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Editorial

The projects funded by the European Development Fund (ERDF) program 2014-2020 “Transition” , “Interreg V” and the European Commission Horizon 2020 have been closed out. The projects submitted in the new ERDF program 2021-2027 “Transition” and “Just Transition Fund” covering Certech strategic axes for the five years to come were unfortunately not granted by the Walloon public authorities despite a strong industrial support and a perfect fit with 4 of the 5 strategic innovation areas of Wallonia (DIS): circular materials, innovation for an improved health, innovations for agile and safer design and manufacturing, sustainable energy systems and housing.
Six projects were submitted in the “Interreg VI” program and 4 in the “Horizon Europe” covering circular and biobased materials, additive manufacturing and process intensification.

In 2023, 242 companies received support in their innovation process, 23% of which were new prospects. A total of 596 R&D contracts were handled. The turnover associated with those R&D projects experienced a 20% growth compared to the previous year. The major market segment for 2023 was (bio)chemistry & life sciences (36%) followed by environment and energy (30%), automotive (14%), and polymers (9%).

I would like to thank all the coworkers for this great achievement, for the support, their commitment and their resilience throughout this year.

Thierry Randoux
General Manager

1. PRESENTATION OF CERTECH ACTIVITIES

Certech is a research and development partner and supplier of analytical and technological services for companies involved with activities related to (bio)-chemistry: life sciences, environment and energy; automotive, polymers.
Our mission is to provide sustainable innovative solutions to improve or develop products and processes to meet industrial and societal needs.

The research & development strategy is based on the synergies of three main themes, namely: polymer materials technology, chemistry & industrial processes, environment supported by an analytical & technological services platform.

ENVIRONMENT

Our industry partners benefit from more than 40 years' experience, in the field of gas emission, process optimization and improved materials with reduced environmental impact. Research and Development activities include air quality, health and safety, energy, and circular economy.
Certech is approved for the atmospheric pollution control (odour, volatile organic compounds) by regional authorities and is an active member of 11 standardisation committees (AFNOR, EN or ISO).

Air Quality, Health & Safety

Atmospheric pollution and ambient air

In the field of outdoor environment, sampling, on-line measurements, and analysis (odour and gaseous effluents) are offered. Environmental impact is evaluated via simulations of atmospheric dispersion and neighbourhood direct assessment. Remediation pilot equipment based on catalysis or scrubbing is also available. A mobile laboratory is dedicated to carry out environmental diagnostics. It is equipped with several sampling equipment and measuring devices for the analysis of atmospheric emissions and ambient air.

Occupational hygiene and indoor air quality

Key expertise in workplace and indoor air assessment includes sampling and analysis of dusts, aerosols, microbiological and chemical components, noise, measurement of nanoparticles and biological agents, determination of organic vapours, evaluation of personal protective equipment (PPE), probability assessment of workstation exposure and characterization of ATEX (ATmosphere EXplosive) atmosphere, generation of controlled atmosphere and sensors efficiency evaluation.

Energy and circular economy

The European Green Deal and the accelerating use of renewable energy sources driven by the need to mitigate the effects of climate change has significantly increased market need in the field of energy saving, renewable energy production, storage, distribution, and end-use.
Driven by the concepts of sustainability, expertise in chemistry for renewable energy applications has been built up by working on efficient and green materials, energy production and storage, chemical storage, sustainable and innovative process.

CHEMISTRY AND INDUSTRIAL PROCESSES

In the current era of globalization and capital mobility, European chemical industry has to accelerate its pace of innovation to remain in a leading position. Capitalizing on its core expertise in chemistry, process intensification and continuous flow chemistry, Certech aims to develop factory of the future and smart (bio)-chemistry platforms adapted to the main industrial chemical sectors: Specialty Chemicals and Life Sciences

Factory of the Future - Intensified/continuous processes

Process Intensification is based on the use of small volume reactors, continuous processes, high temperatures and pressures, better heat, and mass transfer. It leads to improved quality products, increasing yields, reduction of investment costs, lower energy consumption and reduced environmental and safety risks. It is a multidisciplinary approach to improve process technology and the underlying chemistry at the same time.

Micro/Mesofluidic reactors

Multipurpose flow reactors enabling continuous (bio)-chemical/biotech processes are available. Main features of this type of equipment is the outstanding mixing and heat exchange, low internal volume with high residence time allowing the use of low quantities of reactants with an output of 5 kg a day.
Pilot reactors are also available to perform synthesis under strictly controlled experimental conditions in gas, liquid phase but also slurries. Different applications are covered including fine chemicals, medicinal chemistry, biotechnology, green chemistry and polymer chemistry.

Chemical recycling (Plastic to Liquid, Plastic-to-Gas)

Chemical recycling is a process which either breaks down or selectively dissolve plastic waste into their chemical constituents and converts them into useful products like basic chemicals, new polymers/oligomers, or specialty chemicals. Specific skills and equipment able to reach high pressures and temperatures are used in the field of recycling and valorisation of plastic waste materials in a continuous way.
Certech also has a strong expertise in the field of catalytic pyrolysis for waste to hydrocarbons transformation, with potential valorisation for the synthesis of new polymers.

