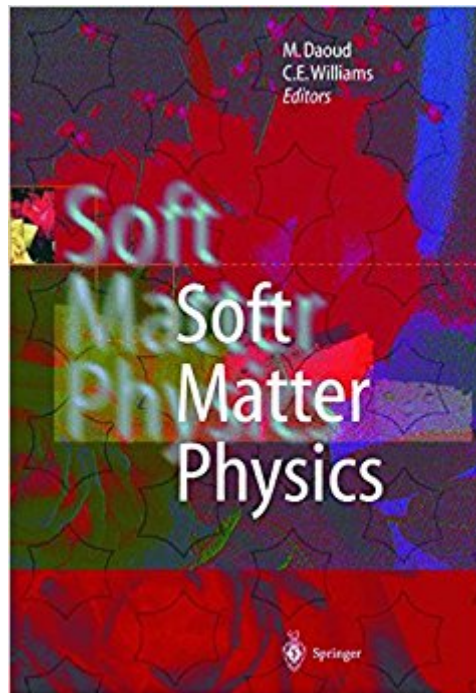




Ebook Directory
the best source of ebook

The book was found

Soft Matter Physics



Synopsis

In a liquid crystal watch, the molecules contained within a thin film of the screen are reorientated each second by extremely weak electrical signals. Here is a fine example of soft matter: molecular systems giving a strong response to a very weak command signal. They can be found almost everywhere. Soft magnetic materials used in transformers exhibit a strong magnetic moment under the action of a weak magnetic field. Take a completely different domain: gelatin, formed from collagen fibres dissolved in hot water. When we cool below 37°C, gelation occurs, the chains joining up at various points to form a loose and highly deformable network. This is a natural example of soft matter. Going further, rather than consider a whole network, we could take a single chain of flexible polymer, such as polyoxyethylene [POE = (CH₂CH₂O)_N, 2 ≤ N ≤ 10⁵], for example, in water. Such a chain is fragile and may break under flow. Even though hydrodynamic forces are very weak on the molecular scale, their cumulated effect may be significant. Think of a rope pulled from both ends by two groups of children. Even if each girl and boy cannot pull very hard, the rope can be broken when there are enough children pulling.

Book Information

Hardcover: 320 pages

Publisher: Springer; 1999 edition (April 14, 1999)

Language: English

ISBN-10: 3540648526

ISBN-13: 978-3540648529

Product Dimensions: 7.9 x 0.9 x 10.9 inches

Shipping Weight: 2.7 pounds

Average Customer Review: 5.0 out of 5 stars 1 customer review

Best Sellers Rank: #4,242,662 in Books (See Top 100 in Books) #49 in Books > Science & Math > Chemistry > Chemical Physics #1041 in Books > Engineering & Transportation > Engineering > Chemical > Fluid Dynamics #1289 in Books > Engineering & Transportation > Engineering > Materials & Material Science > Polymers & Textiles

Customer Reviews

Text: English (translation) Original Language: French

"I think that in these days when the number of students in physics and chemistry is declining steadily, it is necessary to adapt the high school curricula, leave out part of the physics of past

centuries, and present more modern topics to young people. I would like to suggest that soft matter physics can be one of these subjects. This subject is linked with many phenomena in the real world, there are beautiful and simple experiments that can be performed, the mathematics to describe these systems is in itself fascinating (I already mentioned fractals, but some theories that describes the shapes of membranes and vesicles are cousins of those used in string theory) and finally, these products are of high technological value. This book is a rich source of inspiration for starting such a course."Physicalia, 2000/36/3 (..) The book design is catching with instructive and inspiring figures, which are often in colour and are of outstanding quality. (...) It awakes a love for the themes covered. It is a beautiful and nobly designed book, written with much didactic commitment. Translated from the review of K. Stierstadt, *Physikalische Blätter*, 2001, 57, 5.

