



# **Nanoparticle- and Microparticle-based Delivery Systems: Encapsulation, Protection and Release of Active Compounds**

*David Julian McClements*

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## **Nanoparticle- and Microparticle-based Delivery Systems: Encapsulation, Protection and Release of Active Compounds** David Julian McClements

Recent developments in nanoparticle and microparticle delivery systems are revolutionizing delivery systems in the food industry. These developments have the potential to solve many of the technical challenges involved in creating encapsulation, protection, and delivery of active ingredients, such as colors, flavors, preservatives, vitamins, minerals, and nutraceuticals. **Nanoparticle- and Microparticle-based Delivery Systems: Encapsulation, Protection and Release of Active Compounds** explores various types of colloidal delivery systems available for encapsulating active ingredients, highlighting their relative advantages and limitations and their use.

Written by an international authority known for his clear and rigorous technical writing style, this book discusses the numerous kinds of active ingredients available and the issues associated with their encapsulation, protection, and delivery. The author takes a traditional colloid science approach and emphasizes the practical aspects of formulation of particulate- and emulsion-based delivery systems with food applications. He then covers the physicochemical and mechanical methods available for manufacturing colloidal particles, highlighting the importance of designing particles for specific applications.

The book includes chapters devoted specifically to the three major types of colloidal delivery systems available for encapsulating active ingredients in the food industry: surfactant-based, emulsion-based, and biopolymer-based. It then reviews the analytical tools available for characterizing the properties of colloidal delivery systems, presents the mathematical models for describing their properties, and highlights the factors to consider when selecting an appropriate delivery system for a particular application backed up by specific case studies.

Based on insight from the author's own experience, the book describes why delivery systems are needed, the important factors to consider when designing them, methods of characterizing them, and specific examples of the range of food-grade delivery systems available. It gives you the necessary knowledge, understanding, and appreciation of developments within the current research literature in this rapidly growing field and the confidence to perform reliable experimental investigations according to modern international standards.

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