POLYMER MATERIALS TECHNOLOGY

Expertise in polymer and composite materials ranges from analysis and development (formulation, blending...) to transformation and processing, thereby offering a broad and diversified technical and scientific support to partners and customers looking for a global expertise in the field of material science.
To address environmental concerns which have become a major topic for industry these last years, a strong expertise has been acquired in materials and processes with reduced environmental impact, ranging from biobased materials to the mechanical and chemical recycling processes for plastics and composites. This expertise also includes the development of lightweight materials as well as odour and emissions from materials

Odours and emissions from materials and indoor air quality

R&D projects, testing and consulting in the field of materials interaction with the environment are offered. New requirements from end-users (low odour and emission products, non-intentionally added substances NIAS), new directives and regulations (for example new car manufacturers standards, migration concerns, health and environmental regulations) have a clear influence on product market acceptance and have generated a need for reliable laboratory testing conditions. By combining skills in air sampling and analysis with expertise in materials technology, leading edge know-how has been developed in assessing and managing gaseous emissions produced by materials. It includes indoor air quality (IAQ), emissions from transportation or building materials, migration phenomena and organoleptic contamination of packaging materials. Certech works in partnership with suppliers, manufacturers, and end-users in order to achieve materials emission levels that are complying with the market needs. Remediation is also proposed and can involve formulation of less odorous and less emissive products and/or using innovative processes (dry air degassing, devolatilisation and stripping). Certech has been selected as the Belgian expert for the drafting of the European Standard EN13725 “Air quality – Determination of odour concentration by dynamic olfactometry ”EN16846-1 “Photocatalysis”, ISO 16000 standards “Indoor air” and ISO 12219 “Interior air of road vehicles”. Performance evaluations of air purification units are also offered.

(Bio-based) Polymers and composites

Materials and their processing conditions are developed to respond to the most stringent market needs. The intrinsic properties, the cost of raw materials and additives, their origin, processing and manufacturing conditions, health and environmental impact, recyclability are key parameters that are being considered for the development of new materials. Know-how has been acquired in the formulation and modification of oil-sourced and biobased thermosets, thermoplastic materials like wood plastic composites, biobased composites, barrier additives for packaging, functional additives, and biopolymer formulations. Preparation of hybrid materials (sol gel, specialty and multifunctional coatings, zeolites chemistry, lightweight materials, cellular materials) is also one of the key competences.
Expertise has been acquired in the field of material substitution for the plastics and composites sectors aiming at replacing raw materials which are raising potential health or sustainability issues.

Mechanical recycling (Plastic-to-Plastic)

Recycling of materials is one of the most challenging issues from a sustainability point of view. Certech is involved in sorting and separation processes and performs the conversion of solid wastes into new materials. Assistance in material identification, processing, formulation, and evaluation of recycled materials performance is also provided. Odours and emissions associated with recycled polymers can also be managed (sampling, characterisation and remediation).

Lightweight materials: development of polymer foams

Today, environmental concerns play an increasingly central part in all the sectors of activity (building, transport, energy, …). In that respect there is an increasing need for more performing and lighter materials. For that purpose, foamed polymers are very interesting materials thanks to their thermal insulation property, lower density, mechanical properties, and competitive price. Foamed polymers are found virtually everywhere in a wide variety of applications such as packaging, cushioning of furniture, insulation, structural parts in automotive …
In order to deliver R&D support to partners, several activities linked to foaming have been implemented: physical and chemical foaming, development and optimization of formulations, development and optimization of processes.

ANALYTICAL & TECHNOLOGICAL SERVICES

Industry partners benefit from the support of a wide range of advanced characterization tools. The analytical equipment covers the physical, chemical but also sensorial properties determination:

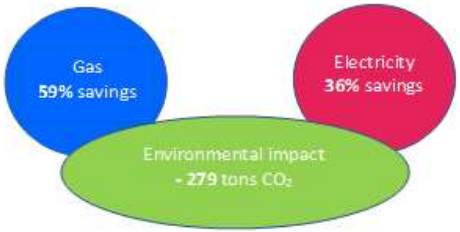
- Physical analysis: mechanical, rheological, thermal, dynamic mechanical, morphological, barrier properties, molecular weight distribution, polymer degree of branching;
- Chemical analysis: chemical composition determination of resins and polymers, additives, fillers, qualitative and quantitative determination of complex mixtures, traces analysis, non-intentionally added substances (NIAS), reverse engineering;
- Sensorial analysis: odour and organoleptic properties.

A 1000 m^2 application hall is available with highly flexible equipment designed for the simulation of industrial processes:

- Polymer Materials: drying, mixing, pelletizing, extrusion, foaming, injection moulding, resin transfer moulding (RTM), compounding. The available output ranges from 5g to a few hundred kg of processed materials.
- Process Intensification: versatile continuous reactors adaptable to project needs, 20 litres continuous reactor for catalytic pyrolysis, autoclaves from 75 to 1000 ml for high temperature and high-pressure chemical treatment, spray-drying.

