

Abstract Submitted
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Analytic Thermodynamic Calculations for an Immobilized Molecule under Poisson-Boltzmann Interactions using a Spheroidal Geometry JOAQUIN AMBIA-GARRIDO, BERNARD MONTGOMERY PETTITT, University of Houston — The change in some thermodynamic quantities such as Gibbs' free energy, entropy and enthalpy of the binding of a particle tethered to a surface or particle are analytically calculated. These particles are considered ellipsoids and submerged in a liquid. The ionic strength of the media allows the linearized version of the Poisson-Boltzmann equation (from the theory of the double layer interaction) to properly describe the interactions between an ion penetrable spheroid and a hard plate. We believe that this is an adequate model for a DNA chip and the predicted electrostatic effects suggest the feasibility of electronic control and detection of DNA hybridization and design of chips, avoiding the DNA folding problem.

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