

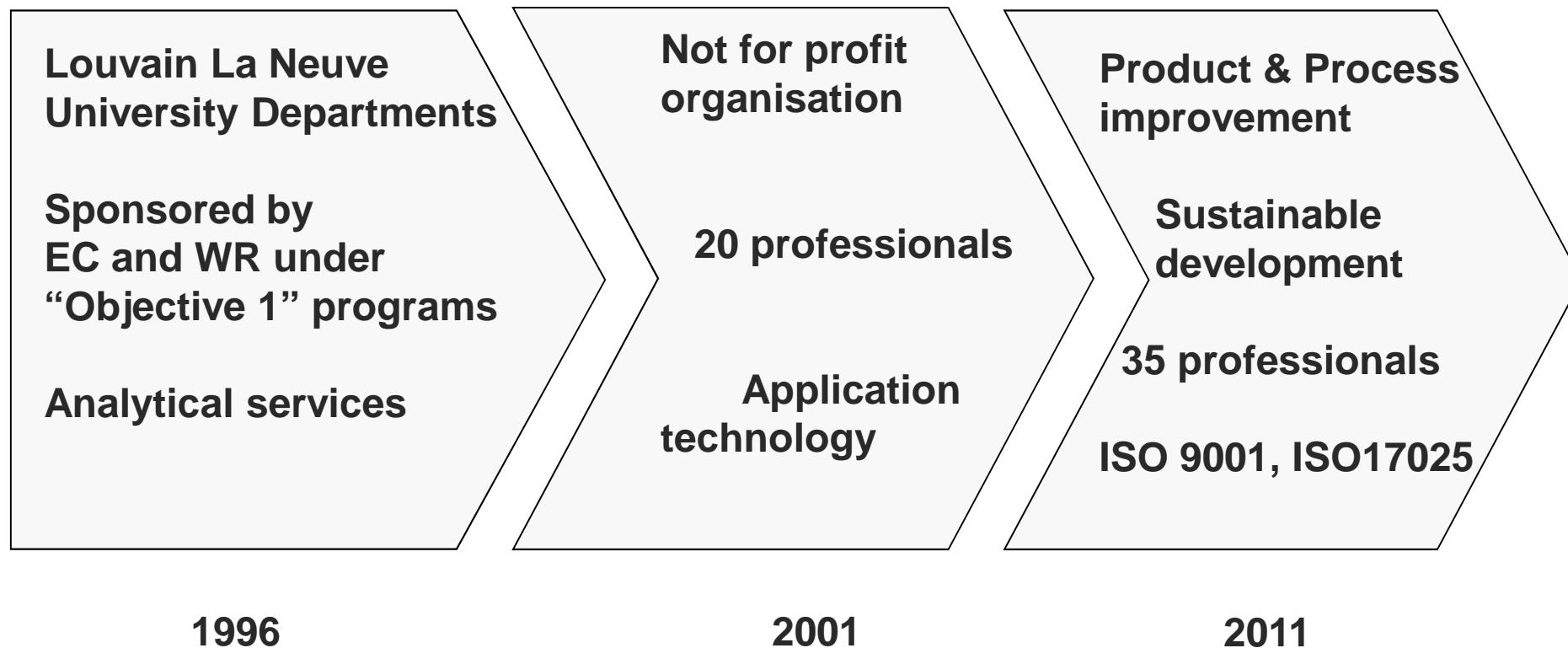
Collaborer pour mieux innover



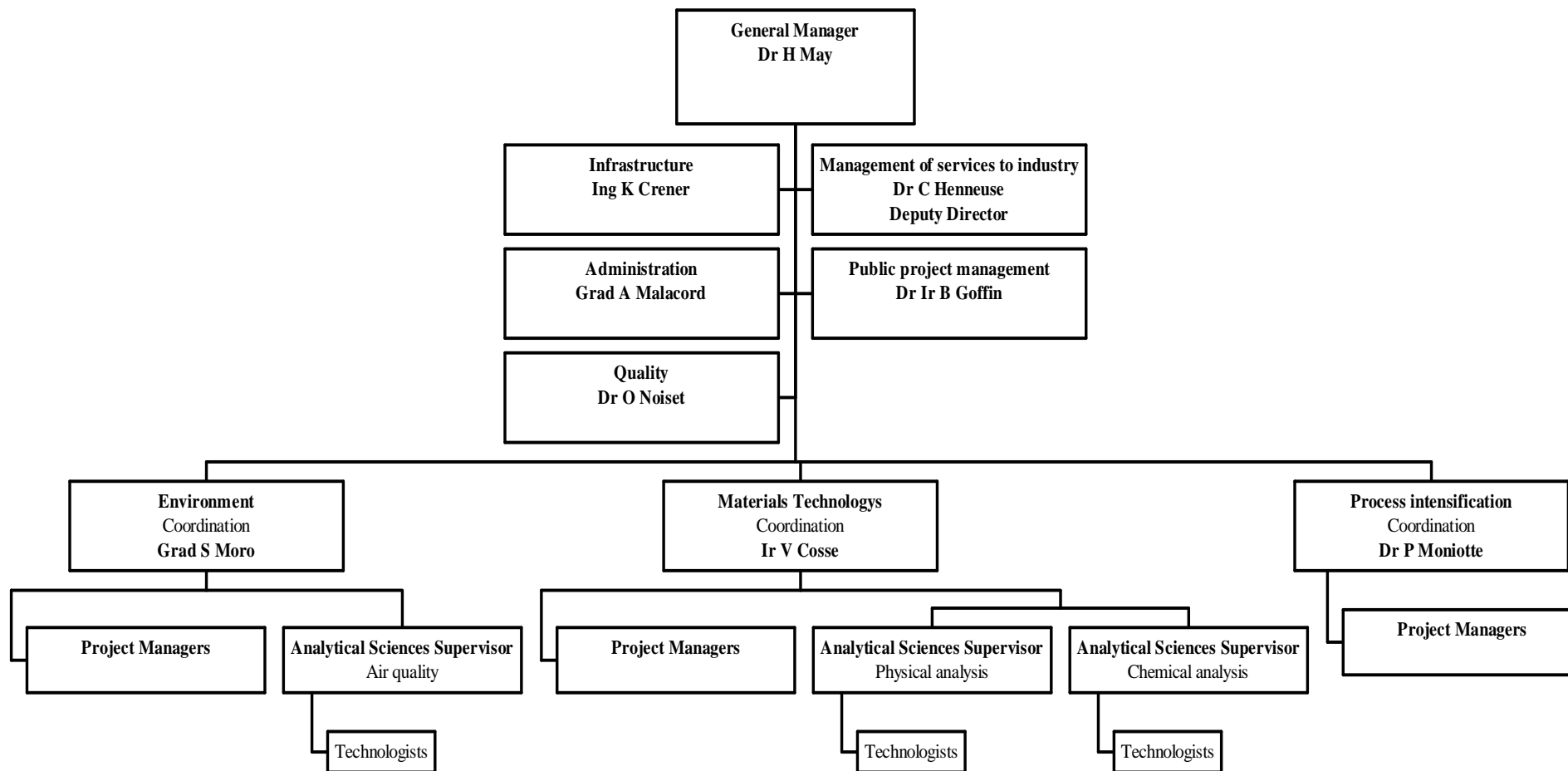
19/01/2010

By Dr. Said Rachidi

from molecular architecture to finished products



from molecular architecture to finished products



Management in fat characters

from molecular architecture to finished products



Certech mission

To provide help, support and services to small and large industrial enterprises by offering ad hoc analysis and measurements, problem-solving, contract research, product and process development capabilities.

