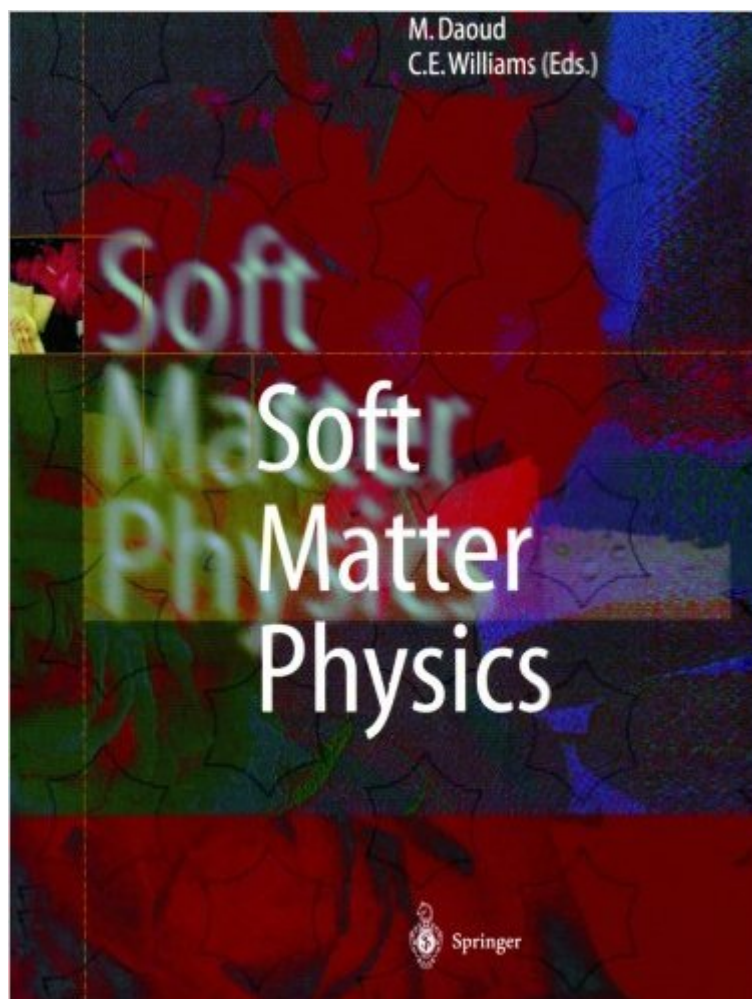


The book was found

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 = $(\text{CH}_2\text{CH}_2\text{O})_N$, $2 \leq N \leq 5$ where $N \leq 10$], 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

Paperback: 320 pages

Publisher: Springer; Softcover reprint of the original 1st ed. 1999 edition (July 25, 2013)

Language: English

ISBN-10: 3662038471

ISBN-13: 978-3662038475

Product Dimensions: 8.3 x 0.8 x 11 inches

Shipping Weight: 1.8 pounds (View shipping rates and policies)

Average Customer Review: 5.0 out of 5 stars [See all reviews](#) (1 customer review)

Best Sellers Rank: #4,409,429 in Books (See Top 100 in Books) #53 in [Books > Science & Math > Chemistry > Chemical Physics](#) #1152 in [Books > Engineering & Transportation > Engineering > Chemical > Fluid Dynamics](#) #1523 in [Books > Engineering & Transportation > Engineering > Materials & Material Science > Polymers & Textiles](#)

Customer Reviews

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 wfor 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 Matter Physics The Feynman Lectures on Physics, Vol. II: The New Millennium Edition: Mainly Electromagnetism and Matter (Feynman Lectures on Physics (Paperback)) (Volume 2) Soft Corals: Selecting and Maintaining Soft Corals Feeding and Algal Symbiosis Lighting and Water Clarity (Creating the Reef Environment) Physics for Scientists and Engineers with Modern Physics: Volume II (3rd Edition) (Physics for Scientists & Engineers) Head First Physics: A learner's companion to mechanics and practical physics (AP Physics B - Advanced Placement) Calder by Matter: Herbert Matter Photographs of Alexander Calder and his Work The Physics of Brand: Understand the Forces Behind Brands That Matter Physics: Why Matter Matters! Fundamentals of Condensed Matter Physics Field Theories of Condensed Matter Physics Learning Game Physics with Bullet Physics and OpenGL Sterling Test Prep GRE Physics Practice Questions: High Yield GRE Physics Questions with Detailed Explanations McGraw-Hill Education SAT Subject Test Physics 2nd Ed. (Mcgraw-Hill's Sat Subject Test Physics) Sterling Test Prep MCAT Physics Practice Questions:

High Yield MCAT Physics Questions with Detailed Explanations
Conceptual Physics : The High School Physics Program
Physics of Atoms and Ions (Graduate Texts in Contemporary Physics)
Physics of Amphiphiles: Micelles, Vesicles and Microemulsions : Proceedings of the International School of Physics, Enrico Fermi, Course Xc
Physics for Scientists and Engineers, Volume 2: Electricity, Magnetism, Light, and Elementary Modern Physics
Introduction to plasma physics and controlled fusion. Volume 1, Plasma physics
Thermodynamics and the Kinetic Theory of Gases: Volume 3 of Pauli Lectures on Physics (Dover Books on Physics)

[Dmca](#)