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Soggetti	Amorphous substances Complex fluids Optical materials Electronic materials Phase transitions (Statistical physics) Soft and Granular Matter, Complex Fluids and Microfluidics Optical and Electronic Materials Phase Transitions and Multiphase Systems
Lingua di pubblicazione	Inglese
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Nota di contenuto	Introduction -- Liquid Crystals – an Overview -- Liquid Crystal Droplets -- Experimental Inspection of Director Fields -- Materials and Experimental Setup -- Simulated Annealing for Determination of Z-Component Sign -- Structures in Chiral Nematic Droplets with Homeotropic Anchoring -- Schematic Construction of Droplets with Multiple Cholesteric Bubbles -- Discussion -- Conclusion.
Sommario/riassunto	In this book Gregor Posnjak unravels the long-standing mystery of the internal director structure of chiral nematic droplets, which has been studied both experimentally and theoretically since the 1970s. To do so, he develops a new method for the reconstruction of director fields from a set of fluorescent confocal polarising microscopy images, which he augments with a simulated annealing algorithm. This allows the full reconstruction of 3D director fields, describing the ordering of the liquid crystal. The reconstruction procedure and its principles, which

are applicable to other methods of studying vector fields, are explained in detail. The method is subsequently used to explore complex 3D structures in chiral nematic liquid crystal droplets with perpendicular surface anchoring. Twentyfour distinct states are identified and presented, including the layered structures of different symmetries and states with multiple topological point defects, separated by localized chiral structures. In closing, the book reports on the first observation of topological point defects with higher topological charges $q = 2$ and $q = 3$.
