

## Electrostatic interaction between two cylindrical particles: Effect of orientation and counter ion valency

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Understanding on the fundamentals on the colloidal particle interaction is of keen interest in many suspension system. In this study, the electrostatic repulsive energy between two cylinders was investigated by solving nonlinear Poission-Boltzmann (P-B) equation under Derjaguin approximation. Comparing to the cases of isotropic particles, the interaction between cylindrical particles is dependent to lots of physicochemical parameters such as surface potential, Debye screening length, counter ion valency, and configuration of cylinders. The numerical calculation of the interaction between cylindrical particles proved that the repulsive energy increased with the counter ion valency at short separation distance. Furthermore, cylinders aligned in end-to-end configuration showed largest repulsive energy and crossed particles had lowest interaction energy. The approach and results present in this study would be applicable in predicting colloidal behavior of cylindrical particles.