

Everything starts with **chemistry**
We make it more **innovative**



Certech
R&D partner in chemistry

R&D partner and supplier of analytical and technological services for companies involved in activities related to chemicals, plastics, life science

Belgium (2021)

73,8 billion € turnover
97.500 direct jobs
and 224.000 indirect jobs
5,5 billion € in R&D investments



Wallonia (2021)

10,8 billion € turnover (26%)
25% industrial employment
30.000 direct jobs
and 68.000 indirect jobs
2 billion € in R&D investments

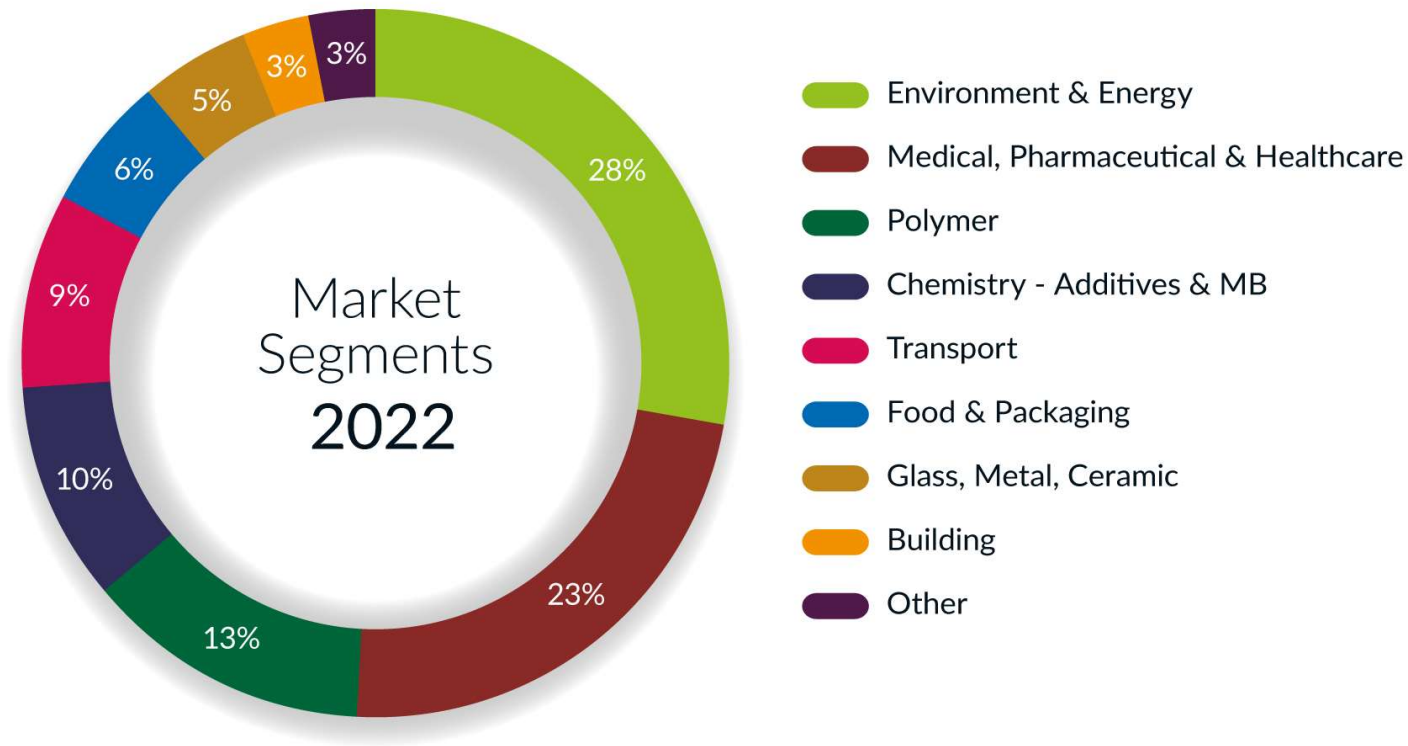
Europe (2020)