Certech vision

Become a recognized expert in product and process improvement or development, by exploiting sustainable chemistry, to meet future societal and industrial needs



from molecular architecture to finished products



Research strategy

ENVIRONMENT Health & Safety Energy from chemistry Recycling	
MATERIALS FORMULATION AND TECHNOLOGY Outstanding performance Renewable origin Hybrid materials - sol gel	PROCESS INTENSIFICATION Catalysis Microtechnologies Green chemistry Innovative reaction media Pilot plants

from molecular architecture to finished products



Product and process improvement for outstanding performance

Sol gel, specialty coatings, zeolites

Synthesis, modification and formulation of thermosets, thermoplastics, (bio)composites

Analysis and reverse engineering

Chemical composition: resins, architecture, process additives and fillers identification

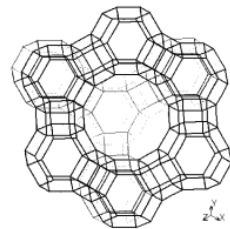
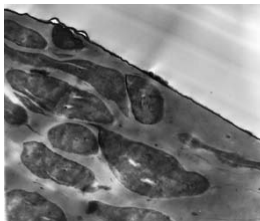
Mechanical, rheological, thermal and dynamic mechanical properties

Morphological evaluation

Barrier and sensorial properties

Pilot operations

Drying, mixing, pelletizing, extrusion, coextrusion, injection moulding, films...



from molecular architecture to finished products



Organic and inorganic synthesis

High throughput screening

Process definition for continuous operations

Microtechnologies

High Pressure Technologies

Green chemistry

Innovative reaction media

Reaction optimisation



Catalysis

Homogeneous (organic) catalysis

Heterogeneous (inorganic) catalysis



Experimental control and management

NMR, FTIR, Raman, Pyro-GC-MS, LC-MS, UV-VIS ...

Experimental design, Multivariate analysis

Pilot operations

Solid/liquid/gas high T reactions, distillation...

from molecular architecture to finished products



Health and safety

Air sampling technology : outdoor environment, ambient air analysis, workplace exposure, building materials and furniture

On-line gas, odour, VOC, dust, nanoparticles, noise analysis

Modeling odour, noise, gas, dust dispersion

Toxicological study

Remediation: origin and causes of pollution, evaluation of odour abatement systems, new low odourous and emissive materials



Energy from chemistry

Energy creation: fuel cell, solar panels, biomass, ...

Energy transmission and storage: batteries, hydrogen capture, ...

Energy management: lighter materials, insulation, ...

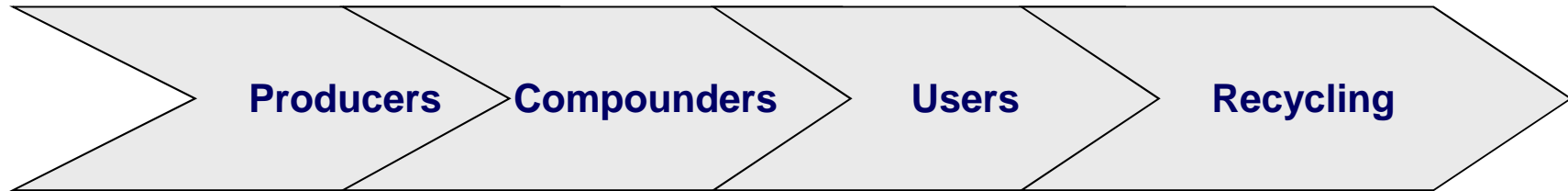
Recycling

Sorting and separating process

Conversion of solid wastes into new materials
and/or energy



from molecular architecture to finished products



**Additives and
resins
suppliers**



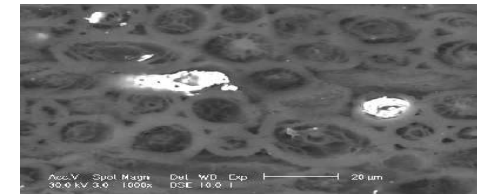
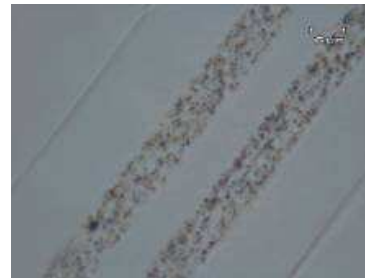
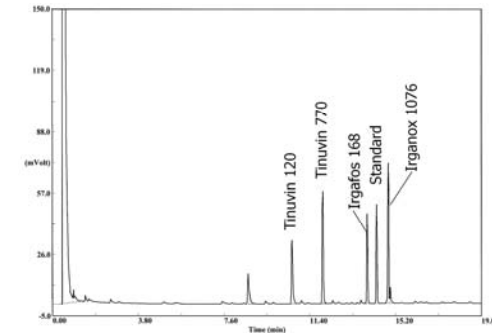
CERTECH provides support and services to small and global enterprises dealing with chemistry & polymer technology, by offering ad hoc analyses and measurements, problem solving, contract research, product and process development capabilities.



