1. Record Nr. UNINA9910835059303321

Titolo	Advances in Oleogel Development, Characterization, and Nutritional Aspects / / edited by Camila Palla, Fabio Valoppi
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2024
ISBN	3-031-46831-7
Edizione	[1st ed. 2024.]
Descrizione fisica	1 online resource (686 pages)
Disciplina	929.374
Soggetti	Food - Analysis Chemistry Food science Food Chemistry Food Science
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Tracing the Evolution of Oleogels: A Historical Overview -- Nutritional aspects of fats and oils -- Novel strategies for structuring liquid oils, their applications, and health implications; Oleogel preparation methods and oleogel classification -- Section I: Oleogels produced by Direct Methods -- Monoglyceride oleogels -- Wax-based oleogels -- Direct oil structuring using ethylcellulose -- Oleogels produced by Direct Methods using as gelator: fatty acids (including 12-HSA), fatty alcohols, ceramides, lecithins, sterols, cellulose fibers, and fumed silica -- Vegetable waxes as multicomponent gelator systems -- Oleogels produced by Indirect Methods -- Section II Engineered oleogels and oleogel-derived systems -- Ultrasound as a tool to taylor oleogelation and oleogels physical properties -- Designing for the future: the intersection of 3D printing and oleogels -- Emulsions containing oleogels -- Bigels: An Innovative Hybrid of Hydrogels/Oleogels for Food Applications -- Oleofoams: formulation rules and new characterization methods based on X-rays and neutrons to advance current understanding -- Physical and Oxidative Stability of Oleogels during Storage -- Oleogels for delivery and protection of bioactive molecules -- Oleogel characterization – physical, physicochemical and

chemical techniques -- Section III Novel techniques to characterize oleogels -- Rheology-based techniques -- Image analysis for oleogel and oleogel-based system characterization -- Synchrotron-based analysis -- Computer simulations: molecular dynamics simulations -- Simulating the physics of oleogels: mathematical models and Monte Carlo computer simulation -- Section IV In-vitro and in-vivo digestion of oleogels -- In-vitro digestion of lipid-based gels -- Preclinical and Clinical Research on Oleogels -- Edible applications -- Legislation, industrial feasibility,and scalability of oleogel production processes -- The future of oleogels between challenges and opportunities.

Sommario/riassunto

Advances in oleogel development, characterization, and nutritional aspects is the result of a collaborative work by top experts in the field of oleogel and related areas, who have brought together the knowledge gained in two decades of work on the design, development, understanding, and application of oleogels and oleogel-based systems in a comprehensive and easy-to-read book. Oleogels have been primarily investigated as ingredients to reduce saturated fats and eliminate trans fats in food products. The versatility of these lipid materials has expanded their potential applications beyond their initial scope, generating a growing interest in both academic and industrial communities. This interest has driven the development of the oleogel field exponentially, resulting in a growing body of scientific literature and patents. This book covers a wide spectrum of topics, ranging from the basic understanding of these lipid-based materials to their practical application in real food products, highlighting the latest breakthroughs in the field. It comprises in-depth descriptions of both canonical and most advanced and recent techniques for the physical, chemical, digestive and physiological characterization of oleogels, as well as some regulatory and industrial considerations relevant to their production. This multifaceted approach brings new tools, standpoints, and perspectives for understanding and applying oleogels, empowering current and new generations of scientists, students, and professionals who are approaching this topic for the first time, or who already have some experience, to become experts in this field. .