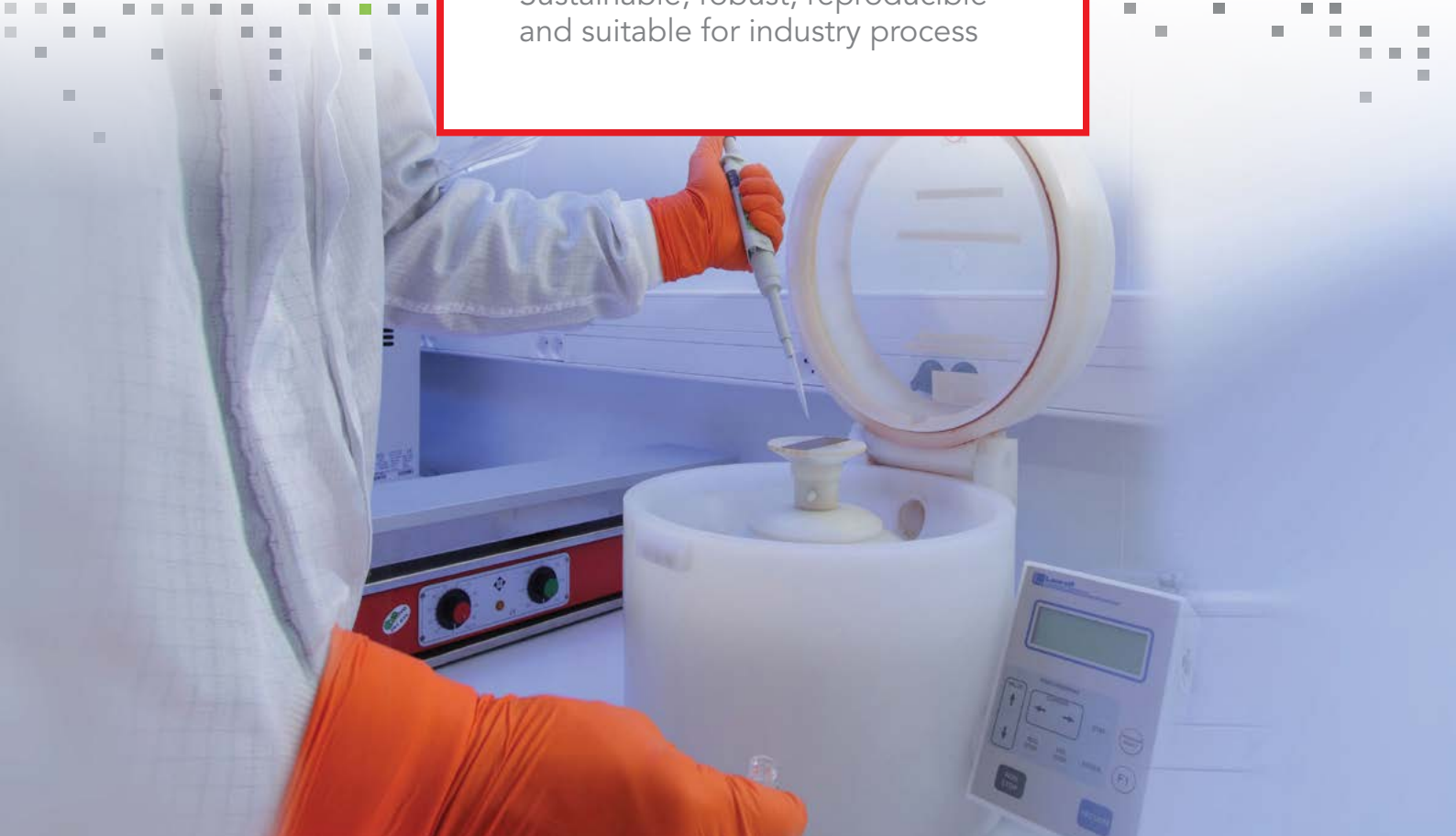


leti
cea tech

TECHNOLOGY
RESEARCH
INSTITUTE

SURFACE CHEMISTRY

Sustainable, robust, reproducible
and suitable for industry process



FUNCTIONAL CHEMICAL INTERFACE FOLLOWING YOUR NEEDS

Identification of the customer's needs

Choice, adaptation or development of the surface functionalization

Process optimization for short runs

Process expertise

Feasibility test

Industrial transfer

SERVICE OFFER

Leti surface chemistry service offers processes on semi-conductors and metals, glass and oxides, polymers and plastics from single component to wafer scale.



