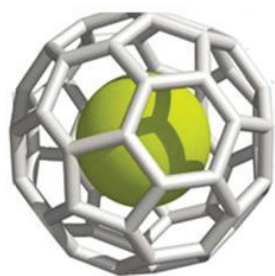




MASTER OF SCIENCE



Three programs:

- Applied Formulation of Polymers and Colloids
- Inorganic Materials Design and Processing
- Micro- and Nanotechnology

IPB : BORDEAUX INSTITUTE OF TECHNOLOGY

IPB is an Institution composed of six graduate schools of engineering :

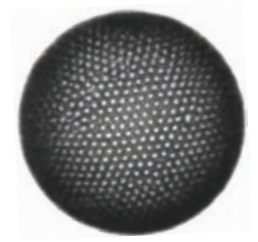
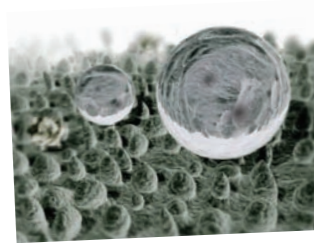
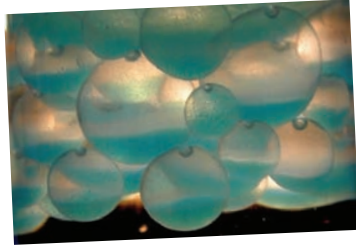
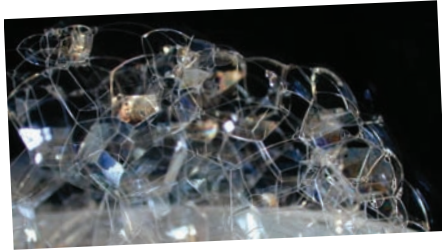
- ENSC, Cognitics
- ENSCBP, Chemistry-Physics and Food Science
- ENSEGID, Environment and Geological Resources
- ENSEIRB-MATMECA, Electronics, Computer Science, Telecommunication, Mathematics and Mechanics
- ENSTBB, Biotechnology
- Bordeaux Sciences Agro, Agronomic Sciences

IPB is a member of the French national network of Institutes of Technology and a founding member of the University of Bordeaux.

The Master of Science, delivered by IPB, is **fully in English** and has been established by ENSCBP as an answer to the rapid evolution of today's needs in industry and academics, allowing the students to adapt efficiently to the most recent technological innovations. It is based on the well-established know-how of ENSCBP and its partner laboratories concerning topics at the interface between chemistry, physics and biology.

www.enscbp.fr

Master of Science - M. Sc.



September to November

Foreign student starts with a **three months internship** in one of the academic partner laboratories.

French lessons

December

One month opening module to choose among :

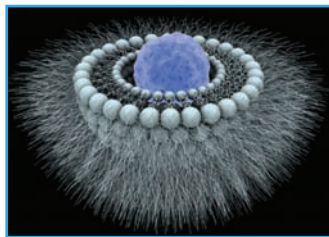
- Innovation
- Geoeconomy
- Marketing and Purchasing
- Wine and Marketing
- Aromas, flavours...

January to March

Three months courses following 1 of the 3 programs of the M. Sc.

April to August

Five months internship in relation with the chosen program of the M. Sc.



M. Sc. Applied Formulation of Polymers and Colloids

From January to March, three month courses in Macromolecular Engineering and Formulation including experimental training and a personal project in cooperation with an industrial partner.

COURSES

with the participation of industrial partners : Arkema, BASF, Dow Corning, L'Oréal, Michelin...

MODULE 1 67h

FORMULATION: BASIC CONCEPT AND TOOLS

- Formulation: principles and applications
- Polymers and Surfactants in solution
- Polymers and Surfactants at interfaces
- Sustainable chemistry, Ecodesign

Applications in Cosmetics, Detergency, Building Materials...