499 billion € turnover
2nd largest chemicals producer



Source: Cefic

Breakdown of income from industrial contracts



R&D Partner for Industries

Sustainable innovative solutions to improve or develop products and processes

Services

Analytical support
Problem solving
Out of Spec analysis
Regulatory assessment

Industrial projects

Product/process development
Product/process improvement

Collaborative projects

Competence development
Product development
Process development

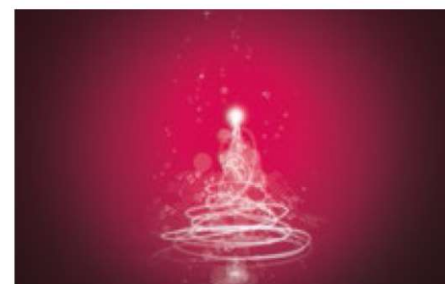


ENVIRONMENT

- Air quality
- Health & safety
- Energy
- Circular Economy

MATERIALS

- (Bio-based) polymers & composites
- Emissions and odours from materials
- Lightweight materials
- Mechanical Recycling



CHEMISTRY & INDUSTRIAL PROCESSES

- Factory of the future / Intensification
- Micro / Meso fluidic technologies
- Catalysis and synthesis
- Chemical Recycling

ANALYTICAL & TECHNOLOGICAL SERVICES

- Extended characterization platform / reverse engineering
- Pilot equipment
- Products and processes improvement



465 industrial contracts in 2022

33 employees

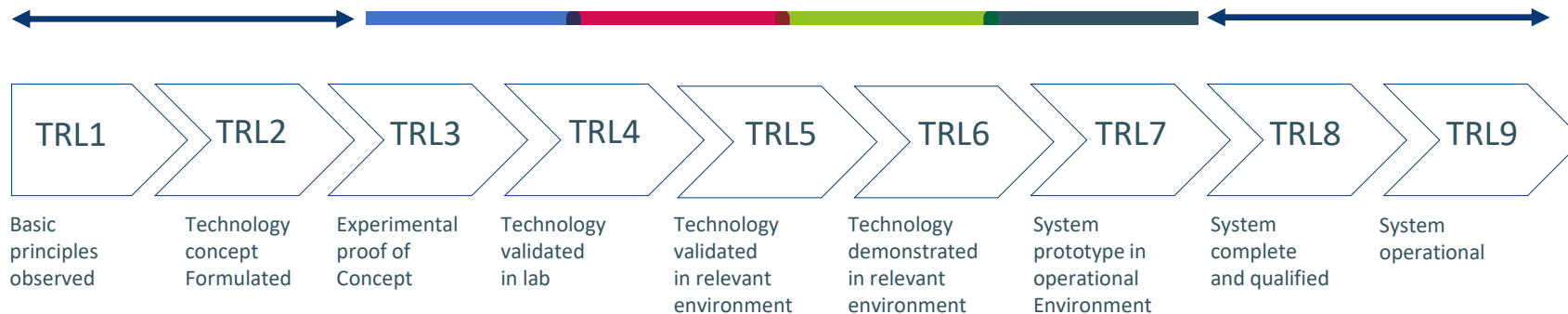
1680 industrial collaborations since 2000

Technology Readiness Level : from 3 to 7

Academic partners
Joint Research Unit
with UCLouvain

Certech

1680 industrial
collaborations since
2000



Market Readiness (Technology Readiness Level)

We make it more **sustainable**.



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R&D partner in chemistry

Environment

- Air Quality
- Health & Safety
- Energy Efficiency
- Circular Economy

Atmospheric pollution / Workplace exposure / Process improvement / Chemical Energy Storage / Waste Recovery

Expert in standardization committees (CEN, ISO...)

We make it more efficient.



Certech
R&D partner in chemistry

Materials

- (Bio-based) Polymers & Composites
- Emissions & Odours from Materials
- Lightweight Materials
- Mechanical Recycling

Formulation / Compatibilization / Characterization / Processing / HSE Management

Market oriented development

Polymers – Medical – Healthcare – Packaging – Automotive & Transportation...