ECO-RESPONSIBILITY – ENVIRONMENTAL IMPACT

A carbon footprint reduction program has been started in 2017 including installation of solar panels, : upgrade the heating system control, compressors change, optimization of HVAC programs, change lightning from conventional to LED, offices insulation. In the period 2020-2023, gas and electricity savings of respectively 59% and 36% which correspond to 279 tons of CO_2. A project to install 444 additional solar panels to produce 170MWh on a yearly basis will be started in 2024.



2. R&D COLLABORATIVE PROJECTS

In 2023, 9 collaborative projects were carried out, 3 of which were closed out during the year and 3 new projects were kicked-off. The funding sources were the European Regional Development Fund (ERDF, "Transition", "REACT-EU" and "Just Transition fund"), Walloon Region (Marshall Plan & Digital Wallonia), Federal Government (Energy Transition Fund).

ONGOING PROJECTS

Project	Description	Partnership	Funding
H_2.be	Easy hydrogen storage with advanced, innovative, safe and cost effective materials	Certech, UCLouvain, industrial partner	Energy Transition Fund (Federal Government)

Project	Description	Partnership	Funding
ECOLISER	Eco-binders for soil treatment, waterproofing and roads	CTP, INISMa, ULiège, ULB, CRR, Certech, Materia Nova	ERDF Transition

Project	Description	Partnership	Funding
EMRA-DEMO-2-FACTORY	Demonstration platform for SMEs in the field of materials technology characterization	Materia Nova, CRIBC, CTP, Certech	ERDF REACT-EU
HipperPACK	Development of bio-based new packaging (tray, lid and stopper) resistant to high hydrostatic pressure.	Industrial Partnership, Certech, Celabor, Materia Nova	Marshall Plan Wagralim
PUR4UP	Design of new finished products incorporating high quality recycled plastics from end-of-life vehicles (ELVs) and waste of electrical and electronic equipment (D3E)	Industrial Partnership, Certech, ULiège	Marshall Plan Mécatech
SFP Liner	Development of a flexible class A structuring liner-resin system for metal pipes network distribution (high temperature application and drinking water) with extended lifespan (50 years)	Industrial Partnership, Certech, Celabor, Centexbel, ULiège	Marshall Plan Greenwin

NEW PROJECTS

Project	Description	Partnership	Funding
UP_PLASTICS	Ecodesign of plastic materials for construction and building	UMons, UCLouvain, ULiège, CTP, Buildwise, Materia Nova, Certech, Celabor, Centexbel,	ERDF Just Transition fund
RECYAGE	Study of ageing on different time scales of recycled thermoplastic polymers and methodology for predicting long-term behaviour	Certech, Sirris	Win4Collective

Project	Description	Partnership	Funding
Chimérique	Industry 5.0 in the fields of chemistry, life sciences	Essenscia, Greenwin, Plastiwin, Infopôle, Cetic, Sirris, Certech	Digital Wallonia

UP_PLASTICS

The “UP_PLASTICS” projects portfolio proposes to develop and demonstrate the eco-design of plastic materials for construction and building via the exploitation of (i) eco-products (natural polymers, animal biomass , etc.) and (ii) industrial waste from buildings (PU foams, cables, PVC, end-of-life paints) using semi-industrial processing methods.
The products that will be developed as part of the UP_PLASTICS projects portfolio are innovative and involve new materials that may emit unexpected volatile organic compounds (VOCs) (residual monomers, synthetic by-products, etc.) and potentially harmful ones. It may therefore be necessary to limit them and, if possible, eliminate them completely. Certech's tasks will be to investigate these aspects of emissions and odors and, where appropriate, propose solutions.

RECYAGE

Recycled plastics are increasingly being used in the consumer electronics, household appliance, IT and automotive markets. However, the high batch-to-batch variability makes it difficult to produce a constant quality material for the manufacture of high-performance parts. In particular, the long-term properties (outdoor weathering, improved chemical and mechanical resistance in aggressive environments, etc.) of recycled materials are poorly documented. These factors are among others holding back the more intensive use of recycled materials and their integration into higher added-value products.
In this context, the aim of the RecyAge project is to develop a hyper-accelerated ageing test to enable systematic qualification of batches of recycled materials for long-term properties.
Certech’s tasks in this project include:

- Melt formulation to obtain ready-to-use granules and shaping into standardised samples
- Characterisation of properties (immediate and long-term/accelerated testing) according to the specifications of the targeted applications
- Analysis of results, development of a hyper-accelerated ageing test methodology and establishment of predictive models

CHIMERIQUE

Building on its expertise in chemical processes and collaborating with experts in digital science, Certech aims at supporting the transition towards a more intelligent and data-driven chemistry by making the Walloon companies aware of the concepts of industry 5.0, targeting a smooth transformation of their production tools.

In the scope of the projects, the objectives consist in:

- Raising the awareness of the companies about the potential benefits provided by the implementation of a more intelligent production by taking part for different communication events
- Supporting the companies of the sector for the identification of their needs in term of digitalization by suggesting the proper tools for an accurate diagnostic
- Implementing the first steps of this action plan specifically designed for the need of the companies.

