1. Record Nr. UNINA9910958519203321

Autore	Brazel Christopher S. <1970->
Titolo	Fundamental principles of polymeric materials / / Christopher S. Brazel, Stephen L. Rosen
Pubbl/distr/stampa	Hoboken, New Jersey, : Wiley, 2012
ISBN	9786613678881 9781118275290 1118275292 9781280768118 1280768118 9781118275313 1118275314 9781118275320 1118275322
Edizione	[3rd ed.]
Descrizione fisica	xvii, 407 p
Altri autori (Persone)	RosenStephen L. <1937->
Disciplina	668.9
Soggetti	Polymer engineering Polymers
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Revised edition of: Fundamental principles of polymeric materials / Stephen L. Rosen. 2nd ed. c1993.
Nota di bibliografia	Includes bibliographical references and index.
Sommario/riassunto	New edition brings classic text up to date with the latest science, techniques, and applications With its balanced presentation of polymer chemistry, physics, and engineering applications, the Third Edition of this classic text continues to instill readers with a solid understanding of the core concepts underlying polymeric materials. Both students and instructors have praised the text for its clear explanations and logical organization. It begins with molecular-level considerations and then progressively builds the reader's knowledge with discussions of bulk properties, mechanical behavior, and processing methods. Following a brief introduction, Fundamental Principles of Polymeric Materials is divided into four parts: * Part 1:

Polymer Fundamentals * Part 2: Polymer Synthesis * Part 3: Polymer Properties * Part 4: Polymer Processing and Performance Thoroughly Updated and Revised Readers familiar with the previous edition of this text will find that the organization and style have been updated with new material to help them grasp key concepts and discover the latest science, techniques, and applications. For example, there are new introductory sections on organic functional groups focusing on the structures found in condensation polymerizations. The text also features new techniques for polymer analysis, processing, and microencapsulation as well as emerging techniques such as atom transfer radical polymerization. At the end of each chapter are problems-including many that are new to this edition-to test the reader's grasp of core concepts as they advance through the text. There are also references leading to the primary literature for further investigation of individual topics. A classic in its field, this text enables students in chemistry, chemical engineering, materials science, and mechanical engineering to fully grasp and apply the fundamentals of polymeric materials, preparing them for more advanced coursework.

2. Record Nr. UNINA9910896530603321

Autore	Selinger Jonathan V.
Titolo	Introduction to Topological Defects and Solitons : In Liquid Crystals, Magnets, and Related Materials / / by Jonathan V. Selinger
Pubbl/distr/stampa	Cham : , : Springer Nature Switzerland : , : Imprint : Springer, , 2024
ISBN	3-031-70200-X
Edizione	[1st ed. 2024.]
Descrizione fisica	1 online resource (216 pages)
Collana	Lecture Notes in Physics, , 1616-6361 ; ; 1032
Disciplina	530.124
Soggetti	Condensed matter Soft condensed matter Mathematical physics Differential equations Condensed Matter Physics Condensed Matter Soft Materials Mathematical Methods in Physics Mathematical Physics Differential Equations

Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Chapter 1. Introduction to Defects -- Chapter 2. Introduction to Solitons -- Chapter 3. Free Energy -- Chapter 4. Dynamics and Statistical Mechanics -- Chapter 5. Prequel to Defects: Variable Magnitude of Order -- Chapter 6. Further Issues: Defect Phase/Orientation, Charge Density, Curvature -- Chapter 7. 2D Nematic Order, Active Liquid Crystals -- Chapter 8. 3D Polar or Nematic Order -- Chapter 9. Defects in Crystals -- Chapter 10. 2D Measuring Surface: Hedgehogs, Skyrmions -- Chapter 11. 3D Measuring Surface: Hopfions -- Chapter 12. Phases With Regular Arrays of Defects or Solitons.
Sommario/riassunto	This textbook introduces topological defects and solitons at a level suitable for advanced undergraduates and beginning graduate students in physics and materials science. It avoids the formal mathematics of topology, and instead concentrates on the physical properties of these topological structures. The first half of the book concentrates on fundamental principles of defects and solitons, and illustrates these principles with a single example—the xy model for 2D magnetic order. It begins by defining the concept of a winding number, and uses this concept to describe the topology of defects (vortices or disclinations) and solitons (domain walls), carefully identifying the similarities and differences between these two types of topological structures. It then goes on to discuss physical properties of defects and solitons, including free energy, dynamics, statistical mechanics, and coupling with curvature. It shows how these concepts emerge from a theory with variable magnitude of order, and hence how topology can be viewed as an approximation to physics. The second half goes on to explore a wider range of topological defects and solitons. First, it considers more complex types of order—2D nematic liquid crystals, 3D magnetic or liquid-crystal order, 2D or 3D crystalline solids—and shows how each type of order leads to specific topological structures. Next, it discusses defects and solitons that are characterized by 2D or 3D measuring surfaces, not just 1D loops, including hedgehogs, skyrmions, and hopfions. These structures are more complex, but they can still be understood using the same fundamental principles. A final chapter describes the formation of phases with regular arrays of defects or solitons.