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Biopolymers in flavor and fragrance delivery systems

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The use of microcapsules in fragrance has become a key technology in home care (fabric softeners and detergents) and personal care (antiperspirants/deodorants) to enable efficient delivery of fragrances during the product use. The aim of this study is to obtain performance benefits such as long lasting release of the fragrance, a higher quality long lasting fragrance (lasting freshness), and fragrance release during handling of wet and dry fabrics, release of fragrance during enhanced physical activity of the wearer, and enhanced bloom during application. As such, a key aspect of the microcapsule performance is to deposit as many capsules as possible during product application. Another challenge is minimizing the fragrance diffusion out of the capsules into the consumer product as this negatively impacts shelf life and transportation in hot climates. However, it is imperative that the fragrance is released during use of the product and wear of the substrates. Biopolymers are used in many facets of encapsulation of flavors and fragrances. Biopolymers are used in encapsulation techniques based on complex coacervation (gelatin), spray drying (starch), and emptied cells (yeast, spores). Furthermore, biopolymers are used as dispersants/emulsifiers in encapsulation (i.e. beverage emulsions), as rheololgy modifiers in aqueous-based microcapsule dispersions. In addition, biopolymers or modified biopolymers can be used to modify capsule surface as to improve their deposition ability in rinse-off applications (detergent, shampoo, hair conditioner and body wash). This study will provide an overview of flavor/fragrance encapsulation as well as examples of where biopolymers and biobased materials are being used.

Biography

Johan Pluyter has completed his PhD at the University of North Carolina at Chapel Hill in Physical Chemistry with an emphasis in Polymer Science. Following his PhD, he worked at Procter & Gamble. Next, he lead physical, polymer and colloid characterization at National Starch and Chemical Company (under Unilever and ICI). Since 2002, he leads research in delivery systems at International Flavors and Fragrances (IFF) where he is a Senior Research Fellow. He is inventor and co-inventor of 21 granted US patents and many pending applications.

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