MODULE 2 71h

NANO- AND MESO-ORGANIZATION IN SOFT MATTER

- Controlled polymerizations
- Self-assembling
- Latex and Particles
- Foams and Emulsions
- Hybrid materials and Nanocomposites

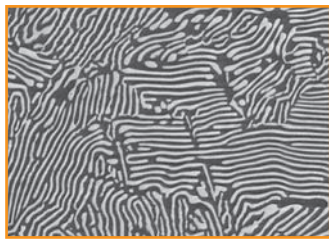
Applications in Coatings, Nanomedicine, Biomaterials...

MODULE 3 72h

CHARACTERIZATIONS OF FORMULATED SYSTEMS

- Imaging techniques
- Spectroscopy
- Chromatography
- Rheology
- Wave Scattering

Applications in Polymer materials, Adhesives, Paints...



M. Sc. Inorganic Materials Design and Processing

From January to March, three month courses in materials design and processing including practical case studies in laboratories and projects in cooperation with industrial partners.

COURSES

with the participation of industrial partners : Arcelor Mittal, Areva, EADS, Renault, Snecma...

MODULE 1 78h

FROM MATERIALS SELECTION TO MATERIALS DESIGN

- Materials (Engineering alloys, composite materials, functional materials)
- Materials selection (material property charts, selection strategy, life-cycles of materials, CES software)
- Materials by design

MODULE 2 66h

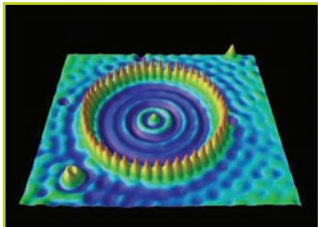
FROM MICROSTRUCTURE MODELLING TO MICROSTRUCTURE CHARACTERIZATION

- Microstructure formation
- Phase diagram, computational thermodynamics, phase transformation modelling
- Microstructural characterisation of materials
- Non-destructive testing of structures

MODULE 3 72h

MATERIALS PROCESSING

- Shaping processes
- Surface treatment processes
- Numerical simulation of processes



M. Sc. Micro- and Nanotechnology

From January to March, three month courses in micro- and nanotechnology including different laboratory courses (AFM, STM, Microfluidics...), a one week hands-on training in clean room conditions and a personal project in cooperation with an industrial partner.

COURSES

with the participation of industrial partners : Arkema, BASF, Merck, Rhodia, Thalès...

MODULE 1 76h

FABRICATION TECHNIQUES AND CHARACTERISATION

- Near-field scanning techniques
- Characterisation techniques
- High resolution spectroscopy
- Nano- and microfabrication techniques
- Materials and thin films
- Engineering of surfaces and interfaces
- Nanobiotechnologies

MODULE 2 62h

NANO-OBJECTS & AUTO-ORGANISATION

- Inorganic, polymer and metal nanoparticles
- Nanotubes and nanofibres
- Nanostructured materials and applications
- Toxicology of nanomaterials and nanotechnologies

MODULE 3 78h

APPLICATIONS

- Micro- and nanofluidics
- Analytical nanosystems
- Sensors and microsystems
- Nanophotonics
- Organic electronics
- Lab course on microfabrication and clean room technology



Programs

- **4 Engineering training programs (Master) :**
 - Chemistry-Physics
 - Food Science
- Materials Engineering (apprenticeship)
- Structural Analysis of Composite Materials (apprenticeship)

- **1 Master's level degree**
Eco-Design and Risk Management

- **Master of Science (M. Sc.)**
3 programs in English
 - Applied Formulation of Polymers and Colloids
 - Inorganic Materials Design and Processing
 - Micro- and Nanotechnology

Research

- **8 laboratories**
- **64 academics and researchers**
- **100 PhD, post-docs**
- **Carnot Institute:**
- LISA (Lipids for Industry and Health)

& Technology Transfer

- 2 dedicated buildings :**
ChemInnov, Agir

2 industrial Chairs (ENSCBP - Arkema - Région Aquitaine)

- Dr. Georges Hadziioannou** « Advanced functional materials for information and communication technology and for energy »
- Dr Patrice Gaillard** « Nanostructured materials based on carbon nanotubes or block co-polymers »

International

- **70% graduate students with international experience**
- **10% foreign students**

For more information
www.enscbp.fr

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+33(0)5 40 00 66 94
international@enscbp.fr