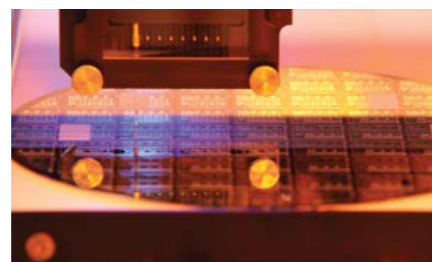
SURFACE FUNCTIONALIZATION

Liquid, vapor, CO₂ supercritical deposition of:

- organic layers (silanes, phosphonates, thiols)
- polymers
- silica
- patterned (> 1µm)

Main Equipments:

- Molecular Vapor Deposition, MVD-100E from Applied MST
- Supercritical fluid deposition, SFD-200 from 31deg
- Spin-coaters, from Laurell
- Electrografting cells in glove box
- Mask aligner, SET MA750 from Karl Süss
- Microwave reaction system, Multiwave Pro from Anton Paar



LOADING

Biological (DNA, PCR fragments, proteins, enzymes, antibodies) or chemical (saccharides, peptides, synthetic molecules) loading

- Spotting
- Freeze drying

Main Equipments:

- Non-contact piezoelectric dispensers, Sciflexarrayer S3 from Scienion
- Tray freeze-dryer, from Cryotec



SURFACE CHARACTERIZATION

- Contact angle
- Thickness (from 1nm)
- Roughness Porosity
- Specific surface
- Zeta potential
- Fluorescence

Main Equipments:

- Electrokinetic surface analyser, SurPAAS from Anton Paar
- SEEC microscope, from Nanolane
- Drop shape analysis systems, from GBX instruments and Krüss
- Fluorescence scanner, LS reloaded from TECAN
- AFM, from PicoPlus
- Minatec Nanocharacterisation platform (XPS, SEM and AFM...)

SUCCESS STORIES



ENVIRONMENT
TOXIN DETECTION IN DRINKING WATER
ML² European project

- Roll-to-roll biofunctionalization of PMMA sheets
- Biological probe grafting by non-contact printing with controlled size and form
- Reproducible process on large area and low cost



MICROELECTRONIC
ORGANIC MEMORY
INAC

- Redox molecules grafting
- Direct grafting on silicon
- 2 different grafting: via heating and electrochemistry



HEALTHCARE
LAB-ON-CHIP FOR FAST DIAGNOSTIC
ULTRA European project

- Localized functionalization for bacteria capture
- Generic layer development for bacteria capture
- 5 × 5µm silicon substrate



HEALTHCARE
SMART ANTIBACTERIAL SURFACE
MATISS project with CNES

- 3 functionalized plaques: a fluorinated thin layer, an organic silica and a biocompatible polymer
- 6 months experimentation aboard the International Space Station

UNIQUE EXPERTISE

Integration of the resulting chemical processes taking into account fabrication constraints and application requirements:

- Low temperature processes
- Fast processes
- Biocompatible processes
- Green processes

KEY FIGURES

- **Facilities:** 170 m² of clean room dedicated to surface chemistry
- **Quality:** ISO 90001 and ISO13485
- **20 projects per year**



GREEN CHEMISTRY
SUPPORTED CATALYSTS
ARCANE labex

- Synthesis and grafting of organic catalysts on nanoporous silica beads
- Supercritical CO₂ deposition (without solvent)



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ABOUT LETI

Leti is a technology research institute at CEA Tech and a recognized global leader in miniaturization technologies enabling smart, energy-efficient and secure solutions. Committed to innovation, its teams create differentiating solutions for Leti's industrial partners.

By pioneering new technologies, Leti enables innovative applicative solutions that ensure competitiveness in a wide range of markets. Leti tackles critical, current global issues such as the future of industry, clean and safe energies, health and wellness, safety & security...

Leti's multidisciplinary teams deliver solid micro and nano technologies expertise, leveraging world-class pre-industrialization facilities.

For 50 years, the institute has been building long-term relationships with its industrial partners providing tailor-made solutions and a clear intellectual property policy.

Leti, technology research institute

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INTERESTED IN THIS TECHNOLOGY?

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