- **(Bio-based) polymers & composites**

- Thermoplastic compounding
- Compatibilisation/dispersion
- Biocomposite and biobased formulations
- Polymerisable formulations
- High performance materials for 3D printing
- Regulatory compliant materials

- **Lightweight materials**

- Physical and chemical foaming
- Development and optimisation of formulations
- Development and optimisation of foaming processes

- **Emissions and odours from materials**

- Objective measurements and diagnostic
- Odour-chemistry correlation
- Remediation
- Validation of materials and devices for indoor air purification

- **Mechanical Recycling (P to P)**

- Thermoplastic compounding/processing
- Shredded composites valorisation
- Characterisation / technical data sheet
- Odour management of recyclates

We make it more competitive.



Certech
R&D partner in chemistry

Chemistry & Industrial Processes

- Intensified / Continuous Process
- Micro/Meso Fluidic Technologies
- Catalysis & Synthesis
- Chemical Recycling

Factory of the future / High temperature and pressure / HSE Management

Pilot equipments: autoclaves, reactors, pyrolysis, solvolysis, spray dryer

Environment & Energy – Chemistry – Materials – Pharmaceutical...

▪ Intensified / continuous processes

Catalysis
Hydrothermal synthesis
Treatment of solids
Specific reactors: design and construction

▪ Micro/Meso fluidic technologies

Continuous reactors, outstanding mixing and heat exchange properties
High internal surface/volume ratio, low residence time, low quantities of reactants and solvents
Easiness of scaling up

▪ HSE management

Atmospheric pollution/ambient air
Workplace exposure
Risk assessment: products, materials and processes health & safety impact
Pilot equipment's for air treatment and gas purification

▪ Chemical Recycling (P to L, P to C, P to G)

Conversion of non-recycled waste into oil, waxes, fuels, and industrial feedstocks
Thermo-chemical recycling (pyrolysis, depolymerisation, solvolysis, selective dissolution)
Alternative feedstock (ultimate waste, biowaste, CO₂, urban mining, ...)

We make it more **intelligible**.



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Analytical & Technological Services

- Extended Characterization Platform
- Reverse Engineering
- Pilot Equipments
- Products & Processes Development

Structure-properties relationship / physical, chemical & odour characterization / traces analysis

Polymers – Medical – Healthcare – Food & Packaging – Chemistry – Environment & Energy – Transport – Building...

▪ Air quality

Online measurement

VOC analysis

Odour analysis: dynamic olfactometry, trained expert panels, GC-(TOF)MS/Sniffing, 2 sensory rooms

Nanoparticles, dust, noise, microorganisms, laboratory gas generator

▪ Mechanical properties

Bending, compression and tensile test, Young modulus, abrasion, scratch test, hardness, creep test, Charpy and Izod impact, HDT/VICAT, DMA

▪ Spectroscopy / Thermal analysis

FTIR, FT- μ IR, NIR, Raman, UV/Vis, NMR (access) TGA, muffle furnace, DSC, Flash DSC (access), TMA (access), moisture analysis

▪ Chromatography

GC \times GC-HRTOFMS

HPLC-PDA-MS, (TDS)-GC-MS/FID, GC-FPD

GPC-TOFMS, GPC RT and HT multidetectors (UV-DRI-Visco-LS-ELSD) TREF, GEF

Preparative GPC and HPLC

Pyrolysis GC-MS, Direct Injection Probe

▪ Microscopy

Optical

FEG-SEM-EDX, EELS-TEM

▪ Rheology

Rotational and capillary rheometer

Viscometers, Melt Flow

▪ Structural and textural analysis

Permeability, DRX, BET, DLS, Profilometer, Laser Granulometer, Ageing, zeta potential analyser

▪ Air quality

Evaluation of the efficiency, reliability and performance of sensors, miniaturized environmental camera fully compatible with the CMOS technology, cost competitive and autonomous



Collaboration with biotech company for the development of potential activators / inhibitors of human olfactory receptors (hOR)



CHEMCOM

▪ Reverse Engineering

Determination of the chemical composition of resins and polymers, characterization of molecular architectures, analysis of multi-layer materials, contaminant, additives and fillers identification...