NEW EQUIPMENT

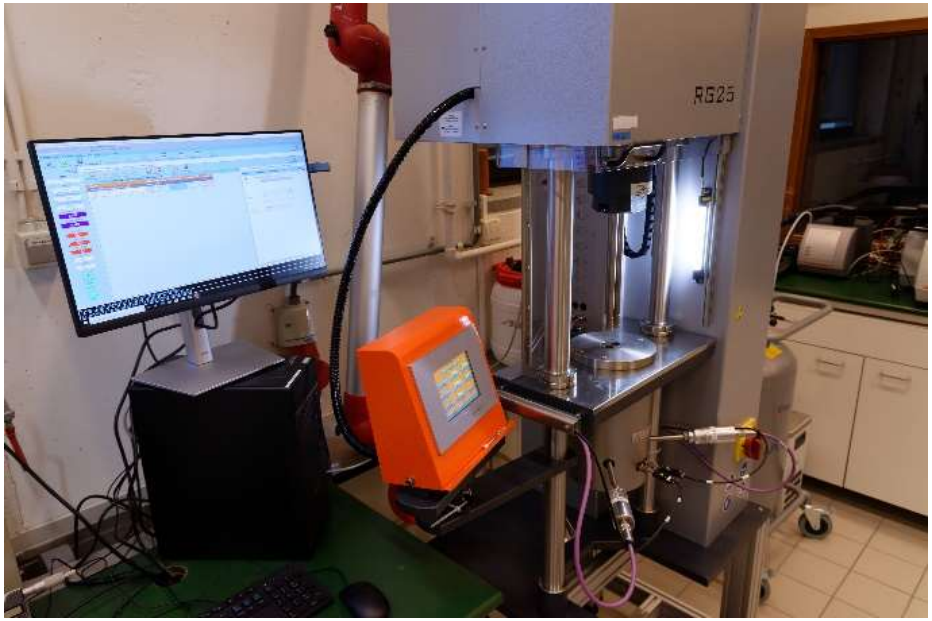
Project EMRA DEMO2FACTORY (REACT-EU)

www.enmieux.be

FEDER
UNION EUROPEENNE
Wallonie
LE FONDS EUROPÉEN DE DÉVELOPPEMENT RÉGIONAL ET LA WALLONIE INVESTISSENT DANS VOTRE AVENIR
Financement dans le cadre de la réponse de l'Union à la pandémie de COVID-19

Capillary Rheometer:

This new equipment was commissioned for the characterization of the rheological behaviour in the molten state of filled or unfilled polymeric materials. The high-pressure capillary rheometer covers the range of high shear rates corresponding to the different polymer processing techniques (extrusion, injection, etc.). This rheometer has a temperature range of up to 400°C and can reach a maximum pressure of 1400 bar, allowing to characterize technical polymers (PEEK, etc.) or polymers with very high viscosities (very low index of fluidity, MFI). It is equipped with a double sheath 15 mm in diameter in Böhler M-390 steel which gives it very good resistance to abrasion and corrosion. The use of several capillaries allows to carry out of numerous mathematical corrections (Bagley, Rabinowitsch-Weissenberg, etc.) and to meet the current standards for viscosity measurement, namely ISO 11443 and ASTM D3835.



Mixing and compounding equipment:

A new modular system equipped with an internal mixer and a twin-screw extruder for the processing in the molten state of filled or unfilled thermoplastic polymer materials was acquired:

- The internal mixer is equipped with two blades and a useful volume of 55 cm3. The equipment can reach a maximum torque of 200Nm and temperatures up to 500°C. The most typical applications are testing the flow and cure behaviour, mastication, compounding with carbon black, silica, … and other additives. It is also frequently used for measuring the black incorporation time (BIT) as a function of temperature and shear. Absorption tests can be run on materials like iron oxide powder, carbon black, pigments, and similar materials with particle sizes in the µm range.
- The mini twin-screw extruder coupled with a drive unit is equipped with a 36D long barrel, 12 mm diameter twin screw, two gravimetric feeders, a side feeder, a vacuum degassing zone and possibly a liquid injection zone. The maximum flow rate is 5kg/h for a torque of 15Nm per screw. This extruder can reach a speed of 740 rpm, temperature up to 400°C and a maximum pressure of 150 bar. It is used for the treatment of liquids, powders, and pellets up to 3 mm diameter. This extruder is designed for small quantities of samples for the development of products in the field of plastic materials (dispersion of additives, production of masterbatches, ...), rubber, energy storage and pharmaceuticals (incorporation of an active substance in a polymer matrix, …).

Injection molding press

A new injection molding machine was acquired, an investment that strengthens Certech's ability to produce high-quality plastic parts. This injection molding machine is equipped with technology that allows precise control of the injection process, ensuring consistent quality of the manufactured products. It also has a powerful cooling system that reduces production cycle times, improving the overall efficiency of the manufacturing process. With this acquisition, Certech is able to meet its customers' injection needs. Standardized specimens can be obtained and then tested on the thermomechanical characterization equipment available at Certech. This acquisition demonstrates Certech's commitment to innovation and continuous improvement of its polymer shaping processes.

