

| | |
|-------------------------|--|
| 1. Record Nr. | UNINA9910736999403321 |
| Autore | Van Oss Carel J |
| Titolo | The properties of water and their role in colloidal and biological systems // Carel Jan van Oss |
| Pubbl/distr/stampa | Amsterdam ; ; London, : Elsevier/Academic Press, 2008 |
| ISBN | 1-281-91122-4 9786611911225 0-08-092157-4 |
| Descrizione fisica | 1 online resource (239 p.) |
| Collana | Interface science and technology ; ; v. 16 |
| Disciplina | 546.22 |
| Soggetti | Water - Analysis Water - Properties Surface chemistry Surfaces (Physics) |
| 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 and index. |
| Nota di contenuto | Front cover; The Properties of Water and their Role in Colloidal and Biological Systems; Copyright page; Contents; Preface; Chapter 1. General and Historical Introduction; Preamble; 1. Some Examples of Polar Forces Interacting in the Mammalian Blood Circulation; 2. Early Examples of the Treatment of Non-Covalent Interactions in Water; 3. Macroscopic-Scale Interactions, Chaudhury's Thesis and Lifshitz-van der Waals Forces 4. Rules for Repulsive Apolar (van der Waals) Forces between Different Polymers Dissolved in an Apolar Liquid, Compared with the Rules for Repulsive Polar (Lewis Acid-Base) Forces between Identical Polymers, Particles or Cells, Immersed in Water 5. The Fallacy of Designating Only One Single Component to Represent the Polar Properties of the Surface Tension of a Polar Condensed-Phase Material; 6. More Recent Developments; Section A: Non-Covalent Energies of Interaction- Equations and Combining Rules; Chapter 2. The Apolar and Polar Properties of Liquid Water and Other Condensed-Phase Materials 1. The γ_{LW} and γ_{AB} Equations 2. The Values for γ_{LW} , γ_{+} and γ_{-} for Water at 20°C; 3. Apolar and Polar Surface |

Properties of Various Other Condensed-Phase Materials; Chapter 3. The Extended DLVO Theory; 1. Hamaker Constants and the Minimum Equilibrium Distance between Two Non-Covalently Interacting Surfaces of Condensed-Phase Materials; 2. The DLVO Theory Extended by the Addition of Polar Interaction Energies Occurring in Water; 3. Decay with Distance of Lifshitz-van der Waals Interactions; 4. Decay with Distance of Lewis Acid-Base Interactions
 5. Decay with Distance of Electrical Double Layer Interactions
 6. Influence of the Ionic Strength on Non-Covalent Interactions in Water; 7. An EL-AB Linkage; 8. Role of the Radius of Curvature, R, of Round Particles or Processes in Surmounting AB Repulsions in Water; 9. Comparison between Direct Measurements via Force Balance or Atomic Force Microscopy, and Data Obtained via Contact Angle Determinations, in the Interpretation of Free Energies vs Distance Plots of the Extended DLVO Approach
 Section B: Surface Thermodynamic Properties of Water with Respect to Condensed-Phase Materials Immersed in It
 Chapter 4. Determination of Interfacial Tensions between Water and Other Condensed-Phase Materials; 1. The Interfacial Tension between a Solid (S) and a Liquid (L); 2. The Interfacial Tension between an Apolar Material or Compound (A) and Water (W); 3. The Interfacial Tension between Polar Compounds or Materials and Water; Chapter 5. The interfacial tension/free energy of interaction between water and identical condensed-phase entities, γ_{iw} , immersed in water, w
 1. The Delta γ_{iw} Equation Pertaining to Identical Entities, i , Immersed in Water, w

Sommario/riassunto

This book treats the different current as well as unusual and hitherto often unstudied physico-chemical and surface-thermodynamic properties of water that govern all polar interactions occurring in it. These properties include the hyper-hydrophobicity of the water-air interface, the cluster formation of water molecules in the liquid state and the concomitant variability of the ratio of the electron-acceptivity to electron-donicity of liquid water as a function of temperature, T. The increase of that ratio with T is the cause of the increase in hydration repulsion ("hydration pressure?") betwe