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Altri autori (Persone)	BeltonP. S
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Nota di contenuto	The Chemical Physics of Food; Contents; Preface; Contributors; About the Editor; 1 Emulsions; 1.1 Introduction; 1.2 Emulsion structure; 1.2.1 Size; 1.2.2 Concentration; 1.2.3 Surface properties; 1.2.3.1 Modified surfaces; 1.2.3.2 Types of interfacial material; 1.2.4 Interdroplet potentials; 1.3 Emulsion dynamics; 1.3.1 Creaming; 1.3.2 Flocculation; 1.3.3 Coalescence; 1.4 Emulsion functionality; 1.4.1 Rheology; 1.4.2 Chemical reactivity; 1.5 References; 2 Physicochemical Behaviour of Starch in Food Applications; 2.1 Introduction; 2.2 Starch composition and chemical structure 2.2.1 Granular structure2.2.2 Molecular composition; 2.2.2.1 Amylose; 2.2.2.2 Amylopectin; 2.2.2.3 Intermediate materials; 2.2.2.4 Minor components; 2.3 Modifications of starch by hydrothermal treatments and shearing; 2.3.1 Gelatinization, pasting and melting; 2.3.1.1 Structural changes; 2.3.1.2 Mechanisms of gelatinization-melting; 2.3.1.3 Functional properties; 2.3.2 Gelation; 2.3.2.1 Structural changes; 2.3.2.2 Mechanisms; 2.3.2.3 Functional properties; 2.3.3 Glass transition and plasticization by water; 2.3.4 Physical ageing; 2.4 Interactions with other molecules

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3.6 Water transport in nonequilibrium microheterogeneous systems3.7 The state of water in nanopores; The colour plate section appears after page 82; 3.8 Experimental probes of water-biopolymer interactions; 3.9 Molecular dynamics simulations of water-biopolymer interactions; 3.10 The dependence of water dynamics on state variables; 3.10.1 Low-water-content systems; 3.10.2 Nonfreezing water; 3.10.3 Diffusion studies of surface water; 3.10.4 Water dynamics under high pressure; 3.11 Conclusion; 3.12 References; 4 Glasses; 4.1 Introduction; 4.2 Glass transitions
4.2.1 Low molecular weight liquids and glasses4.2.2 Biopolymer glasses and plasticization; 4.2.3 Colloidal glasses; 4.3 Glassy state dynamics; 4.4 Structural relaxation in low molecular weight organic liquids and biopolymers; 4.5 Mechanical stability -colloidal systems; 4.6 Chemical stability; 4.6.1 Chemical kinetics and the glassy state in single-phase systems; 4.6.2 Chemical kinetics and the glassy state in multiphase systems; 4.7 Glassy carbohydrates as encapsulation matrices and solvents; 4.7.1 Flavour encapsulation in glassy carbohydrates
4.7.2 Solvent properties of amorphous carbohydrates

Sommario/riassunto

This important book covers the main types of materials that food scientists have to deal with. Special attention is given to starch and gluten as being of particular importance in food science and not typical of general classes of substance. The book approaches the subject matter form a physics viewpoint.Based on the fundamental quantitative principles, which must form the basis for any discussion, qualitative or quantitative, about the behaviour of the systems involved, the book thus differs from others currently available. The editor, Peter Belton, currently President of the Institut