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3.6 Latin America; 3.6.1 Argentina; 3.6.2 Brazil; 3.6.3 Mexico; 3.7 Australia and New Zealand; 3.8 Asia; 3.9 South Africa; 3.9.1 Natural waters; 3.9.2 Waters defined by origin; 3.9.3 Prepared waters; 3.10 Conclusions; Acknowledgements; References
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4.3.6 Hydrochemical classification of bottled waters4.4 Groundwater source development; 4.4.1 Stages of development; 4.4.2 Resource evaluation; 4.4.3 Source definition; 4.4.4 Source construction; 4.4.5 Variation of aquifer properties with depth; 4.5 Management of groundwater sources; 4.5.1 Record keeping; 4.5.2 Monitoring, maintenance and rehabilitation; 4.5.3 Sampling and water quality analysis; 4.5.4 Monitoring borehole yield; 4.5.5 Changes in water quality; 4.5.6 Control of resource exploitation; 4.6 Protecting groundwater quality; 4.6.1 Changing policies and perspectives
4.6.2 Source protection zones4.6.3 Hazard identification and mapping; 4.6.4 Groundwater vulnerability and natural attenuation; 4.6.5 Wellhead protection; 4.6.6 Risk assessment and catchment management; References; 5 Water Treatments; 5.1 Why and when water must be treated; 5.1.1 Compliance with local regulations; 5.1.2 Quality reasons; 5.1.3 Marketing reasons; 5.2 Water treatment objectives; 5.2.1 Removal of undissolved elements; 5.2.2 Removal/inactivation of undesirable biological elements; 5.2.3 Removal of undesirable and/or unstable chemical elements; 5.2.4 Addition of 'valuable' elements
5.3 Water treatment processes

Sommario/riassunto

The fully revised third edition of this unique and comprehensive overview of the science and technology of the bottled waters industry contains brand new chapters which address these new developments. As well as an updated introductory chapter reviewing the market, the degree to which the global legislative and regulatory picture has changed is examined, and new and increasingly-used quality standards are assessed. The book provides a definitive source of reference for all those involved in bottled water production: beverage technologists, packaging technologists, analytical chemists, microbio

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1.2 Equilibrium Theory for Nematics1.2.1 The Frank-Oseen Energy; 1.2.2 A Virtual Work Formulation; 1.2.3 Body Forces and Moments; 1.2.4 The Equilibrium Equations; 1.2.5 Boundary Conditions; 1.2.6 Proposed Extensions; 1.3 Equilibrium Theory for Smectic Liquid Crystals; 1.3.1 An Energy Function for SmC Liquid Crystals; 1.3.2 Equilibrium Equations; 1.4 Dynamic Theory for Nematics; 1.4.1 Balance Laws; 1.4.2 A Rate of Work Hypothesis; 1.4.3 The Viscous Stress; 1.4.4 Equations of Motion; 1.5 References; 2 Molecular Theories of Liquid Crystals; 2.1 Introduction
2.2 Microscopic Definition of the Order Parameters for Nematic and Smectic Phases2.2.1 Uniaxial Nematic Phase; 2.2.2 Biaxial Nematic Phase; 2.2.3 Smectic A and C Phases; 2.3 Anisotropic Intermolecular Interactions in Liquid Crystals; 2.3.1 Hard-core Repulsion; 2.3.2 Electrostatic and Dispersion Interactions; 2.3.3 Model Potentials; 2.4 Molecular Theory of the Nematic Phase; 2.4.1 Mean-field Approximation and the Maier-Saupe Theory; 2.4.2 Short-range Orientational Correlations; 2.4.3 Excluded Volume Effects and the Onsager Theory; 2.4.4 Packing Effects in Thermotropic Nematics
2.4.5 The Role of Molecular Biaxiality2.4.6 Density Functional Approach to the Statistical Theory of Liquid Crystals; 2.5 Molecular Models for Simple Smectic Phases; 2.5.1 Mean-field Theory of the Nematic-Smectic A Transition; 2.5.2 Phase Diagram of a Hard-rod Fluid; 2.5.3 The Role of Intermolecular Attraction; 2.5.4 Smectic A-Smectic C Transition; 2.6 Conclusions; 2.7 References; 3 Molecular Modelling; 3.1 Techniques of Molecular Modelling; 3.1.1 Molecular Mechanics; 3.1.2 Molecular Dynamics and Monte Carlo Simulation; 3.1.3 Quantum Mechanical Techniques
3.2 Applications of Molecular Modelling

Sommario/riassunto

This handbook is a unique compendium of knowledge on all aspects of the physics of liquid crystals. In over 500 pages it provides detailed information on the physical properties of liquid crystals as well as the recent theories and results on phase transitions, defects and textures of different types of liquid crystals.An in-depth understanding of the physical fundamentals is a prerequisite for everyone working in the field of liquid crystal research. With this book the experts as well as graduate students entering the field get all the information they need.