ACTIVITIES REPORT 2012

SUMMARY

EDITO

Our association enjoyed its first "fully operational" year in 2012, strengthened by the addition of its new members, Certech and Materia Nova.

The high point of the year was, without any doubt, the inauguration of EMRA, held in the Stables at the Château d'Enghien in March 2012.

It was an unforgettable moment for our Research Centres, who welcomed over 200 guests to the event, including Mr Rudy Demotte, Regional Prime Minister of the Walloon Government, Mr Jean-Claude Marcourt, the Walloon Minister for the Economy, and Mr Jean-Marc Nollet, representing the Minister for Research. Industrialists also lent their support to the "EMRA" project, as can be seen in the film available for viewing on www.emra.eu.

Operationally speaking, the EMRA Executive Committee (made up of the Managers of the 5 full members of the association) has approved the setting up of five working parties based on the following topic areas:

Communication (creation and updating of the website, activity report, EMRA newsletters, various communication materials);

Business Services (targeted and coordinated "EMRA" prospecting, rules on subcontracting between partners, etc.);

Public Contracts (pooling experience, setting up joint tenders, etc.);

Administration (comparison of administrative processes such as human resources management, accounts management, invoicing, preparation of fund request applications for subsidised projects, and so on – plus management of insurance, IT equipment, and waste);

Quality (pooling experience, presentation of respective quality management systems - ISO9001, ISO17025, ISO14000, VCA – setting up internal cross audits).

An organisation has been put in place to meet the many challenges relating to **Research**, our main activity, which is highly strategic for the partners.

In Wallonia, since the publication of a call for R&D projects (from DG06), the members of EMRA have been working together and very quickly producing ideas for projects which match the relevant requirements and will help to increase collaboration within EMRA.

For EMRA, 2012 was a year of success. In the call for Collective Research, for example, EMRA members were involved in more than 50% of the projects selected.

At the European level, the work is certainly more difficult, and the stakes are higher. The EMRA partners are currently involved to different extents in the calls for European projects (FP7, Cornet Era-Nets, etc.). We are working on our image, and aiming to increase our internal collaboration and global activity on a European level. We are convinced that these efforts constitute an important strategic move for us and will be a foundation for lasting success for EMRA and its partners.

With regard to the 2014-2020 round of EDRF planning, it is clear that EMRA will be a major player in the Walloon Region when it comes to matters of utmost importance to the association: Environment, Materials, and Processes. An internal EMRA task force has been set up with this in mind. This task force is already working actively on drafting and finalising portfolios for projects with the aim of obtaining approval for them for the forthcoming 2014-2020 round.

In 2013, the focus will be more orientated towards 'consolidation' for EMRA.

The goal will be to continue to strengthen, organise, and structure our association. The priorities are as follows: to maintain the operating independence of each partner (including financial) through the adoption of a 'daughter organisation' concept, all while meeting the requirements of the government memorandum from Minister J-M Nollet on the "structuring of Walloon approved research centres" adopted by the Walloon Government in December 2012.

As is evident in this report, the partners' activities thrived and were particularly productive throughout 2012. The "EMRA" identity is being built up gradually, and the positive, constructive spirit of the partners is proof of this progress.

I would like to conclude by thanking the members of the "Communication" working party, Dorothée, Céline, Tiphaine, Véronique, and Séverine, for all their hard work.

I would also like to thank all of our "intermediaries" at the Centres, who have contributed directly or indirectly to the writing of this report.

Stéphane Neirynck / EMRA Coordinator

HIGHLIGHTS

JANUARY

- Installation of SLM and SLS equipment for additive rapid laser manufacturing/prototyping technology (Mons – BE)
- Conference "guest" at the 1st Lyon Turin Workshop (Bardonecchia - ITA)

FEBRUARY

- Participation in the IFEST Trade Fair in Ghent (BE)

MARCH

- EMRA inauguration at the Château d'Enghien
- INISMa obtained approval in France for laboratories and organisations carrying out certain types of sampling and analyses of substance emissions in the atmosphere

APRIL

- CTP obtained quality approval as a waste analysis laboratory
- Participation in the SIÑAL trade fair (Châlons-en-Champagne – FR)
- Spark Plasma Sintering Day (Mons-BE): One-day event on technology for the rapid consolidation of granular materials

MAY

- Tour of the laboratories organised as part of the Europe Weekend
- Participation in the INNOV'ACTION day – the economic potential of your waste (Gembloux – BE)

JUNE

- Participation in the royal mission to Japan - This mission was an opportunity to demonstrate EMRA's level of excellence.
- Inauguration of the SOLINDUS platform (Châtelet)
- Participation in the ENVIRONORD trade fair (Lille – FR)
- First EMRA football tournament
- DesignWeek (Kortrijk - BE): meeting with the main parties involved in each of the 4 economic networks of the INNOVEUROMETROPOLIS platform

SEPTEMBER

- Certech's ISO 17025 certification was extended in line with ISO 16000-6 and the evaluation of inhalable and respirable dust fractions in the workplace
- Organisation of "Researchers' night – science in the home" in collaboration with UMons

OCTOBER

- Hosted the GFEC (Houffalize) - EMRA, in collaboration with the University of Liège, organised by the Groupe Français d'Etude du Carbone's Science Days

NOVEMBER

- First EMRA Newsletter
- Participation in INNOV'EMBRE (Lille – FR)
- Organisation of the GFC's specialist refractory ceramic workshops (Mons – BE)
- Participation in POLLUTEC (Lyon – FR)

DECEMBER

- PCT international patent (WO/2012/164025) obtained for the machining of raw ceramics
- Conference "guest" - Nordic Conference on Ceramics and Glass Technology (Roksilde – DK)
- Participation in the one-day Functional Coatings portfolio event (Mons)

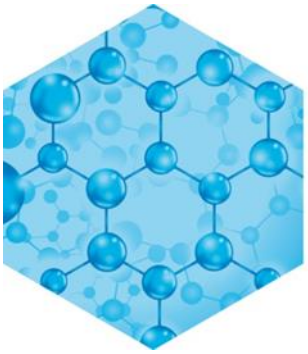

Nos centres de recherche s'affrontent au mini-foot

INISMA – CRIBC – INS: c'est 100 emplois

ACTIVITIES

MATERIALS

- (Bio)polymers
- Ceramics
- Electrolytic depositions
- Geopolymers
- Refractory materials
- Nanomaterials
- Nanocomposites
- Cement phases
- Inorganic and hybrid coatings
- Organic and hybrid coatings
- Rocks and minerals
- Glass



PROCESSES

- Reactive extrusion
- Sintering of inorganic materials
- Intensification of chemical processes
- Mineral processing
- Inorganic materials processing
- Rapid prototyping
- Laser technology
- Thermal treatments

ENVIRONMENT

- Air
- Biotechnology
- Energy conversion
- "Cradle to Cradle"
- Energy saving
- Energy efficient processes
- Quality labelling
- Energy recovery
- Recycling inorganic materials
- Recycling organic materials
- Soil
- Biomass valorisation
- Waste valorisation

RESEARCH & DEVELOPMENT

The driving force of EMRA's research policy is to meet the main expectations of the industrial world. These expectations are centred on remaining competitive, the deployment and/or redeployment of activities, adaption to technological changes and product and process diversification initiatives. Through their research and technology watch activities, and by becoming part of international networks, EMRA members have become the leaders in their respective technological fields. They have all the appropriate facilities and equipment for these assignments.

In 2012, EMRA teams had nearly 78 R&D projects on the go.

These projects are, more often than not, partially supported by public funds and allow the research teams to expand their expertise in the Environmental, Process and Materials fields. The results of their research work will subsequently be developed within the companies.

Main sources of funding

INTERREG IV France • Wallonie • Vlaanderen
Interreg efface les frontières

standards for .be

BELSPO Belgian Science Policy

FEDER UNION EUROPEENNE Wallonie
LE FONDS EUROPEEN DE DEVELOPPEMENT REGIONAL ET LA WALLONIE INVESTISSENT DANS VOTRE AVENIR.