3. INDUSTRIAL COLLABORATIONS

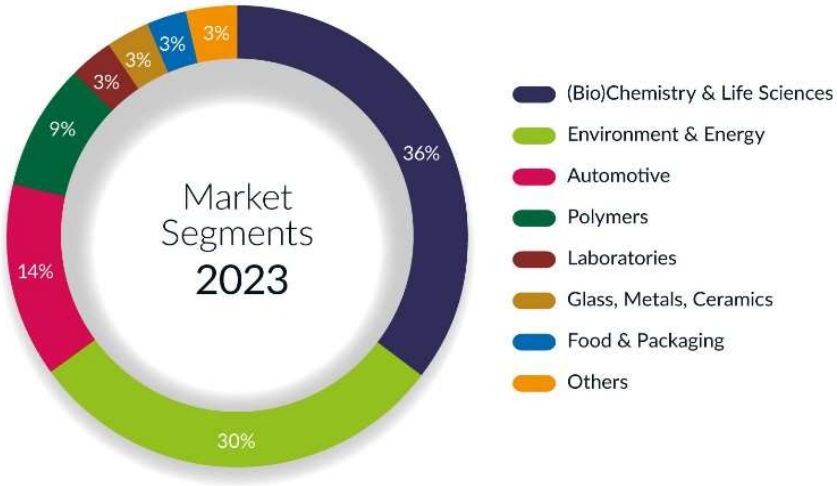
R&D PROJECTS and SUPPORTS

Certech collaborates with industrial companies in their development projects and fosters technological innovation. Concrete solutions, in-depth assistance and technical advice are provided by teams with recognised skills and knowledge. Semi-industrial and pilot equipment are also made available to industrial partners.
Experts are available for companies looking to improve their products/processes or looking to develop new products/processes. Support projects include feasibility studies, assistance or collaboration on R&D projects, technological transfer or the introduction of new products and processes, help with drafting new specifications, etc. This guidance activity is supported by literature survey, which enables experts to stay permanently up to date about the scientific and technical progress made within their field of competence which presents a high potential for industrial innovation.
Services activities include analytical support using a wide range of advanced equipment, problem solving, quality control and regulatory assessment.

In 2023, 242 companies received support in their innovation process, 55 (23%) of which were new prospects. A total of 596 contracts were handled.

INDUSTRIAL TURNOVER BREAKDOWN INTO SEGMENTS

The major market segment for 2023 was (bio)chemistry & life sciences (36%) followed by environment and energy (30%), automotive (14%), and polymers (9%).



Continuous flow technologies for the production of mRNA

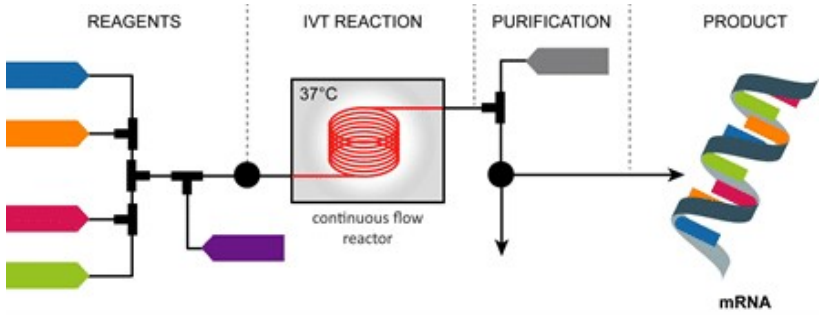
Messenger RNA (mRNA)-based biotechnologies have seen rapid recognition and expansion since the COVID-19 pandemic and the successful launch of the first mRNA vaccines. The unique advantages of mRNA drugs for protein expression, resulting from decades of research and development, are now promising exciting opportunities and rapid progress in many areas of medicine, from vaccines to therapeutics.

The single and swift process for mRNA synthesis – centered on cell-free in vitro transcription (IVT) from a precision DNA template – enables rapid and efficient access to a wide variety of mRNA structures potentially capable to address a large number of (so far intractable) diseases, thereby opening a new era in modern medicine. Following proper design, synthesis, purification and formulation, synthetic mRNA can be effectively transfected and translated into functional proteins using the patient own cellular machinery, alleviating the need to synthesize and deliver therapeutic peptides and proteins instead.

However, to realize the full potential of mRNA-based medicines, different challenges still need to be addressed – from optimization of the mRNA sequence, IVT synthesis and final encapsulation – in order to increase stability, enhance protein expression level and achieve targeted delivery when needed. In parallel, it becomes critical to devise innovative and robust manufacturing approaches to accelerate the development and production of mRNA at scale.

In this direction, in a recent collaboration with Dillico, Certech is exploring the implementation of process intensification and continuous flow technologies – some of Certech's core expertise – for transforming mRNA manufacturing. In this new paradigm, the different steps of mRNA production (synthesis, purification and encapsulation), conventionally performed sequentially in batch reactors, will be combined in a single integrated flow for enhanced process efficiency, control, quality, flexibility and scalability. The resulting miniaturized, automated and digitalized continuous flow platform will allow on-site on-demand mRNA production at different scales, from clinical to commercial.