▪ Chromatography

VOC, Oligomers, additives, Non Intentionally Added substances (NIAS) analysis in different matrices (polymers, cosmetics, drugs, food, beverages, process water, migration testing)
Development of new GPC / TREF methods
Understanding of structure / properties relationship

▪ Microscopy / Structural and textural analysis

Materials and surfaces characterization for the development of new products or processes
Analysis of contaminations for medical/biotech applications

▪ Mechanical properties and rheology

Product characterization and technical data sheet drafting



THERAVET

▪ **Materials Process Hall**

Pre-treatment : air dryers, pellet compactor, shredder

Mixing and compounding (thermoplastics): single-screw extrusion, twin screw extrusion

Shaping (thermoplastics): film (flat die extrusion and blow extrusion), 3D printer filament extrusion line, thermoforming, injection molding, fiber impregnation, foaming extrusion (single screw or twin screw + static mixer), micro twin screw extruder and microinjection molding (5 g)

Polymerisable liquid formulations processing: liquid resin infusion (LRI), 2 component resin transfer moulding (2K RTM)

▪ **Chemical reactors**

Autoclaves (up to 500 °C and 600 bar), microwave, double jacketed reactors

Liquid-liquid systems, liquid-gas reactors, gas phase catalytic tests, continuous treatment of slurries

Continuous micro-meso-fluidic reactors

▪ **Pilot equipment's for air quality**

VOCs wet scrubber

Continuous reactor for catalytic oxidation

Photocatalysis and exposure chambers

▪ Materials Process Hall



Development of polycarbonate films for the production of microporous membranes
Cast-film extrusion of bio-based thermoplastic product to print a commemorative stamp on
Development of low odour and low VOC formulations for automotive and food applications

▪ Chemical reactors

Valorization of ultimate shredder residues into fuel to produce energy (electricity and heat)
Development of a patented intensified process for the extraction and purification of biomaterials - technological transfer and creation of a new medical company
Process intensification for the production of boehmites aluminas
Process development and optimisation to produce mesoporous inorganic materials using spray drying technology



Wishbone



▪ Pilot equipments for air quality

Development of innovative processes for gas treatment using intensified reactors

Ongoing collaborative projects

ECOLISER (Regional Development): Ecobinders for soils treatment, weatherproofing and roads

EMRA-DEMO2FACTORY-REACT-EU (Regional Development): Demonstration units for the process and the characterization of polymers

HIPPER-PACK (Plan Marshall): Development of food packaging materials for High Pressure Processing

PUR4UP (Plan Marshall): Design of new products incorporating high-quality recycled plastics from end-of-life vehicles (ELV) and electrical and electronic equipment waste (D3E)

SPF Liner (Plan Marshall): Development of a sheath/resin system for long life metallic pipes (high temperature and drinking water applications)

CHIMERIQUE: Digital revolution of industries in the fields of chemistry, life sciences, and plastic materials

H2Be: Solid storage of Hydrogen in porous materials

Recognition

ISO 9001



Automotive collaborations and accreditations



RENAULT NISSAN MITSUBISHI

Belgian expert for standards elaboration (ISO16000, EN 13725)

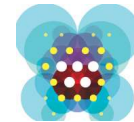
Belgian expert in 11 CEN, ISO and Afnor standardisation committees



Belgian expert for IAQ labels harmonisation in Europe

Walloon Region, Flanders, BXL, CIR agreements

ADEME recognition



AGENTSCHAP
INNOVEREN &
ONDERNEMEN



Vlaanderen
is ondernemen



Agence de l'Environnement
et de la Maitrise de l'Energie

Participations and collaborations

Professional bodies



Clusters



Recognition and collaborations



Certech is an Authorised Partner Laboratory from Agilent Technologies. The collaboration covers all aspects of molecular weight and chemical composition distribution by gel permeation chromatography (GPC), temperature rising elution fractionation (TREF) and odours and emissions from materials using thermal desorption gas chromatography mass spectrometry (TDS-GC-MS).



Certech is member of the Editorial Board of the International Journal of Polymer Analysis and Characterization (IJPAC)

Certech is also referee for the following journals: ACS Applied Polymer Materials, ACS Catalysis, Catalysis Communications, Catalysts, ChemCatChem, Chemistry Eur. J., Macromolecules, Molecules, Nanomaterials, Organic Letters, Polymer Chemistry, Polymers, RSC Advances, Synthesis





Certech
R&D partner in chemistry

Customer-focused employees

Meet industrial needs

From raw materials suppliers to end-users