SEVENTH FRAMEWORK PROGRAMME

economie

FSE UNION EUROPEENNE Wallonie
LE FONDS SOCIAL EUROPEEN ET LA WALLONIE INVESTISSENT DANS VOTRE AVENIR.

Wallonie

MATERIALS

From the origin of raw materials to their second life

PROJECTS		PARTNERS	FUNDING
MICROPACK	Development of a micro-structured composite material with high barrier properties for food preservation using existing machines	Certech, Celabor, Carah	Convergence
PIMI- REMANOS	A micro-system integration platform fit for industrial use and capable of solving the majority of problems linked to packaging	ULg, SIRRIS, CEWAC, Materia Nova	
RF - EVERWALL	Production of barrier layers for applications related to food	UMons, Materia Nova, ULB	
RF - SMARTFILM A	Development of optically active organic components	UMons, Materia Nova, ULB	
RF - SURFACE A	Station for profilometry and surface analysis of thin films.	UMons, Materia Nova	
SINOPLISS - POLYTISS	Development of thermoplastics, thermosetting products and composites of renewable origin	Materia Nova, ULg, UMons	
TECHNOPOLY	Polymer technology, implementation, formulation, characterisation and recycling	Certech, Materia Nova, CTP	
T-REX-MORECAR	Modelling rheological properties of refractory concretes	INISMa, CSTC, ULg	
SOLAPACK	Use of sorption layers on cellulose packaging materials in order to prevent the migration of critical substances	Certech, Celabor, PTS, ZUT, COBRO, Polish Chamber of Packaging	Cornet
CREEPREEF	Development of new methods to measure and characterize the creep behaviour of refractory materials	CRIBC, FGF	
PCtoTEM	Development of new "track-etched" polycarbonate membranes for medical and diagnostic use	Certech, industrial	C-WALity
ZEROCO	Development of clay composites for sustainable construction solutions (ZERO CO2 Emissions)	INISMa, industrial	
PNOXIDES	Transparent semi-conductor oxides for the perfecting of transparent p-n junctions	UMons, Materia Nova + industrial partnership	ERA-NET - MATERA
HYCOLASE	Laser deposition of high-performance ceramic-metal composites intended for the surface hardening of wear-resistant parts	CRIBC, UMons, BAM, VTT	First DoCA
INTERMES	Mesoporous structures obtained from interconnected networks	Certech, UMons	
IASS	Improving the aircraft safety by self healing structure and protecting nanofillers	UNISA, Materia Nova + 8 international partners	FP7

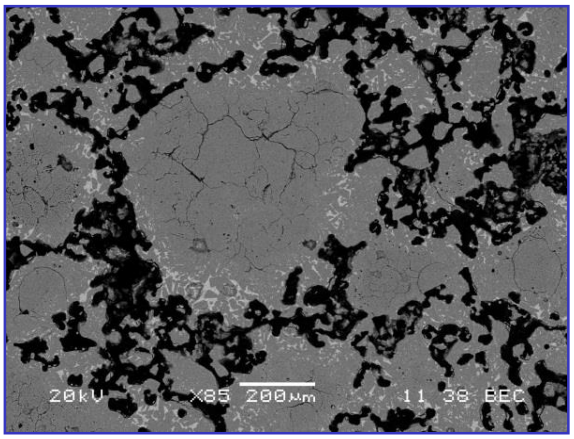
HARCANA	The High Aspect Ratio CArbon-based NAnocomposites	Materia Nova + 15 international partners	
HYBRIPROTECH	Research and development of thin layer sol-gel type coatings for the protection of metallic surfaces and treatment of stone	Certech, CRITT-MDTS, GEGENA2	Interreg IV
NANOLAC	NANOparticles for the production of high performance biodegradable polyLACtic acid-based materials	Materia Nova, ENSAIT, ENSCL	
NAVARE	NAnocomposites aimed at the VAlorisation and counting of REcycled plastic materials	Materia Nova, CREPIM, ARMINES	
POLYCHANVRE	Cross-border development of polymer-hemp composite materials	Certech, ULg, Agro-BIOTECH,CRITT-MDTS, INRA, VALBIOM,CHANVRECO	
PRISTIMAT-MEDIMAT	HAP and TCP-based materials for medical use	SIRRIS, CRITT-MDTS, UPJV, UVHC, CRIBC	
PRISTIMAT-TRANSMAT	Materials for transport (functional surface modification, gradient materials and on-board intelligence systems)	UVHC, CRITT-MDTS, SIRRIS, UPJV, CRIBC	
RECY-POLYMER	The recycling and valorisation of thermoplastics from a cross-border perspective	Certech, VKC, CREPIM	
COMPONAT	Development of natural vegetable oil-based composites	Certech, UCL-BSMA, CSTC + industrial partnership	Plan Marshall GreenWin
FRENSIS	Super-insulating window, including ultra-thin vacuum-sealed double glazing in a very high performance thermal frame	Materia Nova, UMons, UCL + industrial partnership	
RARETE	Recycling Applied to Minor Metals and Rare Earths used in new Technologies	Sirris, CTP, Certech + industrial partnership	
RECYGLASS	Recycling and purification of cullet and study of the potential for the recycling of other alternative materials in the flat glass sector	CTP, ULB + industrial partnership	
CARMAT	Development of new types of construction materials obtained by carbonation, using industrial fumes and steel slag fractions that are hard to recycle	CTP, CRR, CSTC, ISSeP, UCL + industrial partnership	Plan Marshall MecaTech
BEETPACK	Development of multi-component organically-sourced food packaging	Materia Nova, UMons + industrial partnership	Marshall Plan Wagralim
WAL-AID	Promoting competition and durability for the Walloon food industry by creating an interdisciplinary platform of different skills to encourage interaction.	CELABOR, CRA-W, FUNDP, Materia Nova, UCL, ULg + industrial partnership	Plan Marshall Wagralim
CEMCALC	Ternary cements with high calcium and low slag content	CSTC, CRIC, CTP, ULg	Collective research
MODICELL	Development of food packaging materials combining a cellulose matrix with a biodegradable polymer to improve water and oxygen barrier properties	Certech, Materia Nova, Celabor	

GEL DEGEL	Critical analysis and optimisation of the European methodology for assessing the behaviour of bricks and masonry in freezing conditions II	CSTC, CRIBC	SPF-Economie/NBN
PRIBREF II	Standardised procedures to help control the workability and setting of hydraulic setting refractory concretes	CRIBC , CRIC	
RESISCO	Research into the carbon monoxide resistance of refractory products	CRIBC	

New projects

CREEPREF

The refractory materials used to "line" the furnaces of steelworks, cement works, glassworks, and so on are simultaneously subjected to high temperatures and high pressures, which can result in significant creep (deformation over time). The information currently available in the literature or obtained from laboratory tests makes it possible to compare the materials but not to predict their evolution in real conditions of use.



The current trend is to model industrial plants with the aim of increasing their life and reliability, but there is a lack of experimental data. Work on refractory material creep is therefore vitally necessary, as the number of parameters to be taken into account is very high (a wide range of commercial products and raw materials, irregular behaviour according to temperature, chemical and crystallographic changes over time). The main aims of this project are to provide methodologies to test the creep behaviour of refractory materials in conditions close to the real conditions of use, as well as the correlations between the creep behaviour of the selected materials and their other characteristics.

PNOXIDES

The aim of the project is to develop new methods for the manufacture of transparent p-n junctions based on semi-conductor metal oxides (TOS) in the form of thin films. The p-n junctions will be prepared on glass and aluminium.

IASS

The challenge of this research is to develop a self-healing, multi-functional composite material. Inspection and maintenance are paramount in commercial aviation. Improving aircraft safety by means of self-healing structures and nanocharge protection is a revolutionary approach which should lead to the creation of new generations of versatile aircraft materials with new properties. The structural materials can be designed to integrate electrical, electromagnetic, fire-resistant and regenerative capabilities, and possibly other functions working in synergy to provide advantages exceeding those of all of the individual combined capabilities. Materials of this nature have huge potential, as they reduce size, weight and energy consumption while improving performance, safety and versatility.

