



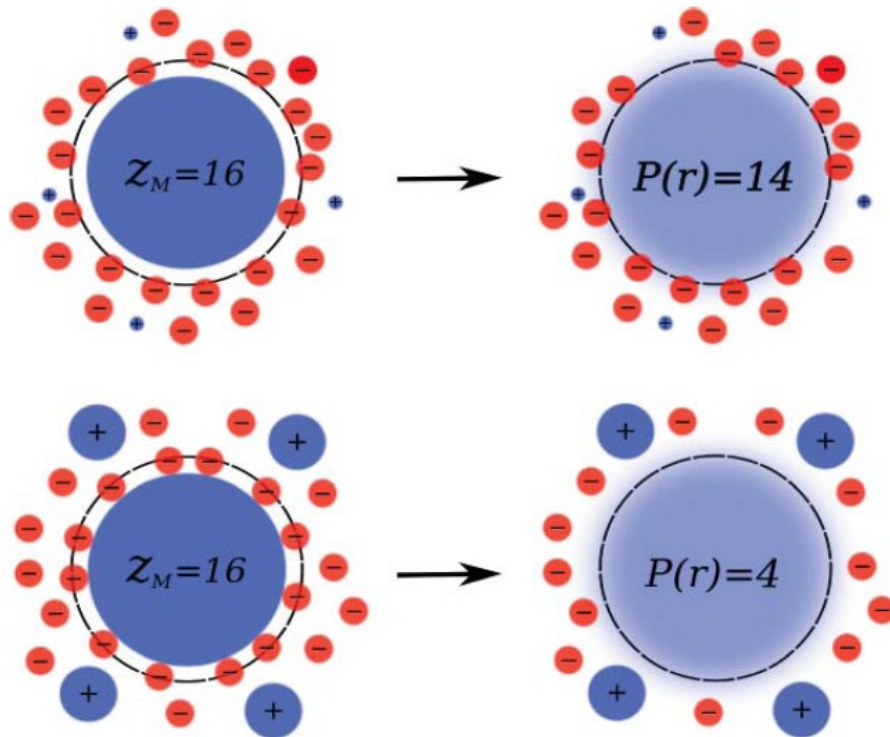
Entropic effects in the electric double layer of model colloids with size-asymmetric monovalent ions



Guillermo Iván Guerrero-García¹, Enrique González-Tovar², and Mónica Olvera de la Cruz¹

¹ Department of Materials Science & Engineering, Northwestern University, Evanston, IL, USA

² Instituto de Física, UASLP, San Luis Potosí, San Luis Potosí, México



Using Monte Carlo simulations and integral equations, we determine the highest charge neutralization and electrostatic screening near a spherical electrified surface in the presence of several size-asymmetric monovalent ions. Specifically, for two binary monovalent electrolytes with the same counterion properties but differing only in the coion's size, the one with the largest coion size is found to promote the largest charge neutralization and electrostatic screening. That is, in size-asymmetric double layers with a given counterion's size the excluded volume of coions dictates the adsorption of the ionic charge close to the colloidal surface for monovalent salts.