layer overlapped K.-D. HUANG, R.-J. YANG, National Cheng Kung University — The electrokinetic phenomena under electrical double layer (EDL) overlapped condition present different results estimated by Gouy-Chapman model, especially the conductance and streaming current. In this study, we use the concept of concentration choice to estimate the streaming current, potential, and the electroviscous effect for the EDL from non-overlapped to overlapped condition. Analytical scaling and numerical simulations are used to investigate the problem. The results reveal that the concentration of net charge dominates the system under the EDL overlapped condition, which shows the streaming current is independent on the concentration of electrolyte. The maximum elctroviscous effect occurs at a specific concentration. The present results reveal that under double layer overlapped, noticeable variations in the ionic transport phenomena occur when comparing to that for the double layer non-overlapped.

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