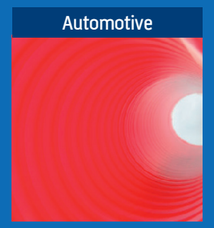

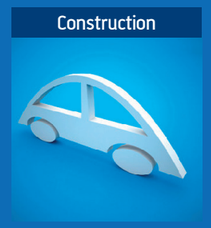

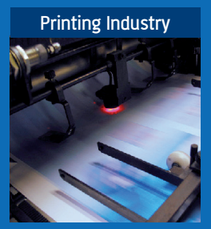

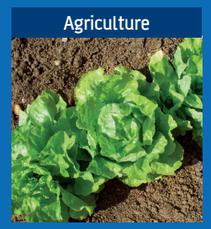

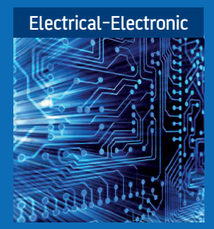

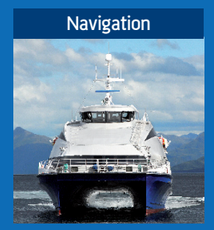

AIMPLAS
PLASTICS TECHNOLOGY
CENTRE

València Parc Tecnològic
Calle Gustave Eiffel, 4
46980 Paterna · Valencia · SPAIN
Tel. +34 96 136 60 40 · Fax +34 96 136 60 41
info@aimplas.es I **www.aimplas.net**

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Una manera de hacer Europa

SYNTHESIS LABORATORY

AIMPLAS
PLASTICS TECHNOLOGY
CENTRE

innovation IN PLASTIC

SYNTHESIS LABORATORY

AIMPLAS focuses its efforts on developing innovative polymeric materials with technological applications in the Industry. A complete team with a broad experience in materials and advanced characterization techniques is involved in the latest developments on polymers and their properties.

The aim of the Synthesis Laboratory is to obtain polymers and nanoparticles with advanced properties. Furthermore, it works on the scaling of the reaction and the subsequent purification stages, in other words, all that surrounds the nanoparticle and polymer synthesis.

We offer solutions throughout the entire value chain

Large-scale trials (up to 50 kg)

Chemistry based on your requirements

R&D Lines

- **Polymer Synthesis**
  - Polycondensation.
  - Ring opening polymerization (ROP).
  - Radical polymerization.
  - Ionic polymerization
- **Nanomaterials**
  - Synthesis.
  - Functionalization.
- **Materials with advanced properties**
  - Thermal and electrical conductivity.
  - Fireproof materials and smoke suppresors.
  - Active and smart materials: anti-microbial, anti-thermal, anti-insects, light diffusers, etc.
  - Improved tribological properties.
  - High-barrier.
- **Functional coatings**
  - Self-cleaning: Superhydrophobic / superhydrophilic.
  - Scratchproof, wear resistance, anti-fouling, anti-icing.
  - Barrier properties.
- **Improvement of traditional materials properties**

Technical Assistance

- Development of new materials and improvement of final properties.
- Design of synthesis and functionalization strategies.
- Processability of plastic materials. Detection and assessment on processing problems by degradation and/or raw material modification.
- New application markets and innovation opportunities for polymeric materials in the Industry.

Polymer Synthesis

- Scale up from 0.1 to 50 Kg.
- Process development by solution synthesis or reactive extrusion.
- Process optimization, including purification steps.
- Strategies in polymer synthesis as:
  - Ring opening polymerization (ROP).
  - Radical polymerization.
  - Ionic polymerization.
  - Polycondensation.

Nanoparticle Synthesis

- Scale up from 0.1 to 1 Kg.
- SOL-GEL synthesis of SiO_2,TiO_2, Al_2O_3.
- Process optimization, including purification steps.
- Functionalization:
  - Oxidation treatment by O_3, peroxides, acids.
  - Silanes (perfluoroalkyl, amino, alkyl...).
  - Crosslinking of active substances, antibacterial, fungicides...

Application Sectors

- **Medical applications**
  - Materials with new features.
  - Biocompatible and bioabsorbable.
  - Materials from renewable sources.
- **Petrochemical industry applications**
  - Development of new polymers.
  - Optimization of polymerization strategy.
  - Screening of catalytic systems.
- **Aeronautical, space and wind applications**
  - Superhydrophobic non-stick coatings.
- **Electrical-Electronic applications**
  - EMI shielding.
  - ESD (Electro Static Discharge) protection.
  - Thermal and electrical conductivity.
- **Energy uses**
  - Self-cleaning.
  - Solar collection capacity.
  - Piezo-electric materials.
  - Recyclability.

Analysis and Testing

- Electronic microscopy: SEM, TEM, EDX, AFM.
- Optical microscopy.
- FTIR, RAMAN Spectroscopy.
- Thermal characterization: TGA, DSC, HDT.
- Mechanical characterization: impact, compression, bending, tensile properties.
- Electrical and thermal conductivity.
- Dynamic rheometry analysis.
- Dynamic-mechanical analysis.

Training

- Specialized and customized training for your company.
- We discover new prospects for the future on innovative materials (seminars, events, etc.).

Competitive Intelligence

AIMPLAS provides services to allow companies keeping a watch on their technological and economic environment (legislation, standards, patents, sector news, scientific articles, etc.) to ensure its competitiveness and discover new business opportunities.

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