RARETE

Indium and gallium are indispensable elements for the manufacture of second generation photovoltaic cells and flat screens.

The European Union (EU) is aware of its dependence on these critical materials, and is concerned that supply issues may arise which threaten the competitiveness of the industry. It is

thus developing an integrated policy aimed at galvanising resource efficiency and promoting recycling.

The aim of the project is to set up a new method of recycling, using the properties of supercritical fluids, in order to validate a way of separating and recovering the critical metals extracted from flat screens and second generation photovoltaic panels.

RECYGLASS

Recycling and purification of cullet and study of the potential for the recycling of other alternative materials in the flat glass sector

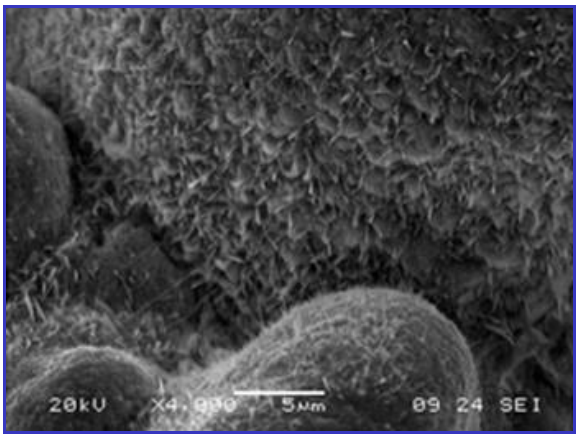
In the glassmaking sector and in the case of flat glass in particular, the partial replacement of raw materials with alternative materials is of great interest from an environmental point of view, in that it improves the green image of businesses, but also from an economic point of view, in that it has an impact on furnace consumption. Although glass can theoretically go on being recycled forever, as it can be melted and reshaped without chemical deterioration, its recycling is, in reality, faced with issues such as a lack of collection systems and the purity of the recovered glass (cullet).

In addition to developing new networks for cullet supply, the project aims both to develop new techniques for cullet recycling and purification and to study the potential for the use of alternative materials with a view to their reincorporation as raw materials in the manufacture of flat glass.

RESISCO

Carbon monoxide (CO) is one of the most corrosive materials for industrial refractory products. This type of corrosion has been known for a long time, but the reproducibility of the test currently proposed under the ISO 12676 and ASTM C288 standards (visual assessment of damage caused by heat treatment under CO atmosphere) is openly criticised. This pre-normative research aims to develop a new methodology for studying the resistance of refractory materials in a CO-rich atmosphere.

The research work will be validated by a series of tests on several qualities of refractory products (produced in the laboratory or of industrial origin) reassessing their CO corrosion strength in relation to the atmospheres found in metallurgy, the steel and petrochemicals industries, and so on. The final deliverable of this project will be a paper based on the results of the new test procedure, which will be presented to the ISO/TC 33/WG 18 working party in preparation for the forthcoming revision of the current ISO test.



ZEROCO

Straw and raw earth construction is still in its infancy. However, it presents a great number of technical and economic advantages, such as energy saving and a reduction in CO_2 emissions. The Paille-Tech company has developed an original building method. Prefabricated modules based on straw, wood and clay are produced in a workshop, and these completely finished modules are then taken to the worksite, where they are assembled for the construction of houses and commercial or industrial buildings. The aim of this project is to perfect a “clay concrete” composition for coating straw walls. This concrete must meet certain industrial criteria (large-scale production, reproducibility and reliability) and, once in place, must provide the built structure with added mechanical strength.

SOLAPACK

The objective of the project is the development of concepts to incorporate sorption materials into coating formulation to selectively sorb benzophenone, bisphenol A, phthalates and mineral oils due to inks, varnishes, adhesive and recovered paper. A coating on the product side should prevent the contamination of food by migration of these substances, so that the critical values are not exceeded. In an extensive test program variations of sorption materials (modifications, quantity, type etc.) shall be made as well as variation of the coating thickness, coating weight and coating application. The prepared coating formulations will be applied on to a reference substrate and the functionality of the coating will be examined amongst others with migration tests. In regard to the results of the tests, the coating formulations will be optimised and applied on to commercial paper and examined regarding to their functionality and recyclability.

The project will result in recommendation for sustainable, environmentally compatible and health preserving packaging materials.

The project will lead to new concepts to reduce the migration of critical substances into packaged goods (food). This will be achieved by adding adequate sorption materials in coating colour formulations and testing their effectiveness. These new innovative coatings will then be optimised in regard to their functionality and profitability.

The project will also contribute to improve the safety and use of food packaging containing recovered paper: the innovative coating will ensure the compliance of the limits of the studied critical substances in food, therefore allowing the development and optimisation of food packaging containing recovered paper and board.

"Strategy also plays its part in EMRA (Environment and Materials Research Association), the alliance of six Walloon research centres based in Western Hainaut, including the Centre Terre & Pierre and Materia Nova. Its coordinator, Stéphane Neirynck, Managing Director of the Centre Terre & Pierre, presents the sectors covered by EMRA, which include chemicals – an innovative sector which also creates jobs. Sustainable chemistry also includes a range of often little-known activities, as Luc Langer, Managing Director of Materia Nova, explains. "Techflax", the use of flax seeds, "Frensis", the development of super-insulating glazing, and "Plynat", the development of materials for sustainable construction – there are plenty of examples which demonstrate not only our region's great potential, but also the existence of many opportunities for its young graduates."

Official website of the "Territoire Wallonie Picarde 2025" project

PROCESSES

From lab scale to pre-industrialisation

Projets		Partenaires	Financement
RF - HAINOLASE	Hainaut-based platform dedicated to laser surface treatments	CRIBC	Convergence
RF - CLEARZINC	Development of a new anticorrosion process to replace galvanising	CoRi, CRM,UMons, INISMa-CRIBC, ULB, Materia Nova	
RF - LASESURF	Improving the wear properties of materials by laser treatment	CRIBC, UMons	
SINOPLISS - BIOTISS	Implementation of innovative processes for biomass valorisation and high added value molecule production.	Materia Nova, ULB	
SINOPLISS - EXTRUDISS	Reactive extrusion: an environmentally compliant process for biomaterial production	Materia Nova	
T-REX-CERAPIDE	Industrial validation of an innovative technology for rapid densification by sintering high added value ceramics and cermet products under a pulsed electrical field.	CRIBC, CTP, UMons, SIRRIS,	
T-REX-EQUIDER	Spark Plasma Sintering Rapid Densification Equipment	CRIBC	
ECOPOR	Environmentally-friendly manufacturing process for ceramic structures of oriented porosity	UMons, CRIBC, UVHC, ICV	First DoCA
ABBEADS	Development of bactericidal coatings on glass beads using low pressure plasma techniques	Materia Nova, UMons	
INNOREX	Development of new sustainable process for PLA	Materia Nova, UMons + industrial partnership	FP7-7ème programme cadre
SIMUGLASS	Development of a synergistic computational tool for material modelling, process simulation and optimization of optical glass moulding	CGCRI, CRIBC, IIT Madras, IIT Delhi, TU lasi / EU contracted DTA, Fraunhofer IPT, industrial partnership	
CATARR	Use of a catalyser for moderating conditions of molecule production	Materia Nova, UMons, USTL	Interreg IV
HM+	The smarter aircraft: Health Monitoring and Predictive Maintenance	CRIBC, CETIC, ULB, UMons, UCL, ULg + industrial partnership	Plan Marshall
RECYSTERIL	Study into the separation and valorisation of previously decontaminated hospital waste	CTP, RECYWALL + industrial partnership	
HOPE4PD	Development of new treatments for Parkinson's Disease	Certech, FUNDP, ULB, Euroscreen, UCB	Plan Marshall Biowin

