

Influence of steric effects of Ionic Liquid in a nanochannel –2 Dimensional Study

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Electric Double Layer has great influence on liquid flows in nanochannels. Most of the nanochannels have circular or rectangular cross-section. Hence, there is a need to undertake thorough investigation of EDL effect in two dimensional nanochannels. Also, Ionic liquids have different characteristics unlike conventional electrolytes. Steric effect of ionic liquid in a rectangular cross-sectional nanochannel is analyzed. Modified Poisson-Boltzmann equation is used as the governing equation for the study of EDL overlapping phenomena in the nanochannel. Ionic concentration and osmotic pressure are estimated using the electric potential distribution. A numerical study is undertaken to solve this problem as it is highly nonlinear to solve it analytically. An analysis is also made to study effects of overscreening parameters of ionic liquid in the nanochannel.