Especially, Dillico and Certech have focused on the development of a custom microfluidic reactor module dedicated to the IVT reaction, central to the production of mRNA. Preliminary results confirmed the synthesis of mRNA in continuous flow; further efforts are underway to optimize the design and operation of the flow process.



schematic representation of continuous pilot unit for mRNA production

MMAtwo project funded by the European Commission under Horizon 2020

MMAtwo's innovative concept for PMMA waste recycling through depolymerization is focused on handling both post-industrial and contaminated end-of-life PMMA waste, thereby converting difficult to recycle waste that would otherwise be landfilled or incinerated into high quality secondary raw material.

The MMAtwo EU-funded project Team is proud to have received the "Innovation Team Best Practices 2023" award at Sorbonne University.

Inter-laboratory test organized by VITO in the field of atmospheric pollution

Certech successfully passed the inter-laboratory test organized by VITO in the field of atmospheric pollution which demonstrates the laboratory's ability to provide reliable results in measuring gases such as CO, SO_2, NOx, O_2 and CO_2. As a partner in air quality, Certech's experts support companies in the context of their regulatory requirements and the development and evaluation of treatment solutions.

QUALITY

Renewal of the ISO 9001:2015 quality management system certification for the period 2022-2025.

Approval in force for the period 2019-2023 by the Walloon Authorities for the sampling, analysis, and research in the field of air quality (including odours), as well as for measurements by dynamic olfactometry and odour detection threshold with human assessors.

Wallonie

Car Manufacturers accreditation according to the technical requirements of ISO 17025 to measure odours and VOCs on materials and parts:

PSA/Stellantis accreditation for the following tests:

- VOC analyses according to D10 5495-E
- Aldehydes and Ketones analyses according to D40 5535-E
- Odour according to D10 5517-G

Renault Nissan accreditation for the period 2021-2024 for the following tests:

- VOC and aldehydes & ketones analyses from materials after conditioning in micro-scale chamber according to RNES-B-20116 v1.1
- VOC, aldehydes & ketones, odour analyses from entire parts after conditioning in 1 m3 chamber test according to RNES-B-00114 v1.1 (formerly D49 3027-C and D49 3085-B) and RNES-B-00096 v1.1 (formerly D49 3046-C)
- Odour from materials according to RNES-B-00096 v1.1 (formerly D49 3001-E)
- VOC analyses according to D42 3109-C and D413144-A
- Aldehydes and Ketones analyses according to D40 3004-A

RENAULT NISSAN MITSUBISHI

Toyota Motor Europe recognition as an authorized laboratory to perform testing on parts /materials according to the following standards was granted for the period 2023-2025:

- TSM0505G-1A: Smell Quality of non-metallic materials
- TSM0508G: Volatile Component measurement method using sampling bag
- TSM0512G: Part volatile component measurement method using large sampling bag

TOYOTA

Financial incentives for industry

Technology vouchers/Technical feasibility studies (Wallonia)

Certech is certified to the *"Chèques Technologiques"* program funded by Wallonia to support SMEs developing a new product, process or service that requires scientific validation.

Chèques-entreprises

KMO Portefeuille (Flanders)

Certech is eligible for technological consulting and contracting supported by Flanders via the KMO-Portefeuille.

kmo-portefeuille
ERKEND DIENSTVERLENER

Research tax credit (France)

The accreditation by the French authorities to the Research Tax Credit (CIR) is valid for the period 2020-2024. This mechanism provides a tax advantage to companies subject to income tax. CIR finances all R&D activities: basic research, applied research and experimental development.

Liberté • Égalité • Fraternité
RÉPUBLIQUE FRANÇAISE

MINISTÈRE
DE L'ENSEIGNEMENT
SUPÉRIEUR,
DE LA RECHERCHE
ET DE L'INNOVATION

PARTICIPATION in TECHNICAL STANDARDISATION COMMITTEES

Thanks to its expertise based on R&D activities, Certech is an active member of several technical standardisation committees dealing with air quality, odours, volatile organic compounds (VOC) and photocatalysis.
Certech is helping industry professionals to:

- understand the aspects related to technical and scientific standardisation and regulations;
- stay up to date with methods and trends in standardisation and regulations in their specific sector;
- Implement the standards in their daily activity.

ISO/TC 146	Air quality
CEN/TC 264	Air quality
CEN/TC 386	Photocatalysis
AFNOR B44/A	VOC and odours, photocatalytic materials, chamber recycling test

EVENTS: **Emissions & Odours from plastic materials workshop**

On October, 12 2023, the Certech team welcomed more than 70 delegates from Belgium, Denmark, France, Germany, UK, Indonesia, Italy, Poland, Sweden, Switzerland, The Netherlands and United Kingdom.
Specialists could share experiences relating to the field of VOCs & odour testing and remediation, future trends and needs.
With the participation of leading industry professionals, standards & regulatory experts, R&D scientists, material specialists, industry analysts and market players, the conference offers an ideal platform for best practice sharing and acquiring new knowledge from participants and speakers and disseminating information

Special thanks go to our guest speakers from Avient, Cadel, Certech, Dow, Milliken, Renault, Sabic, Zeochem and to the exhibitors from Agilent, Gerstel, Interscience, Markes

4. PARTICIPATIONS and COLLABORATIONS

PROFESSIONAL BODIES

www.essenscia.be

www.idea.be

www.wal-tech.be

www.src.ulb.be

www.valbiom.be

www.ccih.be

www.4spe.org

www.gn-meba.org

www.gfsv.net

CLUSTERS

www.greenwin.be

www.polemecatech.be

https://www.wagralim.be

www.biowin.org

www.clusters.wallonie.be

www.clusters.wallonie.be

https://www.bioeconomyforchange.eu/

COLLABORATIONS

Agilent Technologies
Authorized Partner Laboratory

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).