PHOSBIOL2	Production of a second generation of bioethanol from renewable or recycled material by an innovative technology	Certech, ULg, GxABT + industrial partnership	Plan Marshall GreenWin
PHOENIX	Conversion of carbon grinding residues for metallurgy; Energy valorisation of complex final waste	Certech, CRM + industrial partnership	Plan Marshall MecaTech
BARCELONE	Complete, new valorisation of wheat bran by fragmentation of the components of an agricultural by-product	FUNDP, ULg, CTP, Materia Nova+ industrial partnership	Plan Marshall Wagralim
TECHFLAX	Development of the non-edible co-products generated by the fractionation of flaxseed	Materia Nova, CoRI, CVG, Université de Rouen, Université de Reims + industrial partnership	
EDILCO	Electrodeposition in ionic liquid environment for connectors	ULB, Materia Nova	Programme mobilisateur Greenomat
SMARTSPRAY	Manufacture of low cost electrochrome windows by ultrasonic pyrolyse spray	FUNDP, INISMa, ULg	
CYTOFOOD	Rapid detection of allergens and chemical contaminants in foodstuffs by flow cytometry	CER, ULg, Certech	Recherche collective
DEPOLAIR	Reduction in ambient air organic pollutant content by catalytic oxidation	Certech, UCL	
STEELFSW	Using the innovative friction stir process in steel welding	CEWAC, CRIBC, IBS, CENAERO	

New projects

ABBEADS

EMRA invests in beads!
EMRA is developing the state-of-the-art techniques required for coating beads using the magnetron sputtering technique. This technology should provide the innovation needed in the bead manufacturing sector, as it means that new properties can be added by applying a thin layer. EMRA is going to develop an antibacterial coating for beads, and the treated beads will be used in the fields of paint and sol-gel. There should also be many uses for this technology in the health, pharmaceutical and food sectors.

CYTOFOOD

With an average growth in production of 4% p.a. and a growth in employment of 1% p.a. since 2000, the food processing industry is Wallonia's 3rd largest industrial sector and 2nd largest employer. In 2008, 20,800 people were employed in this sector in Wallonia.

The food industry is typically a branch of industry made up of small- and medium-sized businesses, where approximately 98% of businesses have fewer than 100 employees. The 2008 turnover for the Walloon Region was almost 6.4 billion Euros.

In food processing, the presence of allergenic compounds and/or chemical contaminants is a major source of contamination and is often responsible for huge losses. For the producers and the entire food processing sector, Quality Control is an important guarantee of the reputation and trademark protection of the business in question. It is vital for the food processing industry to have quick, simple tests to guarantee optimum quality of foodstuffs in Belgium and for export.

The main aim of the CYTOFOOD project is to provide quick, simple multi-detection tools available to the food processing industry for the detection of any contaminants.

To do this, the project has taken as its basis an immunological multi-component detection technique based on the use of microspheres and

their detection by flow cytometry. Thanks to this technique, a large number of substances can be detected simply by testing a small sample. Current developments point towards the possibility of companies eventually being able to carry out the analyses themselves. The aim of the project is to supply firms in the food processing sector in question with the necessary expertise to help them adapt the test to suit their own needs, as well as all the reagents needed for analysis.

The use of this method will enable small- and medium-sized businesses in the food processing sector to gain market shares, especially for export. The use of this test *in situ* will enable them to identify any problems quickly, thus avoiding the fate of products which may subsequently have to be recalled.

DEPOLAIR

The goal of DEPOLAIR is to provide workers with better protection against toxic effluents resulting from the manufacture of polyester parts (swimming pools, outdoor decorative items, etc). The main pollutant in question is styrene. DEPOLAIR is aiming to reduce workshop air pollutants from their current value to a value 5 times lower within 15 minutes. This objective would meet current environmental standards and even leave room to respond to future crackdowns these standards.

In order to achieve this aim, a catalytic process will be developed which will be more reliable, longer-lasting, more ecological and more economical than competing reduction technologies. Thanks to a particularly active catalyser whose efficacy in destroying other pollutants is already proven, the process will work at a lower temperature than is currently the case in this field, significantly reducing the fuel consumption required to heat the polluted air to be treated, and thus making the technology less costly.

UCL will be in charge of setting up the active phase to enable an easy changeover of gases without a need for the air to be cleaned to be considerably compressed. Various options will be explored.

EMRA will be dealing with measuring the styrene content in the workshops at various intervals and in accordance with the operations carried out, as well as the presence of any other pollutants. Pilot tests will then be carried out (on synthetic compounds: air + styrene in controlled quantities, or real flows previously captured in workshops), tests which would make it possible to calculate the dimensions of future commercial installations. If the catalyser loses its activity over time, the conditions for its regeneration will be identified.

INNOREX

End-user partners within the consortium in close cooperation with RTD partners will develop new PLA grades, PLA blends and PLA-based composites using the flexible, precisely controlled process with alternative energy sources, which will aim not only at existing markets such as extruded foils or injection moulded packages for PLA but also for new applications.

InnoREX will develop a novel reactor concept using alternative energies for the continuous, highly precise, metal-free polymerization of PLA replacing metal-containing catalysts by organic ones and purifying the polymer utilization the excellent degassing ability of a Gneuss' MRS device.

The InnoREX project will utilise the rapid response time of microwaves, ultrasound and laser light during the polymerization process. This adjustable alternative energies input will make it possible to achieve a precise dynamic control of the polymerization and of the molecular structure (branching, crystallinity, molecular weight, etc.) of the resulting polymer. Additionally, significant energy savings will be achieved by combining polymerisation, compounding and shaping in one production step.

ENVIRONMENT

Helping to make the environment a healthier, safer place

Projects		Parterns	Funding
Use of REFIOM Materials	Use of materials for REFIOM (Résidus d'Épuration des Fumées d'Incinérateur d'Ordures Ménagères - Residues from domestic waste incineration fume purification)	CTP, ULB, CRIBC	Convergence
REFIOM-Purification	Establishment of perennial valorisation channels for REFIOM	CTP, ULB	
SOLINDUS	Integrated sustainable solutions for sediments and similar materials	CTP, ISSeP, INISMa, (DG02)	
VALSOLINDUS	Validation and valorisation of integrated and sustainable solutions for sediments and similar materials	ISSeP, Carah, CTP, UMons	
TERRAVAL	Development of new, efficient materials for roadway technology based on the solidification/stabilisation of land polluted with heavy metals	CTP + industrial partnership	C-Wality
MINERVE	Characterisation and optimisation of the mineralisation process of buried wastes within engineered landfill sites and uncontrolled dumps, with the aim of reducing the ecological footprint by the valorisation of associated renewable energy (biogas) and residual materials.	CTP, UCL, ULg + industrial partnership	GreenWin
GEDSET	Sustainable management of cross-border sediment	ARMINES, BRGM, INERIS, CTP, ISSeP	Interreg IV
SENSOPLAST	Methodology for the control of mechanisms for the appearance of sensory defects generated by plastic products	Certech, Armines	
NORMACAT	Development of new AFNOR XP B44-13-compliant materials with photocatalytic activity for air purification	Certech	Labélisé par le Cluster AXELERA
PICOM	Open innovation project aimed at developing a new generation of fuel cells	Certech, UCL, ULg	Plan Marshall
GAZTON	Transformation of CO_2 content in fumes from industrial ovens to a lean gas able to be recycled as fuel for use in the same ovens, through the use of plasma technology powered with green electricity	Materia Nova + industrial partnership	Plan Marshall GreenWin

COLAMIN	Simultaneous management of asbestos and other industrial waste based on the development of a mobile cross-neutralisation unit	CTP, INISMa-CRIBC + industrial partnership	Plan Marshall MecaTech
NOSENS	Automobile pollution and atmospheric pollutant detection and measurement	UMons, Materia Nova, UCL	Programme mobilisateur Greenomat
HUMIBATI	Treatment of rising humidity in buildings. Development of solvent-free products and assessment of their impact on the environment	Certech, CSTC	Recherche collective
PARAGGLO	Improvement of filtration systems by agglomeration of fine particles	Certech, CRM, CENAERO	
RECYMELT	Valorisation of solid residues from fusion or refining ovens	CRM, CTP, CRIBC, ISSeP	
REVADEC II	Optimal valorisation of material flows resulting from the re-enabling of old dumps	CTP, Certech, CERISIC	
	Comparative study of testing methods for measuring the photocatalytic activity of construction materials for the removal of NOx and VOCs. The project is part of the establishment of European standard CEN TC 386.	CRR,Certech, Centexbel	Recherche normative
CAPTINDOOR	Sensors for measuring indoor VOC pollution	UMons, Materia Nova, Certech, UCL	WBGreen

New projects

TERRAVAL

In Wallonia, various inventories show approximately 6,000 potentially contaminated sites. On the basis of this analysis, the firm SolAZ, which specialises in techniques for cleaning up polluted soils and sites, intends to treat the soils strongly contaminated with the heavy metals most commonly found in Wallonia (Pb, Zn, Cu, Cr) by means of a new solidification/stabilisation process in cooperation with the CTP. This process, based on producing original reagent formulae, will lead to the production of a “STABILART(R)” material, which can be used in roadway technology.

