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Nota di contenuto	Chapter1. Numerical approaches to complex fluids -- Chapter2. Basic Concepts of Stokes Flows -- Chapter3. Mesoscopic approach to nematic fluids -- Chapter4. Amphiphilic Janus Particles at Interfaces -- Chapter5. Upscaling Flow and Transport Processes -- Chapter6. Recent Developments in Particle Tracking Diagnostics for Turbulence Research -- Chapter7. Numerical simulations of active Brownian particles -- Chapter8. Active fluids within the unified coloured noise approximation -- Chapter9. Quadrature-based lattice Boltzmann models for rarefied gas flow.
Sommario/riassunto	This open access book, published in the Soft and Biological Matter series, presents an introduction to selected research topics in the broad field of flowing matter, including the dynamics of fluids with a complex

internal structure -from nematic fluids to soft glasses- as well as active matter and turbulent phenomena. Flowing matter is a subject at the crossroads between physics, mathematics, chemistry, engineering, biology and earth sciences, and relies on a multidisciplinary approach to describe the emergence of the macroscopic behaviours in a system from the coordinated dynamics of its microscopic constituents. Depending on the microscopic interactions, an assembly of molecules or of mesoscopic particles can flow like a simple Newtonian fluid, deform elastically like a solid or behave in a complex manner. When the internal constituents are active, as for biological entities, one generally observes complex large-scale collective motions. Phenomenology is further complicated by the invariable tendency of fluids to display chaos at the large scales or when stirred strongly enough. This volume presents several research topics that address these phenomena encompassing the traditional micro-, meso-, and macro-scales descriptions, and contributes to our understanding of the fundamentals of flowing matter. This book is the legacy of the COST Action MP1305 “Flowing Matter”.