Member of the Editorial Board of the International Journal of Polymer Analysis and Characterization (IJPAC).
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, Ultrasonics Sonochemistry, Frontiers in Chemical Engineering

Guest Lecturer at UCLouvain university (*Sustainable treatment of industrial and domestic waste; Safety in the industry; Techniques d'échantillonnage et analyse de l'air*) and Savoie University (*Process Intensification-Flow Chemistry-Sustainable Chemistry*)

5. PUBLICATIONS, LECTURES & ATTENDANCE at CONFERENCES & TRADE SHOWS

Books:

- Purification of regenerated monomers, F. Boutros, M. Van Melkebeke, C. Lemenu, P. De Groote, pp 103-118, ch9 in Polymer Circularity Roadmap-Recycling of Poly(Methyl Methacrylate) as a case study, edited by DR. D'hooge, YM. Marien, JL. Dubois, 2023, De Gruyter
- Application of regenerated MMA, M. Bierens, JF.Devaux, C. Lemenu, T. Compagnucci, J. Bermejo, P. Laekeman, MS. Pianesi, P. De Groote, pp 135-147 ch11 in Polymer Circularity Roadmap-Recycling of Poly(Methyl Methacrylate) as a case study, edited by DR. D'hooge, YM. Marien, JL. Dubois, 2023, De Gruyter

Scientific Papers:

- Dynamic self-assembly of supramolecular catalysts from precision macromolecules, Q. Qin, J. Li, D. Dellemme, M. Fossépré, G. Barozzino-Consiglio, I. Nekkaa, A. Boborodea, A. E. Fernandes, K. Glinel, M. Surin, A. M. Jonas, Chemical Science 2023, 14, 9283.
- Continuous flow hydrothermal synthesis of zeolite LTA in intensified reactor. Experimental and multiphysics CFD modeling approach, S. Ahmad, L. B. Mustapha, S. Calvo, F. Collignon, A. E. Fernandes, D. Toye, Chemical Engineering and Processing - Process Intensification 2023, 189, 109399.

Lectures:

- Investigation of Additives and Oligomers by GPC-QTOF: Application to HALS and Recycled Plastics, A. Boborodea, SPE Additives & Color Europe Conference, Brussels (B), March, 8-10 2023
- Upcycling Mixed Plastics from Shredder Residues to Injection Molded Industrial Parts, H. Demoulin, B. Verlee, M. Huberland, F. Cotin, A. Boborodea, B. Goffin, Ph. De Groote, SPE Additives & Color Europe Conference, Brussels (B), March, 8-10 2023
- Les matériaux isolants en MEB, A. Jadin, CNAM Entreprises FCEA02-Approfondissement en imagerie au microscope électronique à balayage et en microanalyse-X, Paris (F), 20-24 March 2023.
- Les technologies de recyclage des matières plastiques, J. Wauters, Quinzaine de l'économie circulaire, Materia Nova, Mons (B), June 11, 2023.
- Plastiwin webinar: polymers 3D printing, C. Lemenu, September 2023.
- Advanced Technologies for VOC & Odorous Compounds Characterization – C. Brasseur, O. Noiset – 16th Emissions and Odors from Materials Workshop, Seneffe (B), October, 12 2023.

- Exposomics: Monitoring of Air Quality & Material Emissions – C. Brasseur, Journée Scientifique 2023 du Club Grand-Est de l'AfSep : « Sciences séparatives au service de la santé » , Liège (B), November 6 2023.
- Développement de nouveaux matériaux pour emballage résistant au procédé High Pressure Processing C. Lemenu, présentation du projet R&D HipperPack, Inauguration – Nouveau bâtiment, équipements et installations Materia Nova, Mons (B), November 23, 2023.