CAPTINDOOR

In this project, EMRA, along with various partners, is developing a VOC (formaldehyde) sensor to monitor the quality of indoor air so that passive and active prevention measures can be taken. The sensor will use a periodic network of micro-beams (micro-cantilevers) coated with a gas-absorbing compound which changes in volume or weight, and will then modify the curve of the micro-beams. This curve variation will then be measured.

SERVICES TO COMPANIES

With the aim to create innovation in business, EMRA teams are tuned in to the industrial world and put their expertise, know-how and technical platforms to work for companies.

The EMRA teams are the first points of contact for firms wishing to improve their processes or develop new products. Our business assistance and valorisation projects promote skills transfer by providing technology forecasting services in the given field, supporting companies in their choice and assisting them in solving problems involving the use of to specific technologies.

The provided services consist of technological audit of problems associated with processes or products, and guidance on obtaining technological skills. This guidance is supported by technology forecasting, which enables experts to stay permanently up to date on the scientific and technical progress made within their fields which present a high potential for industrial innovation.

In 2012, a working party specifically dedicated to assisting businesses was created. This working party ensures to benefit all of its industrial partners of the global range of expertise and resources available within EMRA. For this purpose various actions have been carried out, such as :

- Cross-visits to centres to gain greater insight into possible collaboration opportunities
- Setting up an operating method which valorize a single EMRA's point of contact
- Joint visits of industrialists requiring overall support in EMRA's three fields of expertise
- Joint participation in certain trade fairs and exhibitions

875 companies have received assistance since the creation of EMRA, 104 of which received assistance from at least two EMRA partner centres.

44% of these companies are SMEs or micro-businesses.

212 new businesses were assisted in their innovation procedures in 2012.

Distribution of requests

- **46 %** Materials
- **36 %** Environment
- **18 %** Processes

In 2012, **15 business guidance and valorisation projects** were supported by public funding (guidance funded by the Walloon Region, SPF-Economie and ERDF). These projects cover EMRA's 3 areas of activity (Environment, Processes and Materials).

PROJET		PARTENAIRES	FINANCEMENT
EMRA-MAT	Raw materials, inorganic materials and composites	INISMa-CRIBC, CTP	Guidance
IMMUNOHELP	Immunochemical guidance service focussing on the production of polyclonal antibodies, the characterisation and the purification of antibodies and ELISA kit	Certech, CER	
GUIDEMB	Provision of expertise in the food packaging sector, covering aspects of barrier materials, implementation and transformation processes, and methods for improving foodstuff preservation	Certech, Celabor	
SOLESITE	Technical support for entities treating polluted sites and soil in Wallonia	CTP, Celabor	
REVETACT	Guidance on active coatings	CRM, CoRI, Materia Nova	
VALODECH	Valorisation of industrial waste	RECYWALL, CRR, CTP	
REFIOM (valorisation)	Establishment of continual valorisation systems for residues from domestic waste incineration fume purification (REFIOM)	CTP, CRIBC	Convergence
SOLINDUS (valorisation)	Integrated and sustainable solutions for sediments and similar materials (valorisation section)	CTP, ISSeP, INISMa, (DG02)	
T-REX PROM	Promotion of technological services available as part of the T REX and Functional Coatings portfolios	INISMa, CRIBC	
TECHNOPOLY (promotion)	Polymer technology, implementation, formulation, characterisation and recycling	Certech, CTP, MateriaNova	
MICROPACK – Technology Transfer	Barrier materials for food packaging	Certech, Celabor, Carah	
Standards Department 2012	Promoting and raising awareness of standards and technical rules.	CRIBC	NBN
RF - VALOMAT	To reinforce the integrated and structuring effect of the FUNCTIONAL COATINGS project portfolio	Materia Nova	
SINOPLISS - VALORISS	To reinforce the integrated and structuring effect of the SINOPLISS project portfolio	Materia Nova	
PRISTIMAT	Technology watch and promotion concerning materials for uses in medicine and transport (roadmap and coordination actions)	INISMa, CRITT-MDTS, SIRRIS, UPJV, UVHC	

EMRA members help industry professionals to:

- Understand the aspects linked with technical and scientific standardisation and regulations
- Stay up to date with methods and trends in standardisation and regulations in the relevant sectors
- Implement the standards in their daily activities

This know-how is supported by the participation of national, European, and international technical standards committees.

The expertise of EMRA members is also based on research activities which enable them to become involved in pre-normative projects and technical committees dealing with subject areas such as the environment, geotechnology, wall and floor coverings, roadway hydrocarbons, and more.

EMRA's participation in technical standardisation committees

National scale (Belgium)	
E067	Ceramic Tiles
E129	Revision of double glazing standards

National scale (France)	
AFNOR B44/A	VOC and odors, photocatalytic materials, chamber recycling test

European scale	
CEN/TC 352	Nanotechnologies
CEN/TC 351	Construction products: Assessment of release of dangerous substances
CEN/TC 386	Photocatalyse
CEN/TC 184	Advanced technical ceramics
CEN/TC 187	Refractory products and materials
CEN/TC 264	Air quality

International scale	
ISO/TC 229	Nanotechnologies
ISO/TC 206	Fine ceramics
ISO/TC 33	Refractories
ISO/TC 146	Air quality
ISO/TC 63	Glass containers
ISO/TC 166	Ceramic ware, glass ware and glass ceramic ware in contact with food

Technology cheques

Chèques Technologiques

Available since 1st January 2009, the Technology Cheque is a financial assistance tool for SMEs seeking technological expertise on a specific topic.
This assistance may be in relation to any of the following: preliminary testing, calculations and analysis, carrying out all or part of the design and/or adaptation of products, processes or services, or the resolution of technical problems related to the quality and compliance of newly-developed products, processes and services.

In 2012, for EMRA…

483 technology cheques

41 companies involved

as·t agence de stimulation technologique

FEDER UNION EUROPEENNE Wallonie

LE FONDS EUROPEEN DE DEVELOPPEMENT REGIONAL ET LA WALLONIE INVESTISSENT DANS VOTRE AVENIR.

Research tax credit (France)

In the European era, the EMRA members cannot allow their activities to be limited to just Belgian territory. It is in this spirit that they requested and obtained French research tax credit approval for all of their activities.

Liberté • Égalité • Fraternité
RÉPUBLIQUE FRANÇAISE
MINISTÈRE DE L'ENSEIGNEMENT SUPÉRIEUR ET DE LA RECHERCHE

KMO – Portfolio

kmo-portefeuille ERKEND DIENSTVERLENER

Companies can receive subsidies of up to €15,000 per annum from the Flemish authorities for training, advice, exports or technology exploration. The KMO portfolio is an interactive web application which enables entrepreneurs to simply ask the Flemish authorities for subsidies for initiatives in any of the following four areas: training, advice, exports or the exploration of technologies.

