

Micro- and nanoencapsulation

Encapsulation is a process at which small solid, liquid or gaseous substrates are covered by a polymeric or inorganic shell. Typically, capsules have a spherical structure with core shell geometry. According to their size capsules are classified as micro- (diameter 1 – 5000 μm) or nanocapsules (diameter < 1 μm).

For the selection of the encapsulation technique the properties of the core, shell and matrix material have to be considered.

The following encapsulation techniques are used:

- Polycondensation-melamine resin
- Polyaddition-epoxy resin
- Phase separation polymerisation - poly(meth)acrylates, polystyrols and corresponding copolymers
- Interface polycondensation - polyamides, polyurethanes, polyureas

Specific experiences about the micro- and nanoencapsulation of chromogenic systems and the incorporation of the capsules in polymer matrices have been worked out.



Figure 1
Microencapsulated thermochromic composites

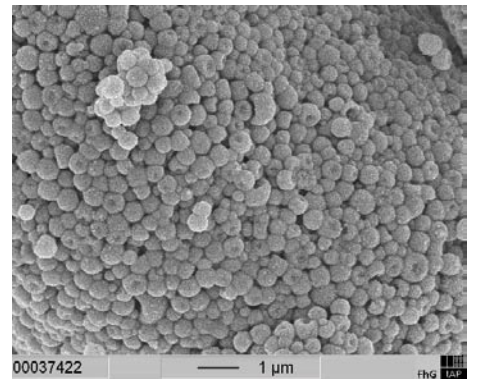


Figure 2
REM-photo of monodisperse nanocapsules

Fraunhofer-Institut für
Angewandte Polymerforschung
Chromogenic Polymers
Volmerstraße 7B
12489 Berlin-Adlershof
Germany

Phone +49(0)30/6392-4258
Fax +49(0)30/6392-2065
E-mail arno.seeboth@iap.fraunhofer.de
www.thermochromic-polymers.com