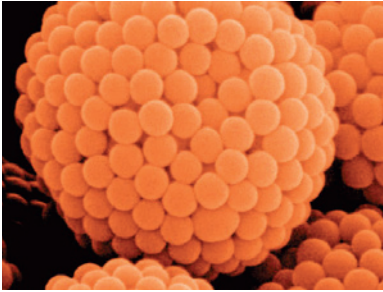


Agriculture and Food Industry Alliance

Optical and Magnetic ID Particles

1 μm





Supraparticles with ID information

Novel marker particles are being developed at Fraunhofer ISC. They possess a high degree of individuality and differentiation and alone or as an ensemble enable a unique fingerprint (“ID”).

It is becoming increasingly important to assign an active **communication-capable identifier** to each object

in order to support digitalization and automation in manufacturing processes (Industry 4.0).

In terms of **sustainability**, the second-life sector, which extends beyond the actual product life to the recycling of components and secondary raw materials, must be considered. Closing the cycle requires markers that are both indestructible and unambiguous.

For these reasons, it is of the utmost interest to develop inexpensive and reliable techniques for marking objects.

The marker technology is based on the fusion of nanoparticles into microscale particles.

The nanoparticles form the information carriers, which can be equipped with different degrees of differentiation and detection capabilities depending on the intended use.

In borderline cases, a single **(sub-) microparticle** is sufficient for unambiguous identification.

Basic substances, materials, and product components can be marked permanently, inexpensively, and sustainably and can be identified with simple physical methods.

The fingerprint function can not only be placed close to the surface and be read optically, but the information bundled on the micro-scale carriers or immanent in the carriers can also be detected from deep inside as a hidden feature.

For further information, please follow the QR code.