Technical Feasibility

Financial innovation assistance mechanism for SMEs

Designed to help SMEs to develop their ideas, the Walloon Region supports the technical feasibility projects which are generally carried out prior to the development of a product or service.

This assistance enables businesses to use external research organisations to carry out technical services. The verdict of the Walloon authorities is given within the 3 months following the submission of the application.

In 2012, 12 research and innovation projects were carried out by EMRA which assisted 9 SMEs in their preliminary steps in industrial research and the experimental development of new products or processes.

Wallonie

LABELS / STANDARDISATION

Benor

"Compliance label" for construction products in Belgium

Vinçotte

EMRA is approved by AIB-Vinçotte for OK-compost quality labelling

http://www.okcompost.be

BQA : Belgian Quality Association

System and environment certification body accredited by BELAC. EMRA provided this association with the sector's leading auditors for carrying out quality (ISO 9000) and environmental (ISO 14001 and EMAS) audits.

http://www.bqa.be

ICG : International Commission on Glass

International association bringing together companies with scientific and technological activities in the glass sector. EMRA is the Belgian representative for this association and actively participates on technical committees 2 and 10 (Chemistry and Optical).

IMPC : International Mineral Processing Congress

The aim of the IMPC is the regular organisation of world mineral processing conferences. EMRA is the Belgian representative on the Advisory Committee.

www.impc2010.org

CEN : European Committee for Standardisation

Through these services, it provides a platform for the development of European standards and other technical specifications. EMRA is present and active on TC129, 187 & 352.

www.cen.eu

L'ISO (The International Organization for Standardization) is the world's largest developer of voluntary international standards. EMRA is participating in work on TC206.

www.iso.org

CE : The "CE" mark indicates a product's conformity with European Community requirements for manufacturers. The "Glass and Components" department is the recognised body for marking (Id.No.1174) according to article 18 of the Construction Products Directive CPD 89/106/EEC

AMECA : Automotive Manufacturers Equipment Compliance Agency Inc. (USA)

The "Glass and Components" department is an AMECA accreditation laboratory for car windscreen approval tests.

The "Glass and Components" department is a sub-contracted laboratory for AIB Vinçotte International for the car windscreen sector.

Belgian Union for Technical Approval of Construction: The UBA is the technical approvals institution for construction materials, products, and systems and for installers in Belgium. The "Glass and Components" department is a sub-contracted laboratory for UBAtc for the windows for buildings sector.

STUDIES AND TESTS

EMRA carries out tests, analysis and expert reports on work in various fields, using experienced teams with state-of-the-art laboratories and a stock of high-performance equipment. Efficient coordination of the various departments enables them to maintain and develop an essential asset for their work in industry : the capacity to offer a comprehensive solution to their needs or isolated problems.

MATERIALS

Synthesis, formulation, transformation, application and production

(Bio)polymers and nanocomposites : performance and environmental impact improvements, controlled structures, lightweight materials production, use of bio-sourced products, fillers compatibilization, properties (fine)tuning, reactive extrusion.

Organic electronics : fabrication and characterization of optoelectronic devices (organic LEDs, organic solar cells, transparent electrodes). Measurement of the electrical conductivity by local probe microscopy. Modelling: *ab initio* and semi-empirical methods, molecular modelling.

Organic, inorganic and hybrid coatings : sol-gel, laser cladding, plasma technologies for the protection or the functionalization of surfaces on a wide range of materials. Improvement of optical, thermal, mechanical, electrical, antibacterial, anti-adhesion and self-cleaning properties, improvement of corrosion resistance, improvement of barrier properties, adhesion and biocompatible layers,...

Electrolytic coatings : anodic oxidation (conversion) on aluminum and titanium, surface preparation (degreasing, polishing), metal coatings (hard chromium, nickel, and silver plating), alternative to the toxic ionic liquid baths for electroplating (cyanide bath), substitution of hard chromium VI.

Ceramics and ceramic-metal composites : development, simulation and characterization for domestic, building and technical applications or using their functional properties (piezoelectricity, thermoelectricity,...).

Geopolymers : formulation, use of industrial by-products, performance improvement, sustainability measurement.

Cementitious phases : chemistry, formulation and application of cements, rheology.

Refractory materials : development and characterization of shaped or unshaped (concrete, mortar,...) refractory materials. Industrial linings: casting optimization, aging/wear monitoring, post-mortem diagnosis, reverse-engineering, repair techniques, improvement of reactors.

Nanomaterials : chemistry of oxides with high specific surface (SiO_2, zeolites, TiO_2,...), superhydrophobic powders. Nanostructured ceramics and composites.

Rocks and minerals : identification, physical, chemical and mineralogical characterizations, microscopic studies, mineral processing (separation, concentration, stabilization, passivation and activation, hydrometallurgy,...).

Glass : development (color, brightness,...), raw materials and final products characterizations (photoenergetical properties, coated glass durability, defect analysis,...), process improvements. Assessment tests for insulating and safety glass, laminated and tempered glass.

ENVIRONMENT

Towards sustainable development

Air quality : diagnostic, risk assessment and remediation (environmental air pollution at emission and immission, industrial fumes, diffused sources,...), workplace exposure, ambient air, confined space. Chemical, sensorial , biological, particules analysis.

Soil characterization and treatment : monitoring and analysis of groundwater, geotechnical characterization (probing, drilling, soil strength measurements,...), environmental audits. Chemical, physical or physicochemical soil treatments (decontamination, stabilization of pollutants ...).

Biotechnology : substitution of chemical processes by biotechnological processes. Fermentation, analysis and genetic modification of stems, proteomics, down-stream processing and purification. Extraction of molecules, bacterial and fungal biopolymers. Immobilization of enzymes. Antimicrobial and antifungal tests (ISO certified and screening tests).

Energy conversion : low temperature conversion of waste by catalytic pyrolysis into liquid hydrocarbons and recoverable by-products, development of materials with thermoelectric properties or piezoelectric actuators.

Energetic efficiency of processes : diagnosis, analysis and modelling of industrial facilities. Storage and production equipments and processes (fuel cells, biomass, bio-refinery, CO_2 capture,...).

Materials efficiency : high performance materials (eco-efficiency, lightweight, recycling,...). Energy recovery and conversion (thermoelectric materials, heat exchangers, phase change materials, heat vectors, materials with anisotropic thermal conductivity).

Labelling : construction products labelling for emission of volatile organic compounds. Tests of air purifying equipments and materials. Labels associated with biodegradable plastics (OK compost). CE marking for glazing and BENOR marking for stoneware pipes.

Recycling of materials : grinding, separation, decontamination/purification, formulation and processing. Evaluation of recycled materials properties. Energy recovery and materials in compliance with environmental legislation.

Biomass valorisation : transformation of by-products or waste into bio-sourced and high added value molecules. Solvolysis technologies (high temperature and pressure chemical "cracking") and biotechnological transformations.

Waste recovery : characterization of new minings and recoverable materials. Development of treatment and recovery technologies for strategic metals, development of recovery processes of new raw materials (NRM).

Cradle to cradle : analysis of potential C2C product development, assessment of components toxicity and recycling processes, life cycle analysis (LCA).

PROCESS

From laboratory scale to pilot plan

Reactive extrusion : development of new environment-friendly materials (solvent-free, low reaction volume) and performance improvement (functionalization, grafting, copolymerization, chemical modification, active fillers or functional additive incorporation,...).

Sintering of inorganic materials : optimization of drying, de-binding, sintering and post-treatment (annealing) cycles. Natural or under controlled atmosphere sintering, uniaxial or isostatic hot pressing and SPS (Spark Plasma Sintering), post-hiping. Selective laser sintering and laser cladding.

LCA

LCA is the acronym for Life Cycle Assessment. EMRA is a pioneer in incorporating environmental thought into R&D activities in Wallonia. Why?