from molecular architecture to finished products



- **Chemical composition**
 - Identification of polymer resins, architecture and process
 - Additives
 - Fillers
- **Thermal analysis**
- **Morphological analysis**
- **Mechanical testing**
- **Rheological testing**
- **Dynamic mechanical testing**
- **Barrier properties**
- **Emissions from materials**

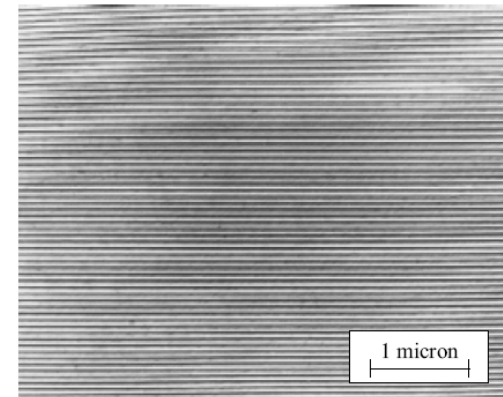


NMR, FTIR, GC-MS, GPC, HPLC-MS, TEM, ESEM, VIS, Raman, DMA, TGA, DSC, MFI, Traction ...

from molecular architecture to finished products



- Single and twin screw extruders
- Mixers
- Coextrusion (multiple tubes and layers films)
- Injection moulding
- Blown film extrusion



Micro-Nano layers coextrusion (500 layers)

from molecular architecture to finished products



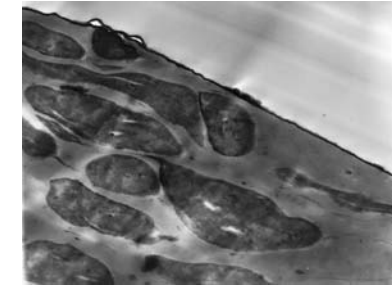
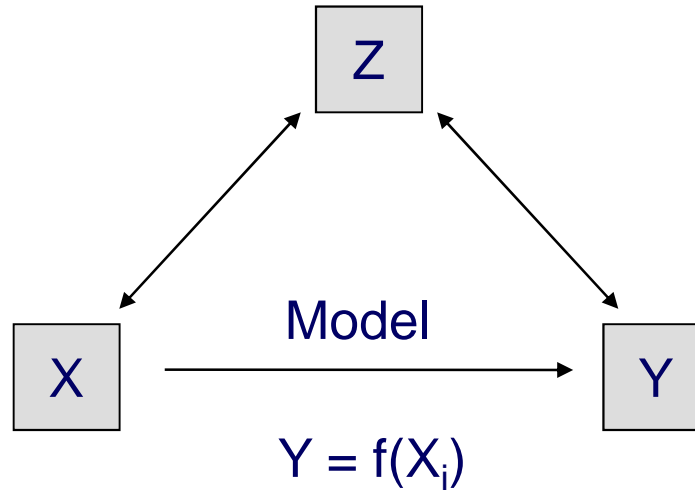
Composition



