Departamento de Industrias Facultad de Ciencias Exactas y Naturales Universidad de Buenos Aires
Universidad de Buenos Aires
(www.uba.ar)

- Created in 1821
- 13 schools distributed around the city
- > 300000 undergraduate students
- > 25000 graduate students
- 61 Research Institutes
Department of Industries

Undergraduate and Graduate Programs

Chemical Science
Food Science and Technology
Food Engineering

PhD of the University of Buenos Aires, in the area of Industrial Chemistry
Master in Bromatology and Technology of Food Industrialization
Specialization degrees:
- Bromatology and Food Technology
- Industrial Biotechnology
Emerging technologies of food production and preservation for optimizing the quality
Design of functional foods, with bioactive properties

Advanced materials
- Nanomaterials
- Biomaterials

Sustainable development
- Alternative energies
- Environmental remediation
- Process intensification
- Bioprocesses
Food technology & Materials

LABORATORIO DE OPTIMIZACIÓN DE LA CALIDAD DE ALIMENTOS PRESERVADOS – LOPAC (Optimization of the quality of preserved foods)

- Vegetable products, regular, modified and nutrients enriched
- Biopolimeric matrices for antimicrobial products support
- Valorization of vegetables industrialization residues

Research Group for Harnessing Vegetables as Raw Materials
Lía Gerschenson, Silvia Flores, Eliana Fissore, Marina de Escalada Pla, Florencia Basanta, Jhon Nieto-Calvache, Carlos Otálora, Adriana Castellanos, Enzo Zukowski

- Stability and antioxidant ability – relation with reological properties and structure
- Valorization of fruits and vegetable residues for obtaining food antioxidants and polysaccharides

Research Group for Upgrading Discarded Fruits and Vegetables
Ana María Rojas, María Florencia Basanta, Eliana Fissore, María Dolores De Nobili, Alondra Indrovo Encalada, Natalia Ehrenhaus, Ricardo Higuera

- Development of bio-preservation products
- Interaction between aditivives, ingredients and preservation factors
- Preservation of high moisture foods

Research Group for Optimization of Food Preserving Products
Carmen A Campos, María F Gliemmo, Laura I Schelegueda, Aldana L Zalazar, Malena González, Sofía Delcarlo, Virginia Lara
Regular, modified and nutrients enriched vegetable products. Biopolimeric matrices for antimicrobial products support. Valorization of residues arising from vegetables and fruits industrialization

Calabaza 
(Cucurbita moschata Duch. ex Poiret)

Remolacha 
(Beta vulgaris L.var conditiva)

Membrillo 
(Cydonia oblonga Miller)

Durazno 
(Prunus persica L.)

Papaya 
(Carica papaya L.)

Functional food ingredient, enriched in soluble fiber and with probiotics (Lactobacillus)

Successfully incorporated in beverages of acid pH

Biopolymeric matrices

Research Groups for Harnessing Vegetables as Raw Materials
Lía Gerschenson, Silvia Flores, Eliana Fissore, Marina de Escalada Pla, Florencia Basanta, Jhon Nieto-Calvache, Carlos Otálora, Adriana Castellanos, Enzo Zukowski
Valorization of fruits and vegetable residues for obtaining food antioxidants and polysaccharides. Antioxidant preservation at food interfaces.

Bio-Materials: active edible films carrying natural antioxidants (phenolics)

Research Group for Upgrading Discarded Fruits and Vegetables
Ana María Rojas, María Florencia Basanta, Eliana Fissore, María Dolores De'Nobili, Alondra Indrovo Encalada, Natalia Ehrenhaus, Ricardo Higuera
Bio-preservation products: interaction between additives, ingredients and preservation factors. Preservation of high moisture foods.

Research Group for Optimization of Food Preserving Products
Carmen A Campos, María F Gliemmo, Laura I Schelegueda, Aldana L Zalazar, Malena González, Sofía Delcarlo, Virginia Lara
<table>
<thead>
<tr>
<th>Research Group for Emerging and Traditional food preserving processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stella M. Alzamora, Andrea B. Nieto, Paula Gómez, Lucas González, M. Bernarda Coronel, Eunice Contigiani, Silvia Raffellini, Gabriela Jaramillo</td>
</tr>
</tbody>
</table>

- Multifactorial preservation technologies to obtain minimally processed foods
- Inhibition and inactivation of microorganisms by combining traditional and emerging methods of food preservation
- Development of functional foods