Soft Matter Physics is an excellent compilation of chapters on different aspects of soft matter, written by the experts in their respective areas. In more ways than one, this text complements the texts of Chaikin & Lubensky as well as the one by Witten, and can be used for classroom teaching. F. Brochard-Wyart's chapter on droplets describes some really elegant and simple experiments to introduce diverse concepts related to wetting and capillarity. A greater depth and detail about this area is found in a recently published treatise on Capillarity and Wetting Phenomenon, that she co-authored with David Quere and PG deGennes. The second chapter on fractals by Daoud and Van Damme presents introductory ideas of the mathematics of self-similarity, fractals, and random walks. Next follows an insightful foray into colloidal matter where J. C. Daniel and R. Andibert discuss the central role of interaction forces in describing the stability and aggregation behavior of colloids. The following two chapters focus on surfactants, where C Taupin and G. Porte examine the physiochemistry and the phase behavior of surfactant molecules. F Candau then talks about the polymers formed by self-assembly and L Monnerie follows it up with description of the physical properties of covalently linked polymers. Thereafter comes a chapter by Tom Witten, which beautifully strings together the concepts of fractals, random walks, phase behavior into a discussion on the behavior of polymers in solution. This chapter is written in his trademark elegance, so apparent in his own treatise on soft matter, titled Structured Fluids. The last chapter on Liquid Crystals by J. Prost and C. E. Williams dwells on the characteristic properties of the nematic, smectic and columnar phases. With PG de Gennes, J. Prost is co-author on detailed text on liquid crystals. It is only befitting that the forward to this text is written by PG de Gennes himself, for besides his fundamental contributions to the field, he has shaped and influenced the research of all the contributors and of readers worldwide. I recommend this book to one and all, and

I am sure that even if your research area is constrained to topics described in any one chapter, you will find the reading of the rest text as purposeful and illuminating.

[Download to continue reading...](#)

Soft Condensed Matter (Oxford Master Series in Condensed Matter Physics, Vol. 6) Soft Matter Physics My Yonanas Frozen Treat Maker Recipe Book: 101 Delicious Healthy, Vegetarian, Dairy & Gluten-Free, Soft Serve Fruit Desserts For Your Elite or Deluxe Machine (Frozen Desserts & Soft Serve Makers) Soft Corals: Selecting and Maintaining Soft Corals Feeding and Algal Symbiosis Lighting and Water Clarity (Creating the Reef Environment) The Feynman Lectures on Physics, Vol. II: The New Millennium Edition: Mainly Electromagnetism and Matter: Volume 2 (Feynman Lectures on Physics (Paperback)) The Feynman Lectures on Physics, Vol. II: The New Millennium Edition: Mainly Electromagnetism and Matter (Feynman Lectures on Physics (Paperback)) (Volume 2) Fragile Objects: Soft Matter, Hard Science, and the Thrill of Discovery Theory of Simple Liquids, Fourth Edition: with Applications to Soft Matter Theory of Simple Liquids: with Applications to Soft Matter Introduction to Soft Matter: Synthetic and Biological Self-Assembling Materials The Solid State: An Introduction to the Physics of Crystals for Students of Physics, Materials Science, and Engineering (Oxford Physics Series) Head First Physics: A learner's companion to mechanics and practical physics (AP Physics B - Advanced Placement) Physics for Scientists and Engineers with Modern Physics: Volume II (3rd Edition) (Physics for Scientists & Engineers) Physics for Kids : Electricity and Magnetism - Physics 7th Grade | Children's Physics Books Six Ideas that Shaped Physics: Unit N - Laws of Physics are Universal (WCB Physics) Quantum Electrodynamics: Gribov Lectures on Theoretical Physics (Cambridge Monographs on Particle Physics, Nuclear Physics and Cosmology) Six Ideas That Shaped Physics: Unit R - Laws of Physics are Frame-Independent (WCB Physics) Problem-Solving Exercises in Physics: The High School Physics Program (Prentice Hall Conceptual Physics Workbook) A Matter of Time: Vol. 2 (A Matter of Time Series) Calder by Matter: Herbert Matter Photographs of Alexander Calder and his Work

[Contact Us](#)

[DMCA](#)

[Privacy](#)

[FAQ & Help](#)