



**Particles at Fluid Interfaces and Membranes:
Attachment of Colloid Particles and Proteins to
Interfaces and Formation of Two-Dimensional
Arrays (Studies in Interface Science)**

Download now

[Click here](#) if your download doesn't start automatically

Particles at Fluid Interfaces and Membranes: Attachment of Colloid Particles and Proteins to Interfaces and Formation of Two-Dimensional Arrays (Studies in Interface Science)

Particles at Fluid Interfaces and Membranes: Attachment of Colloid Particles and Proteins to Interfaces and Formation of Two-Dimensional Arrays (Studies in Interface Science)

In the small world of micrometer to nanometer scale many natural and industrial processes include attachment of colloid particles (solid spheres, liquid droplets, gas bubbles or protein macromolecules) to fluid interfaces and their confinement in liquid films. This may lead to the appearance of lateral interactions between particles at interfaces, or between inclusions in phospholipid membranes, followed eventually by the formation of two-dimensional ordered arrays. The book is devoted to the description of such processes, their consecutive stages, and to the investigation of the underlying physico-chemical mechanisms.

The first six chapters give a concise but informative introduction to the basic knowledge in surface and colloid science, which includes both traditional concepts and some recent results. Chapters 1 and 2 are devoted to the basic theory of capillarity, kinetics of surfactant adsorption, shapes of axisymmetric fluid interfaces, contact angles and line tension. Chapters 3 and 4 present a generalization of the theory of capillarity to the case, in which the variation of the interfacial (membrane) curvature contributes to the total energy of the system. The generalized Laplace equation is applied to determine the configurations of free and adherent biological cells. Chapters 5 and 6 are focused on the role of thin liquid films and hydrodynamic factors in the attachment of solid and fluid particles to an interface. Surface forces of various physical nature are presented and their relative importance is discussed. Hydrodynamic interactions of a colloidal particle with an interface (or another particle) are also considered.

Chapters 7 to 10 are devoted to the theoretical foundation of various kinds of capillary forces. When two particles are attached to the same interface (membrane), capillary interactions, mediated by the interface or membrane, appear between them. Two major kinds of capillary interactions are described: (i) capillary immersion force related to the surface wettability (Chapter 7), (ii) capillary flotation force originating from interfacial deformations due to particle weight (Chapter 8). Special attention is paid to the theory of capillary immersion forces between particles entrapped in spherical liquid films (Chapter 9). A generalization of the theory of immersion forces allows one to describe membrane-mediated interactions between protein inclusions into a lipid bilayer (Chapter 10).

Chapter 11 is devoted to the theory of the capillary bridges and the capillary-bridge forces, whose importance has been recognized in phenomena like consolidation of granules and soils, wetting of powders, capillary condensation, long-range hydrophobic attraction, etc. The nucleation of capillary bridges is also examined.

Chapter 12 considers solid particles, which have an irregular wetting perimeter upon attachment to a fluid interface. The undulated contact line induces interfacial deformations, which engender a special lateral capillary force between the particles. The latter contributes to the dilatational and shear elastic moduli of particulate adsorption monolayers.

Chapter 13 describes how lateral capillary forces, facilitated by convective flows and some specific and non-specific interactions, can lead to the aggregation and ordering of various particles at fluid interfaces or in thin liquid films. Recent results on fabricating two-dimensional (2D) arrays from micrometer and sub-micrometer latex particles, as well as 2D crystals from proteins and protein complexes, are reviewed.

Chapter 14 presents applied aspects of the particle-surface interaction in antifoaming and defoaming. The mechanisms of antifoaming action involve as a necessary step the entering of an antifoam particle at the air-water interface. The considered mechanisms indicate the factors for control of foaminess.

 [Download Particles at Fluid Interfaces and Membranes: Attac ...pdf](#)

 [Read Online Particles at Fluid Interfaces and Membranes: Att ...pdf](#)

Download and Read Free Online Particles at Fluid Interfaces and Membranes: Attachment of Colloid Particles and Proteins to Interfaces and Formation of Two-Dimensional Arrays (Studies in Interface Science)

From reader reviews:

Vickie Reed:

Book is to be different for each grade. Book for children till adult are different content. We all know that that book is very important usually. The book Particles at Fluid Interfaces and Membranes: Attachment of Colloid Particles and Proteins to Interfaces and Formation of Two-Dimensional Arrays (Studies in Interface Science) was making you to know about other understanding and of course you can take more information. It is quite advantages for you. The reserve Particles at Fluid Interfaces and Membranes: Attachment of Colloid Particles and Proteins to Interfaces and Formation of Two-Dimensional Arrays (Studies in Interface Science) is not only giving you much more new information but also to become your friend when you feel bored. You can spend your spend time to read your e-book. Try to make relationship with all the book Particles at Fluid Interfaces and Membranes: Attachment of Colloid Particles and Proteins to Interfaces and Formation of Two-Dimensional Arrays (Studies in Interface Science). You never sense lose out for everything should you read some books.