<table>
<thead>
<tr>
<th>Research Group for Development of Assisted Intervention Technologies for Food Preservation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sandra Guerrero, Marcela Schenk, Mariana Ferrario, Mercedes Garcia Carrillo, Daniela Fenoglio</td>
</tr>
</tbody>
</table>

- Emerging technologies to preserve turbid juices. Revalorization of Yerba Mate tea.
- Development of extracts with high content of bioactive compounds
- Optimization of sensorial features of preserved food and beverage

<table>
<thead>
<tr>
<th>Research Group for Optimization of grinding and grains hydrothermal processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marcela Tolaba, María Ana Loubes, Rosa Baeza</td>
</tr>
</tbody>
</table>

- Wet and dry grinding processes. Characterization of the obtained products.
- Hydrothermal processing of grains. Traditional and alternative parboiling.
- Development of gluten free bread and pasta
Development of extracts with high content of bioactive compounds for beverages and foods. Revalorization of Yerba Mate tea

UV-C

Aged-canchada YM leaves

US (600 W, 20 kHz, 95.2 µm, 25 °C, Ethanol:water 50:50)

UAE (ultrasound assisted extract)

Group for Development of Assisted Intervention Technologies for Food Preservation
Sandra Guerrero, Marcela Schenk, Mariana Ferrario, Mercedes Garcia Carrillo, Daniela Fenoglio
Development of extracts with high content of bioactive compounds for beverages and foods. Use of short-wave ultraviolet light (UV-C) to preserve turbid juices.
Food technology & Materials

LABORATORIO DE INVESTIGACION DE PROPIEDADES FÍSICO-QUÍMICAS Y CONSERVACIÓN DE BIOMOLÉCULAS – PROCBIO (Biomolecules Physicochemical properties and conservation)

- Encapsulation of natural ingredients
- Biomolecules conservation in freezing and dehydrated systems
- Improving safety of processed and stored food
- Enzymes crio and dehydroprotection and proteins stabilization

Research Group for Biomolecules Stabilization in Nano and Micro-Confined Systems
Pilar Buera, Carolina Schebor, María Florencia Mazzobre, Beatriz Elizalde, Patricio Santagapita, Cristina dos Santos, Abel Farroni, Mario Cueto, Leonardo Favre

LABORATORIO DE BIOPOLÍMEROS, NANOPARTÍCULAS y COLOIDES ALIMENTARIOS (biopolymer, nanoparticles and food colloids)

- Emulsion structures for improving delivery of bioactive oils and control the rate and extent of lipolysis
- Study of peptides and proteins self-assembly

Study of emulsion structure for: improving delivery of bioactive oils and control of the rate and extent of lipolysis

IN VITRO (STATIC) GASTROINTESTINAL DIGESTION (O/W EMULSIONS BEHAVIOUR)

- **O/W Emulsion** (10:90, HIUS).
- **Emulsifiers**: β-lactoglobulin, soy protein isolate and HPMC derivates: E5LV and E4M (2% w/w).
- **Commercial sunflower oil.**

**Mastersizer 2000:**
- Particle size distribution

**Microstructure**

**Lipolysis:**
- FFA released (titration method)

**IN VITRO (STATIC) GASTROINTESTINAL DIGESTION (O/W EMULSIONS BEHAVIOUR)**
Study of peptides and proteins self-assembly for: delivery of bioactive oils, delivery of minerals, delivery of folic acid

INTERFACIAL PROPERTIES (o/w)

TENSIOMETER PAT-1 (SINTERFACE)

Subphase exchange technique (sequential adsorption of the compounds)

LABORATORIO DE BIOPOLÍMEROS, NANOPARTÍCULAS y COLOIDES ALIMENTARIOS (biopolymer, nanoparticles and food colloids)
Ana Pilosof, Karina Martínez, Victor Pizones Ruíz-Henestrosa, María Julia Martínez, Mariana von Staszewski, Federico Jara, Carolina Arzeni, Paula Zema, Fernando Bellesi, Julieta Naso, Rocio Morales
Chemical Processes and Materials

PROGRAMA DE INVESTIGACIÓN EN FUENTES ALTERNATIVAS DE MATERIAS PRIMAS Y ENERGÍA – PINMATE (alternative sources of raw materials and energy)

