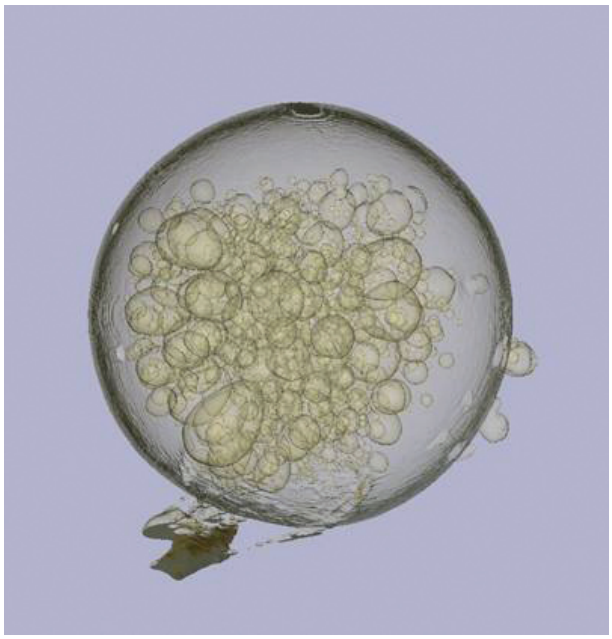
CS CeramiSphere

ENCAPSULATION AND RELEASE OF HYDROPHOBES

The encapsulation of hydrophobic actives is a key component of their use in various industries such as pharmaceuticals, cosmetics and food. Several innovative methods, based on a combination of sol-gel and emulsion chemistry, have been developed by CeramiSphere to encapsulate hydrophobic molecules in the form of liquid, solution or solid into silica micro- and nano-particles. The encapsulation in silica offers good protection against chemical attack and payload oxidation or decomposition. In addition, the release rate of the molecules can be controlled by the internal structure of the spheres and can be optimised for specific compounds.



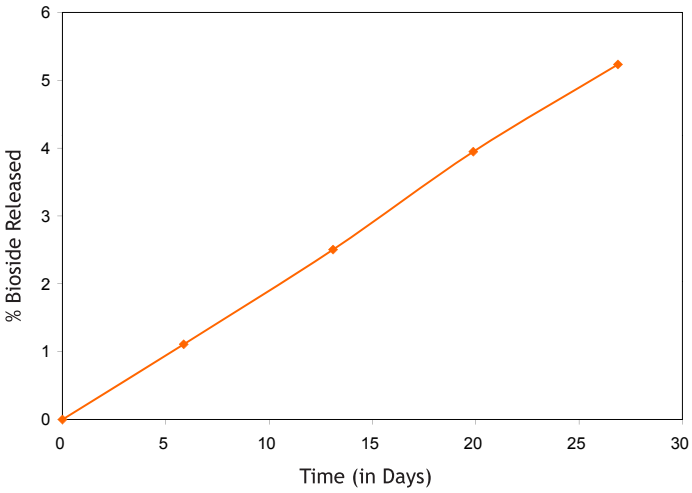
X-ray tomographic view of oil encapsulated inside pure silica microparticles.

KEY ADVANTAGES OF THE CERAMISPHERE™ HYDROPHOBE RELEASE SYSTEMS

- Controlled particle size from nanometers to microns
- Encapsulation of liquids such as oil (flavour,fragrance and perfumery)
- Encapsulation of chemicals (dye, biocide and drugs)
- Stability in corrosive environments (acid or base)
- Protection of sensitive molecules (e.g. retinol) against degradation
- Biocompatibility of the matrix
- The carrier is hydrophilic and thus can be suspended in water
- The silica particles have higher mechanical strength and thermal stability
- Cheap ingredients and low capital investment

CONTROLLED RELEASE

Slow release of a hydrophobic biocide, encapsulated in derivatised silica particles, into sodium hydroxide solution (pH = 12), demonstrating the stability of the particles to corrosive environments.



APPLICATIONS

- Release of hydrophobic biocides and pesticides
- Release of oil and flavours for food applications
- Release of hydrophobes for cosmetic and personal care applications
- Release of temperature and oxygen sensitive compounds
- Delivery of poorly soluble drugs
- Solubilisation of poorly soluble compounds
- Encapsulation & release of reactive compounds (e.g. bleach)

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