

國立交通大學應用數學系

學術演講公告

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講 題：Steady-state Poisson-Nernst-Planck equations with charge
non-neutrality constraint: one-dimensional and radial configurations

時 間：104 年 12 月 22 日(星期二) 下午 2:00 – 3:00

地 點：(光復校區) 科學一館 223 室

茶 會：當天下午 1:30 (科學一館 205 室)

Abstract

In order to investigate the behavior of the thin double layer (DL) in electrolyte solutions, we treat a Poisson-Nernst-Planck (PNP) equation as the basis and investigate the asymptotic behavior of the boundary layer of its steady-state solutions. Under the non-electroneutrality, we show that solutions approach the (pointwise) electroneutrality and have quite strong non-electroneutrality near the boundary. Such a result can be found in the experiment of the redox reaction. Moreover, we establish the exact first two order terms of the asymptotic expansion of solutions which provides a point of view to see the influence of ionic concentrations and charge valences on the DL. These results provide a basic understanding of the DL structure at the charged surface and on the behavior of the electrostatic potential in the bulk, both at a theoretical level and for practical applications.

敬請公告 歡迎參加

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