- Thermochemical processes for valorization of agroindustrial, forestal and urban residues to get alternative products and energy
- Development of advanced materials based on carbon, for biomedical and monitoring applications
- Development of products and processes for remediation of liquid and gaseous efluent

Ana Lea Cukierman, Pablo R. Bonelli, Hector Prado, Gisel Nunell, Luciano Gurevich, Mi Ra Kim, Edward Gomez, Alex Schwenberg

LABORATORIO DE REACTORES Y SISTEMAS PARA LA INDUSTRIA – LARSI (reactors and systems for the industry)

- Mixing and motion of solids and liquid in pilot scale vessels using non-invasive techniques (densitometry, tomography and particle tracking)
- Monitoring and fault diagnosis of industrial processes and equipment
- Process intensification of remediation technologies

Miryan Cassanello, Gabriel Horowitz, Mauricio Maestri, Stella Piovano, Santiago Fleite, Julia Picabea, Verónica Martínez
Synthesis of carbon nanotubes (CNTs) arrays by catalytic chemical vapor deposition

SEM and TEM images of CNTs arrays synthesized at 895°C

SEM images of graphene oxide nanosheets synthesized by modified Hummers’ method

x 2K x 50K

Programa de Investigación en Fuentes Alternativas de Materiales Primas y Energía – PINMATE (alternative sources of raw materials and energy)

Ana Lea Cukierman, Pablo R. Bonelli, Hector Prado, Gisel Nunell, Luciano Gurevich, Mi Ra Kim, Edward Gomez, Alex Schwenberg
Production and characterization of biofuels (bio-oils) obtained from lignocellulosic and plastic residues

Programa de Investigación en Fuentes Alternativas de Materias Primas y Energía – Pinmate (alternative sources of raw materials and energy)

Ana Lea Cukierman, Pablo R. Bonelli, Hector Prado, Gisel Nunell, Luciano Gurevich, Mi Ra Kim, Edward Gomez, Alex Schwenberg
### Chemical Processes and Materials

**PROGRAMA DE INVESTIGACIÓN EN FUENTES ALTERNATIVAS DE MATERIAS PRIMAS Y ENERGÍA – PINMATE** (alternative sources of raw materials and energy)

- Thermochemical processes for valorization of agroindustrial, forestal and urban residues to get alternative products and energy
- Development of advanced materials based on carbon, for biomedical and monitoring applications
- Development of products and processes for remediation of liquid and gaseous efluentes

Ana Lea Cukierman, Pablo R. Bonelli, Hector Prado, Gisel Nunell, Luciano Gurevich, Mi Ra Kim, Edward Gomez, Alex Schwenberg

**LABORATORIO DE REACTORES Y SISTEMAS PARA LA INDUSTRIA – LARSI** (reactors and systems for the industry)

- Mixing and motion of solids and liquid in pilot scale vessels using non-invasive techniques (densitometry, tomography and particle tracking)
- Monitoring and fault diagnosis of industrial processes and equipment
- Process intensification of remediation technologies

Miryan Cassanello, Gabriel Horowitz, Mauricio Maestri, Stella Piovano, Santiago Fleite, Julia Picabea, Verónica Martínez
Mixing and motion of solids and liquid in pilot scale vessels using non-invasive velocimetry and distribution techniques (densitometry, tomography and particle tracking)

LABORATORIO DE REACTORES Y SISTEMAS PARA LA INDUSTRIA – LARSI (reactors and systems for the industry)

Miryan Cassanello, Gabriel Horowitz, Mauricio Maestri, Stella Piovano, Gabriel Salierno, Santiago Fleite, Julia Picabea, Verónica Martínez
Mixing and motion of solids and liquid in pilot scale vessels using non-invasive techniques (densitometry, tomography and particle tracking)

LABORATORIO DE REACTORES Y SISTEMAS PARA LA INDUSTRIA – LARSI (reactors and systems for the industry)

Miryan Cassanello, Gabriel Horowitz, Mauricio Maestri, Stella Piovano, Gabriel Salierno, Santiago Fleite, Julia Picabea, Verónica Martínez
CFD-DEM modeling of the solid motion validated by Radioactive Particle Tracking

LABORATORIO DE REACTORES Y SISTEMAS PARA LA INDUSTRIA–LARSI (reactors & systems for the industry)
Miryan Cassanello, Gabriel Horowitz, Mauricio Maestri, Stella Piovano, Gabriel Salierno, Santiago Fleite, Julia Picabea, Verónica Martínez