- *When research projects are being set up, the authorities granting subsidies are increasingly demanding guarantees, or at least forecasts, regarding the environmental benefits of the projects for which their funds are requested, in the same way as they previously asked about their social and economic benefits.*
- *Although LCA techniques are virtually up to date for established products, they have yet to be fully defined for concepts of as uncertain a nature as research projects.*
- *Regulations evolve, and environmental awareness will become an obligation for consumer products – and there is still room for others in this growing market.*

Chemical processes intensification : development of continuous chemical processes through smaller, faster, cleaner and energy-efficient technologies. Organic and inorganic synthesis (from gram to kg scale), catalysis, high throughput experimentation with automated synthesis stations.

Mineral processing : development of schemes for the treatment of ores and industrial minerals (crushing, grinding, classification, hydrometallurgy, concentration, separation, heat treatment,...). Development of schemes for the treatment and recovery of secondary raw materials and industrial by-products. Design and construction of treatment pilot plants.

Shaping of inorganic materials : formulation and processing (grinding, mixing, granulation) of powders, suspensions or pastes (traditional and advanced ceramics, refractory materials, glass). Shaping by casting, pressing, extrusion, melting, rapid prototyping, machining and coating techniques.

Plastic materials processing : pilot testing equipments for the industrial process simulation: drying, mixing, pelletizing, compounding, extrusion, co-extrusion, physical or chemical foaming, blow molding, injection molding.

Laser technologies : "additive" (by adding material) and "subtractive" (ablation of material) processes on ceramics, glass, metals, organic polymers, composites. Development of functional layers and components (decorative marking, traceability ...). Laser machining of ceramics.

Heat treatment : optimization of drying and/or calcination parameters and upscaling. Materials synthesis from raw and secondary matter. Development of thermochemical processes.

Cold plasma technologies : high vacuum technology (PVD, PECVD, PCVD), plasma microwave (activation of stable molecules, metal coatings, plasma polymerization, grafting of chemical functions).

WE PARTICIPATE IN

Accord-Wallonie asbl
R&D forces in Wallonia
http://www.accord-wallonie.be

BCerS asbl – ECerS – JECS Trust
The Belgian Ceramic Society (BCerS): Belgian society of scientists and manufacturers of the ceramics sector.
http://www.bcers.be

BElgian **S**olid **W**aste **A**ssociation
http://www.beswa.be

Centre of competitive excellence**: C**reation **d**evelopment **e**co-friendly **e**nterprises
http://www.cd2e.com/panel_accueil

MITECH cluster
Micro-Technology cluster for Intelligent Manufacturing & Products
http://clusters.wallonie.be/mitech/fr/contact.html

Val+ cluster (solid waste)
The VAL+ cluster brings together active players in the treatment of waste
http://clusters.wallonie.be/dechetssolides/fr/

The **E**uropean **F**ederation of **C**hemical **E**ngineering
www.efce.info

Le **G**roupement d'**I**ntérêt **S**cientifique **S**ites, **S**ols et **S**édiments **P**ollués
www.gis3sp.fr

Groupement **B**elge de l'**É**nergie **E**xplosive
This group brings together all players involved in the use of explosives.
www.gbee.be

Société de l'industrie minérale (Sim)
The promotion and dissemination of scientific and technical knowledge on mineral matter.
www.lasim.org

UCRC
Union des Centres de Recherche Collective
http://www.centexbel.be/ucrc/

Vlaamse Overkoepelende Organisatie van Technologieverstrekkers
This non-profit organisation supports the organisational collaboration of 18 scientific and technological innovation centres and contributes to give substance, in the field, to the government's innovation policy.
http://www.vloot.be

Union **W**allonne des **E**ntreprises
www.uwe.be

Plastiwin
Walloon cluster bringing together active players in the plastics processing sector
http://clusters.wallonie.be/plastiwin/fr

TWEED Cluster
Walloon energy technology - Environment and sustainable development
http://clusters.wallonie.be/tweed/fr

GFEC
French Research Group on Carbon
http://www.gfec.net/

GFP
French Polymer Group
http://www.gfp.asso.fr/

VOM
Belgian surface treatments association
http://www.vom.be/

GIS- Surface
Scientific interest grouping in the surface treatments sector
http://www.gis-surfaces.be/

TEAM centre
French centre ("Technologies de l'environnement appliquées aux matériaux" - Environmental technologies applied to materials) dedicated to waste valorisation.

UP-TEX centre
French centre of collective excellence bringing together textile players
http://www.up-tex.fr/

IAR centre
French centre of competitive excellence, partnership of industries and agro-resources
http://www.iar-pole.com

MECATECH centre
Walloon centre of competitive excellence in mechanical engineering
http://www.polemecatech.be

Greenwin centre
Walloon centre of competitive excellence: accelerator of innovation in environmental technology
http://www.greenwin.be/

BioWin centre
Walloon centre of competitive excellence in health
http://www.biowin.org/biowin/fr/5408-home.html

Wagralim centre
Walloon centre of competitive excellence in agro-industry
http://www.wagralim.be/

Plastipolis
French centre of competitive excellence in plastics processing
http://www.plastipolis.fr/

SusChem
European technology platform for Sustainable Chemistry
http://www.suschem.org/

Belgian Royal Society of Chemistry
http://www.src.be/

Belgian Polymer Group
http://www.belgianpolymergroup.be/

GN-MEBA
National scanning electron microscope and microanalysis group
http://mr.gnmeba.free.fr/index.htm

WE ARE STAKEHOLDERS IN

ACENIS SCRL
Sole point of contact for meeting needs related to the characterisation of soil and subsoil contamination (including underground water) and the remediation to be applied.
http://www.acenis.be

LABOMOSAN SA
Labomosan carries out the majority of tests, either in the laboratory or on site, needed before, during and after production to ensure that all building, civil engineering structures and road construction projects are carried out properly or under its

Labotour SA
The specialist in characterisation of road and construction products
http://www.labotour.com/

Lasedesign SA
Specialist in enamel laser sintering for the purpose of marking, personalising or functionalising objects and substrates of any kind.
http://www.lase-design.be/

Mineral X
Real estate company with a view to expanding the CTP's real estate.

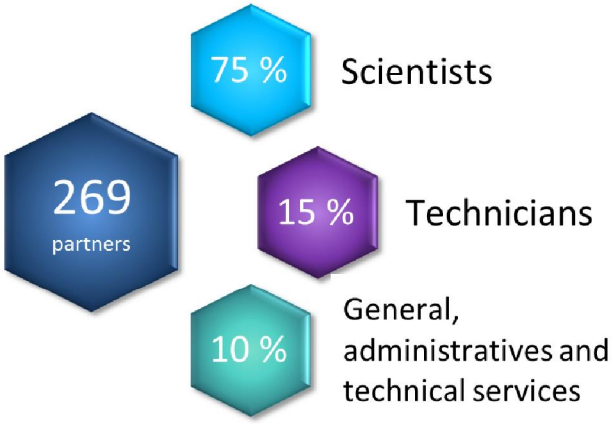
NaNo4
Company working in the synthesis of organic nanocomposites to order

VALORE
Company working in the production and marketing of formulated speciality products.

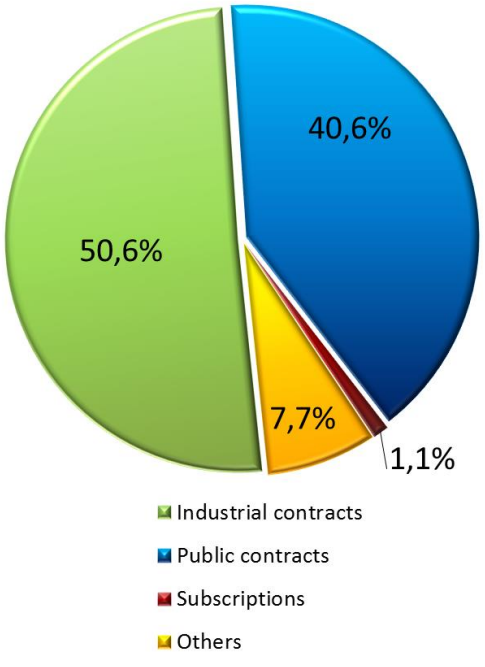
RECYWALL
Economic interest group
The purpose of this group, both in Belgium and abroad, is to carry out any operation relating to the research, study and execution of projects in the field of waste, recycling and recovery, as well as the use of matter or materials, without limits as to the technologies used.

