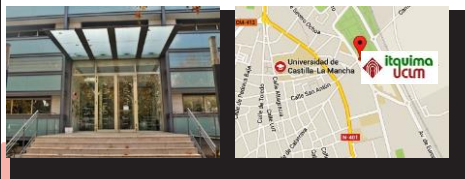


RESEARCH LINES

- Nanoparticle agglomeration.
- Development of thermoregulating microcapsules.
- Synthesis of polyols from vegetable oils.
- Polymer recycling (polyurethane and polystyrene).
- Development of microcapsules containing extractant agents for removal of heavy metals.
- Development of new biodegradable Polyurethanes having flammability resistance.
- Synthesis of flexible Polyurethane (PU) foams with superabsorbents.
- Synthesis of biodegradable polymers for the drug delivery by mean of supercritical technology.
- Synthesis of PEG derivatives for controlled drug delivery.

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**SPRAY-DRYING
Pilot Plant**

**Production of
Consolidate
Nanoparticles by
Spray-Drying**



AIM

The Pilot Plant is used in the production of consolidated nanoparticles in the form of micro-sized granules.

The plant provides:

- Improved processability
- Safer production
- Better recovering of the product

SYNTHESIS

Several steps are involved in the synthesis of consolidated nanoparticles:

- Synthesis of the nanoparticles
- Generation of the nanoparticles suspension
- Spraying and drying of suspension

FEATURES

The Pilot Plant can be used:

- To check new agglomeration routes.
- To optimize process conditions.
- For the production of different nanoparticles aggregates and their mixtures.
- To obtain data that allow to model and simulate the process at industrial scale.

CHARACTERISTICS

- Built in stainless steel AISI 316
- Feed tank: 1.2 m³ capacity, jacketed and with a Rushton-type stirrer with shaft seal of 300 rpm.
- Positive pressure close to 200 mbar for safety purpose.
- Possibility of oxygen concentration control under a 6% in the chamber when working with inflammable solvents
- Computer program and a control panel for registering and visualizing the main operating variables



PRODUCT CAPABILITIES

Nanoparticles agglomerated are a consolidated group of nanoparticles. This way, the materials pass from the nanometer scale to complex structures in the micrometer range, improving some of their properties such as the safety and easiness of handling.

Alternatively, this Pilot Plant could be used for:

- Microencapsulation of different products
- Nanomaterials production (SiO₂, SiC, ZnO and TiO₂) without agglomeration
- Currently the Pilot Plant is able to produce up to 10 kg/h of microcapsules and 5 kg/h of consolidated nanoparticles per batch.

SERVICES OFFERED

- Prototyping and development of specific type of innovative raw materials
- Offered value to SMEs and to the network
- Production costs reduction
- Possibility of producing two different type of materials
- Possibility to enter food and pharmaceutical industry
- Easy scalable

THE TEAM

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