Several analytical techniques



Microstructure

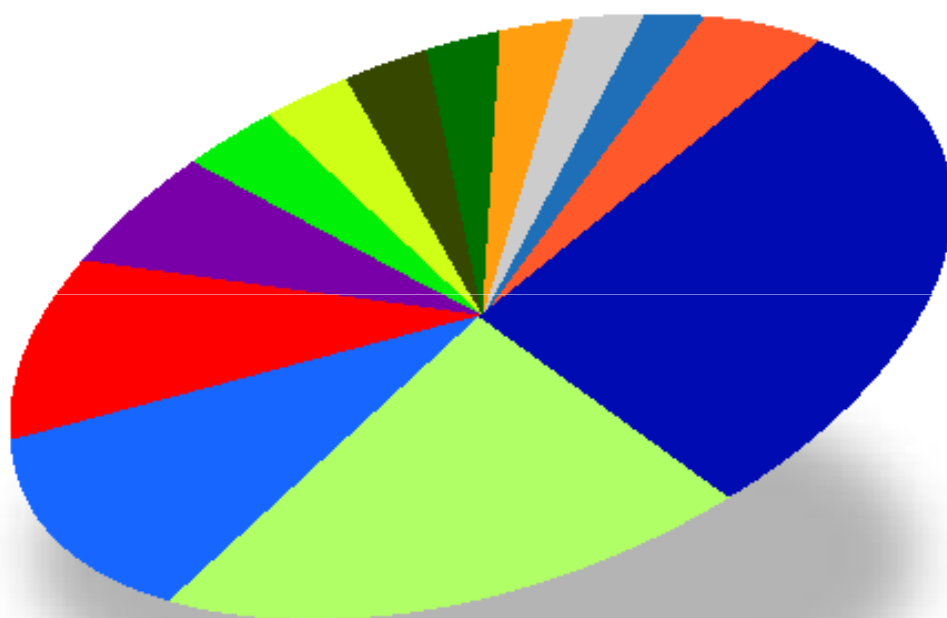


Several mechanical techniques



Parameters analysis
 +
 Properties understanding
 ↓
Generation of knowledge

from molecular architecture to finished products



- Environnement & Energy
- Medical, Pharmaceutical & Healthcare
- Laboratories
- Polymer producers
- Transport
- Chemistry
- Packaging
- Building
- Food
- Glass
- Others polymers end-user
- Electronic & Electric
- Other

from molecular architecture to finished products



Synthesis of pharmaceutical actives

Synthesis of organic and inorganic catalysts

Formulation of plastic composites (nanocomposites, hemp fibers, wood...)

Recycling and reformulation of used plastics

Conversion of organic wastes into combustible liquid fuels

Development of a photocatalytic air purifier (*commercial*)

Enhanced barrier polyolefins for food packaging

Special coatings (anti adhesion, low friction, barrier, anti-tag...)

Superior aqueous film forming foam (AFFF) fire extinguisher (*commercial*)

Numerous ad hoc consulting and analysis...

The diversity of CERTECH implications is an important source of cross fertilisation.



Inter regional projects (Interreg IV):

RECYPOLYMER: plastic waste

HYBRIPROTECH: development of technologies devoted to the surface protection

SENSOPLAST: sensory properties of plastics.

POLYCHANVRE: development of polymer-hemp composite materials

European Fund for Regional Development:

MICROPACK: protection and preservation of food in plastic packaging

TECHONOPOLY: plastic waste

Collective research projects:

MODICELL: sustainable packaging materials

PARAGGLO: reduction of industrial dust pollution

REVADEC: recovering major components from landfills

INTERMES: PhD thesis, developing of new mesoporous polyimide structures

HUMIBATI: new formulations for humidity remediation in buildings

Regional competitiveness action - Marshall Plan:

PICOM: fuel cells and the development of new Membrane Electrode Assembly

HOPE4PD: identification of new treatments for Parkinson's disease.

PHOENIX: energetic valorisation of complex ultimate wastes

5 technological guidance services

from molecular architecture to finished products



>700 customers

Majority of budget and cash flow through industrial contracts

0,1 patent application/year/employee

Total gross investment € ~10 M

34 Permanent scientists (14 PhD)

from molecular architecture to finished products



CERTECH has licensing agreements with

VALORE SA
Incubateur Activalis
Rue Jules Bordet, Z.I.C.
B-7180 Seneffe
Tel.: +32(0)478882226
TVA: BE 0877 847 228

Contact : Dr Said Rachidi

VALORE mission is to supply novel additives, systems and commercial services to speed up CERTECH customers business

from molecular architecture to finished products



Application of known art for industrial innovation

Product and process improvement

High value added services

Synergistic aggregation of core skills

Sustainable development



CERTECH asbl
Rue Jules Bordet
Zone industrielle C
B-7180 Seneffe
BELGIUM
Tél. +32 64 520 211
Fax. +32 64 520 210
E-mail : info@certech.be
www.certech.be