The Hong Kong Polytechnic University
Department of Applied Mathematics

Colloquium

Modified Poisson-Nernst-Planck equations with many-body effects

by

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Abstract

Dielectric-boundary and ion correlation effects play important role in many soft matter and electrochemical energy systems at the nano/micro scale. We develop a modified Poisson-Nernst-Planck model to include these many-body properties in electrolytes, which also takes the ion-size effect into account and is expected to provide more accurate prediction for ion dynamics with microscopic confinement. We discuss asymptotic and numerical strategies to solve the resulted PDEs, validate the model by Monte Carlo particle simulations, and report the study on the effect of ion correlation and dielectric boundary in different applications.

Date : 31 August, 2016 (Wednesday)
Time :   11:00a.m. – 12:00noon
Venue : TU801, The Hong Kong Polytechnic University

* * *   ALL ARE WELCOME   * * *