KEY FIGURES (K€)

			2010	2011	2012
Products	Customer invoicing		9.996	11.895	11.662
	Operating grants		8.525	9.419	9.365
	Subscriptions		182	213	243
	Other products		1.412	1.578	1.766
		TOTAL	**20.115**	**23.105**	**23.036**
Charges	Purchases and Services		4.485	5.435	5.367
	Payroll		14.898	15.468	15.791
	Depreciation of Share Capital and provisions		484	839	1.140
	Other charges		71	197	166
		TOTAL	**19.938**	**21.939**	**22.464**
Results			**408**	**1.166**	**572**
Investments	Investment grants (equipment and buildings)		4.432	3.115	1.574



Breakdown of revenue in 2012



MEETINGS AND COUNCILS

INS

General Assembly	UMons	Conti	Calogero		Board Meeting
	FIB Services	Di Loreto	Osvaldo	Vice-Chairman	
	NGK Ceramics Europe	Wauters	André	Chairman	
	Lebailly	De Bruycker	Daniel		
	Wienerberger – Division Tuileries du Hainaut	Willain	Bernard		
	Guest	Eeckman	Jean-Pierre	Honorary Chairman	
		Cambier	Francis	Managing Director	
	Ceramag				
	Steinzeug - Keramo NV				
	Megaceram				
	NCA Technologies				
	Neoceram				
	Wienerberger - Division Aalbeke				
	Tuileries du Hainaut (TDH)				

CRIBC

					Industriels	
General Meeting	NGK Ceramics Europe	Wauters	André	Chairman	x	Permanent Committee
	FGTB	De Nooze	Alain			
	FIB Services	Di Loreto	Osvaldo		x	
	SPF Economie, PME, Classes Moyennes	Collette	Renaud			
	Neoceram	Lemaire	Michel		x	
	Wienerberger - Division Tuileries du Hainaut	Willain	Bernard		x	
	Guest	Cambier	Francis	Managing Chairman		
		Eeckman	Jean-Pierre	Honorary Chairman		
	Wienerberger NV	Chambart	Hilde		x	
	NGK Ceramics Europe	Dewitte	Carine		x	
	Service Public de Wallonie - DGO6	Gillin	Alain		x	
	Belref	Humblet	Florence		x	
	Lebailly SA	Jonniaux	Henri		x	
	Steinzeug - Keramo	Jorissen	Chris		x	
	FGTB	Lootens	Paul			
	Wienerberger - Division Aalbeke	Maertens	Michael		x	
	IWT - Vlaams Gewest	Otte	Dirk			
	CSC Mons-La Louvière	Urbain	Jean-Marc			
	Vesuvius Belgium nv	Van Belle	Rony		x	
	Wienerberger NV	Van der Biest	Johan		x	
	NGK Ceramics Europe	Veys	Jean-Noël		x	

INISMa

					Industriels	
General Assembly	UMons-FPMs	De Haan	André	Chairman		Board Meeting
	NGK Ceramics Europe/INS	Wauters	André	Vice-Chairman	x	
	UMons	Conti	Calogero			
	FIV	de Clippele	Guy	Co-opted		
	FIB Services/INS	Di Loreto	Osvaldo		x	
	IDEA	Escarmelle	Jean-François			
	UMons	Lazzaroni	Roberto			
	Neoceram	Lemaire	Michel		x	
	NGK Ceramics Europe	Rennotte	Jacques		x	
	UMons	Snyders	Rony			
	AGC Glass Europe	Van de Neste	Marc	Co-opted	x	
	Wienerberger - Division Tuileries du Hainaut	Willain	Bernard		x	
	Service Public de Wallonie - DGO6	Gillin	Alain	Observer		
	Guest	Cambier	Francis	Managing Director		
	UMons	Damman	Pascal			
	FGTB /IDEA	De Nooze	Alain			
	UMons/FPMs	Delaunois	Fabienne			
	UMons	Dubois	Philippe			
	UMons/FPMs	Lybaert	Paul			
	IDEA	Sakas	Achille			

CTP

					Industriels	
	UCL	Germain	Pierre		x	Board Meeting
		Mercier	Daniel			
		Thimus	Jean-François	Chairman		
	ALC	Bodson	Michel	Secretary/Treasurer	x	
		Lorant	Régis		x	
		Polet	Jean-Pierre		x	
	IDETA	Dupont	Laurent		x	
		Luyten	Philippe		x	
		Vandewattyne	Pierre	Vice-Chairman		
	UMons	Boucher	Serge			
	ULB	Degrez	Marc			
	Guest	Neirynck	Stéphane	Managing Director		
	Service Public de Wallonie – DGO6	Villers	Pierre	Observer		
General Assembly	UCL	Duquesne	Xavier			
		Laduron	Dominique			
		Lucion	Christian			
		Thimus	Jean-François	Chairman		
		Mercier	Daniel			
	IDETA	Dumortier	Armel			
		Delbar	Gonzague			
		Luyten	Philippe			
		Seynhaeve	Frédéric			
		Vandewattyne	Pierre	Vice-Chairman		
	ALC	Begin	Alain			
		Busquin	Philippe			
		Calozet	Michel			
		Bodson	Michel	Secretary/Treasurer		
		Polet	Jean-Pierre			
	UMons	Boucher	Serge			
	ULB	Roggeman	Yves			

MATERIA NOVA

					Industriels	
	ESE	Descy	Gilbert		x	Board Meeting
	Vandeputte Oleochemicals	Vandeputte	Luc		x	
	Solvay	Goldberg	Anne		x	
	Galactic	Bogaert	Jean-Christophe		x	
General Assembly	UMons	Conti	Calogero	Chairman		
		Lybaert	Paul			
		Dubois	Philippe			
		Vince	Dany			
	IMBC	Belle	Jean-Sebastien	Vice-Chairman		
	Politique Scientifique Fédérale	Mettens	Philippe			
	ULB	Di Stefano	Patrick			
	ArcelorMittal	Beguin	Michel		x	
	Cosucra Groupe Warcoing	Crahay	Jean		x	
	AGC Flat Glass Europe	Van Den Neste	Marc		x	
	Total Petrochemicals	Maziers	Eric		x	
	Guest	Langer	Luc			
	Service Public de Wallonie - DGO6	Villers	Pierre	Observer		
	ULB	Roggeman	Yves			
	Idea	Escarmelle	Jean-François			
	Igretec	Debois	Marc			
	Hoccinvest	Pattyn	Dominique			
	UMons	Delaunois	Fabienne			
	UMons	Olivier	Marjorie			
	Ideta	Vandewattyne	Pierre			

CERTECH

					Industriels	
General Assembly	UCL	Blondel	François	Chairman		Board Meeting
		Macq	Benoit			
		Bailly	Christian			
		Pardoen	Thomas			
		Gaigneaux	Eric			
		Schneider	Yves-Jacques			
		Burteau	Nathalie			
	Bourgmestre Seneffe	Busquin	Philippe			
	Total	Debras	Guy		x	
	Umicore	Lox	Egbert		x	
	Veolia	Benanou	David		x	
	Nanocyl	Massin	Francis		x	
	BMF Consult	Beguin	Michel		x	
	MacTac	Lefevre	Carine		x	
	Grando	Charlier	Yves		x	
	Guest	Randoux	Thierry	Managing Director		
	Service Public de Wallonie - DGO6	Villers	Pierre	Observer		
	Sopartec	Durieux	Philippe			

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VISITOR

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*In most cases, patents do not belong to us but are taken by companies on the basis of our work. The only exception for 2012 : « **Ceramic Particle mixture and method for manufacturing ceramic parts from such a mixture** » [F. Petit, V. Lardot, C. Ott, E. Juste, F. Cambier], WO/2012/64025.*

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