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Disciplina	530
Soggetti	Amorphous substances Complex fluids Physical chemistry Biophysics Biological physics Surfaces (Technology) Thin films Statistical physics Dynamical systems Soft and Granular Matter, Complex Fluids and Microfluidics Physical Chemistry Biological and Medical Physics, Biophysics Surfaces and Interfaces, Thin Films Complex Systems Statistical Physics and Dynamical Systems
Lingua di pubblicazione	Inglese
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Note generali	Description based upon print version of record.
Nota di contenuto	Membranes -- Microfluidic membrane networks -- Electrostatic interactions in membrane fusion -- Phase contrast X-ray imaging of lipid membranes -- Oscillating droplets: Chemical micro-oscillators -- Swimming droplets: Artificial squirmers -- Interacting droplets: Collective dynamics -- Conclusions and Outlook -- Appendices -- Materials and Methods -- Hydrodynamic flow fields with axial

symmetry.

Sommario/riassunto

This book focuses on the assembly, organization and resultant collective dynamics of soft matter systems maintained away from equilibrium by an energy flux. Living matter is the ultimate example of such systems, which are comprised of different constituents on very different scales (ions, nucleic acids, proteins, cells). The result of their diverse interactions, maintained using the energy from physiological processes, is a fantastically well-organized and dynamic whole. This work describes results from minimal, biomimetic systems and primarily investigates membranes and active emulsions, as well as key aspects of both soft matter and non-equilibrium phenomena. It is shown that these minimal reconstitutions are already capable of a range of complex behaviour such as nonlinear electric responses, chemical communication and locomotion. These studies will bring us closer to a fundamental understanding of complex systems by reconstituting key aspects of their form and function in simple model systems. Further, they may also serve as the first technological steps towards artificial soft functional matter.