Arlene Farmer:

The knowledge that you get from Particles at Fluid Interfaces and Membranes: Attachment of Colloid Particles and Proteins to Interfaces and Formation of Two-Dimensional Arrays (Studies in Interface Science) is the more deep you searching the information that hide into the words the more you get interested in reading it. It doesn't mean that this book is hard to be aware of but Particles at Fluid Interfaces and Membranes: Attachment of Colloid Particles and Proteins to Interfaces and Formation of Two-Dimensional Arrays (Studies in Interface Science) giving you joy feeling of reading. The author conveys their point in a number of way that can be understood through anyone who read the idea because the author of this publication is well-known enough. This particular book also makes your personal vocabulary increase well. Making it easy to understand then can go to you, both in printed or e-book style are available. We highly recommend you for having this kind of Particles at Fluid Interfaces and Membranes: Attachment of Colloid Particles and Proteins to Interfaces and Formation of Two-Dimensional Arrays (Studies in Interface Science) instantly.

Jerome Chisolm:

Information is provisions for those to get better life, information these days can get by anyone on everywhere. The information can be a understanding or any news even a huge concern. What people must be consider if those information which is in the former life are challenging to be find than now is taking seriously which one is acceptable to believe or which one the actual resource are convinced. If you receive the unstable resource then you understand it as your main information you will have huge disadvantage for you. All of those possibilities will not happen within you if you take Particles at Fluid Interfaces and Membranes: Attachment of Colloid Particles and Proteins to Interfaces and Formation of Two-Dimensional Arrays (Studies in Interface Science) as the daily resource information.

Rachel Cady:

Reading a publication make you to get more knowledge from that. You can take knowledge and information coming from a book. Book is prepared or printed or created from each source this filled update of news. In this modern era like today, many ways to get information are available for an individual. From media social similar to newspaper, magazines, science guide, encyclopedia, reference book, fresh and comic. You can add your understanding by that book. Ready to spend your spare time to spread out your book? Or just seeking the Particles at Fluid Interfaces and Membranes: Attachment of Colloid Particles and Proteins to Interfaces and Formation of Two-Dimensional Arrays (Studies in Interface Science) when you necessary it?

Download and Read Online Particles at Fluid Interfaces and Membranes: Attachment of Colloid Particles and Proteins to Interfaces and Formation of Two-Dimensional Arrays (Studies in Interface Science) #NMKOT3UVFZL

Read Particles at Fluid Interfaces and Membranes: Attachment of Colloid Particles and Proteins to Interfaces and Formation of Two-Dimensional Arrays (Studies in Interface Science) for online ebook

Particles at Fluid Interfaces and Membranes: Attachment of Colloid Particles and Proteins to Interfaces and Formation of Two-Dimensional Arrays (Studies in Interface Science) Free PDF d0wnl0ad, audio books, books to read, good books to read, cheap books, good books, online books, books online, book reviews epub, read books online, books to read online, online library, greatbooks to read, PDF best books to read, top books to read Particles at Fluid Interfaces and Membranes: Attachment of Colloid Particles and Proteins to Interfaces and Formation of Two-Dimensional Arrays (Studies in Interface Science) books to read online.

Online Particles at Fluid Interfaces and Membranes: Attachment of Colloid Particles and Proteins to Interfaces and Formation of Two-Dimensional Arrays (Studies in Interface Science) ebook PDF download

Particles at Fluid Interfaces and Membranes: Attachment of Colloid Particles and Proteins to Interfaces and Formation of Two-Dimensional Arrays (Studies in Interface Science) Doc

Particles at Fluid Interfaces and Membranes: Attachment of Colloid Particles and Proteins to Interfaces and Formation of Two-Dimensional Arrays (Studies in Interface Science) Mobipocket

Particles at Fluid Interfaces and Membranes: Attachment of Colloid Particles and Proteins to Interfaces and Formation of Two-Dimensional Arrays (Studies in Interface Science) EPub