

1. Record Nr.	UNINA9910787575903321
Titolo	Electrostatics of soft and disordered matter // edited by David Dean, Jure Dobnikar, Ali Naji, Rudolf Podgornik
Pubbl/distr/stampa	Boca Raton, FL : , : CRC Press : , : Pan Stanford Publishing, , [2014] ©2014
ISBN	0-429-16837-3 981-4411-85-X
Descrizione fisica	1 online resource (434 p.)
Disciplina	537.2
Soggetti	Electrostatics Electrostatics - Industrial applications
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Front Cover; Contents; Preface; Introduction; Chapter 1 Surprising Challenges; Chapter 2 A Field Theory Approach for Modeling Electrostatic Interactions in Soft Matter; Chapter 3 Extended Poisson-Boltzmann Descriptions of the Electrostatic Double Layer: Implications for Charged Particles at Interfaces; Chapter 4 Aspects of One-Dimensional Coulomb Gases; Chapter 5 Electrostatics in Electrolytes Expressed in an Exact Formalism Reminiscent of the Poisson-Boltzmann Picture; Chapter 6 Legendre Transforms for Electrostatic Energies Chapter 7 Ionic Liquids and Ionic Liquid + Solvent Mixtures, Studied by Classical Density Functional Theory Chapter 8 The Wigner Strong-Coupling Approach; Chapter 9 Moderately Coupled Charged Fluids Near Dielectric Interfaces and in Confinement; Chapter 10 Dielectric Profiles and Ion-Specific Effects at Aqueous Interfaces; Chapter 11 Hydration Repulsion between Polar Surfaces: An Atomistic Simulation Approach; Chapter 12 The Electrode-Ionic Liquid Interface: A Molecular Point of View; Chapter 13 Modeling Electrokinetics through Varying Length and Time Scales Chapter 14 Polarizable Surfaces: Weak and Strong Coupling Regimes Chapter 15 Coarse-Grained Modeling of Charged Colloidal Suspensions: From Poisson-Boltzmann Theory to Effective Interactions;

Chapter 16 Many- Body Interactions in Colloidal Suspensions; Chapter 17 Controlling the Fluid- Fluid Mixing- Demixing Phase Transition with Electric Fields; Chapter 18 Dynamic Electric Response of Charged Fibrous Virus (fd) Suspensions: Interactions of Charged Colloidal Rods in AC Electric Fields; Chapter 19 Statistical Thermodynamics of Supercapacitors and Blue Engines
Chapter 20 Cluster Phases in Colloids and ProteinsChapter 21 Estimation of Solvation Electrostatic Free Energy of Biomolecular Systems by Numerical Solution of the Poisson- Boltzmann Equation; Chapter 22 Modeling DNA in Nanopores; Chapter 23 Mean- Field Electrostatics of Stiff Rod- Like Ions; Chapter 24 Physics of Counterion- Mediated Attractions between Double- Stranded DNAs; Chapter 25 Coulomb Interactions between Disordered Charge Distributions; Chapter 26 Short- Range Disorder and Electrostatic Interactions in Macromolecules
Chapter 27 Interaction between Disordered Heterogeneous Charged SurfacesBack Cover

Sommario/riassunto

Recently, there has been a surge of activity to elucidate the behavior of highly charged soft matter and Coulomb fluids in general. Such systems are ubiquitous, especially in biological matter where the length scale and the strength of the interaction between highly charged biomolecules are governed by strong electrostatic effects. Several interesting limits have been discovered in the parameter space of highly charged many-particle Coulomb matter where analytical progress is possible and completely novel and unexpected results have been obtained. One of the challenges in highly charged mat