Conference and Trade show Attendance

Event	Date	Location
14th Multidimensional Chromatography Workshop	30-01&01-02-23	Liège (B)
Webinaire MécaTech "Comment créer des opportunités commerciales grâce au design circulaire ?"	10-02-23	webinar
Workshop Wagralim + visite du centre de tri Valtris	16-02-23	Charleroi (B)
Additives & Color Europe Conference (SPE)	08 to 10-03-2023	Brussels (B)
Webinaire Plastiwin / Certech: Centre de recherche dans le domaine des matériaux polymères et composites.	14-03-23	webinar
Appel à projets BBBC 2023 en faveur de l'économie circulaire	15-03-23	Brussels (B)
Les matériaux isolants en MEB (dans stage EA02 au CNAM)	22-03-23	Paris (webinar)
Présentation de la nouvelle plateforme "e-report"	28-03-23	Namur (B)
B4C - Plénière Matériaux Biosourcés	06-04-23	webinar
Plastiwin - AG et événement annuel de Networking - projet Chimérique	11-04-23	Nivelles(B)
Ecomaison - Appel à Projets 2023 : Innovation et Recyclage (webinaire)	18-04-23	webinar
Plastic Recycling Show	09 to 11-05-23	Amsterdam(NL)
Journées du Groupe Français de Spectroscopie Vibrationelle 2023	22 to 26-05-23	Deauville (F)
Opportunités de financement européen dans le cadre de l'économie circulaire - NCP/EEN	01-06-23	webinar
Conférence sur la circularité des plastiques dans le cadre de la quinzaine de l'économie circulaire	01-06-23	Mons (B)
Journée de présentation du projet LifePlasPlus par Comet traitements	20-06-23	Mons (B)
Réunion thématique GN-MEBA	05&06-07-23	Rouen (F)
Biowin Day	21-09-23	Namur
PLASTIWIN - WEBINAIRES VEILLE TECHNOLOGIQUE - Fabrication additive de matériaux polymères	26-09-23	webinar
Energy Transition Fund event (SPF Economie)	04-10-23	Brussels (B)
Workshop emissions and odours from materials	12-10-23	Seneffe (B)
Belgian Hydrogen Council : Joining forces on hydrogen - Belgium, Benelux and its neighbours	16-10-23	Brussels (B)
Plastiwin - Webinaire veille technologique Centexbel - Recyclage multicouches et additifs non conformes à REACH	17-10-23	webinar
COSMETIC 360 - PARIS, Carrousel du Louvre 2023	18 to 19-10-23	Paris (F)
AFSEP Club Grand Est (Association Francophone des Sciences Séparatives) - Journées "Sciences séparatives au service de la santé"	06&07-11-23	Liège (B)
Secoya Crysta-Days	08&09-11-23	Louvain-la-Neuve (B)
L'essentiel pour gérer mon projet 21-27 « En mieux » - Séance d'information du DCPF	29-11-23	Namur (B)
Evénement annuel Interreg	01-12-23	Kortrijk (B)

6. KEY FIGURES

Balance sheet

Assets	2023	2022
Fixed assets	**1.175.032**	**1.154.502**
Scientific equipment and installations	**1.175.032**	**1.154.502**
Current assets	**7.781.991**	**8.363.705**
Accounts due within one year	1.711.721	3.187.943
Cash investments	3.723.421	3.067.230
Cash	1.819.974	1.767.701
Adjustments (accrued income)	526.875	340.831
Total assets	**8.957.023**	**9.518.207**

Liabilities	2023	2022
Reserves	**5.572.970**	**5.708.096**
Social reserves	2.228.173	2.228.173
Accumulated reserves	2.863.954	3.007.703
Investment subsidies	480.843	472.220
Provisions for contingencies and losses	**191.543**	**196.190**
Debt	**3.192.511**	**3.613.921**
Accounts payable after one year	1.466.935	1.466.935
Accounts payable within one year	1.545.761	2.088.017
Adjustment accounts	179.815	58.069
Total liabilities	**8.957.023**	**9.518.207**

Income statement	2023	2022
Turnover	**4.237.932**	**4.457.838**
Industrial projects	3.007.714	2.482.213
Public research subsidies	607.603	1.212.580
Depreciation subsidy allowances	259.421	370.414
Other revenues	363.194	392.631
Expenses	**3.960.640**	**3.619.520**
Supplies and services	1.192.376	923.757
Salaries	2.768.264	2.695.762
Depreciation, provisions, and loss of value	**570.612**	**704.029**
Financial revenues	**163.098**	**1.030**
Financial expenses	**7.590**	**118.467**
Other expenses and Taxes	**5.936**	**6.063**
Net Result	**-143.749**	**10.788**

Workforce	2023	2022
Total Headcount	**33**	**34**
Total FTE	30,7	31,7
FTE Scientists	27,3	28,3
FTE Technicians	1	1
FTE administrative staff	2,4	2,4

Certech Management Team

General Assembly - Board of Directors

				Industry	
General Assembly	UCLouvain	Eric Gaigneaux			Board of Directors
		Nathalie Burteau			
		Karine Glinel			
		Jean-Christophe Renauld			
	TotalEnergies	Jean-Pierre Dath	Chairman	√	
	Umicore	Erynn Robert		√	
	Dow Silicones	Serge Creutz		√	
	Cargill	Stéphane Biltresse		√	
	Veolia	David Benanou		√	
	GMA Consult	Gisèle Maréchal		√	
	it4ip	Yves-Jacques Schneider		√	
	Grando	Yves Charlier		√	
	IDEA	Maïté Dufrasne		√	
	Guest	Thierry Randoux	General Manager		
	SPW-EER	Emmanuel Delhaye	Observer		
	UCLouvain	Thomas Pardoen			

General Management

General Manager	Thierry Randoux
Business Manager-Deputy General Manager	Catherine Henneuse

Auditor

Avisor scrl	Dorothée Hurteux

Certech (CEntre de Ressources TEchnologiques en CHimie) asbl
Rue Jules Bordet, 45 - Zone Industrielle C - B 7180 SENEFFE - BELGIUM
TVA BE 0470.677.454 ING BE87 3701 1282 1494
Tél. +32 64 520 211- - e-mail: info@certech.be
www.certech.be