



Universidad de Concepción
Vicerrectoría de Investigación y Desarrollo

Bases Research Internship



1.0 General Background

The Technological Development Unit (UDT) of the Universidad de Concepción (UdeC) invites students from doctoral programs in Chile and abroad, to conduct a research stay at its facilities for a minimum of six months.

UDT is a R&D+i center specialized in the development of new products and processes based on the transformation of biomass. It has a plant with more than 100 people, including scientists, professionals and technicians, as well as a significant number of UdeC academicians associated with activities in UDT. Additionally, UDT has an excellent infrastructure for scaling processes and access to first level laboratories within UDT and from other university departments.

2.0 UDT Proposal

We offer the opportunity to: (i) work in our laboratories and pilot demonstration production plants and process scaling (see www.udt.cl), (ii) share in a pleasant, stimulating and demanding environment, (iii) engage in multidisciplinary collaboration and receive support from the principal investigators and associates of UDT, students and academicians from the Universidad de Concepción; and (iv) be part of national and international networks.

Annex 2 presents a detail of the work areas of UDT for those interested.

We offer applicants a funding of up to \$5,000,000 CLP (approximately USD\$ 6,900) that covers the following aspects: tickets to and from Chile, minimum stay of 6 months with a maintenance of up to \$500,000 CLP/month and operational expenses inherent to the research.

The call begins on Monday, October 21, 2019 and closes on Friday, November 22, 2019. It is expected that those selected can begin their stay no later than March 2020.

3.0 Application Process

Those interested in applying for funding must submit: (i) complete application form with their data, which is in Annex 1, (ii) curriculum, (iii) regular student certificate of the respective doctorate, (iv) letter of recommendation from the tutor professor or director of the doctorate program, indicating that the applicant's thesis project is approved, and (v) the documents that the applicant deems pertinent. These documents must be submitted to Mónica Paz: m.paz@udt.cl.

In case of being selected the students must:

1. Execute the planned activities
2. Generate the back-up information that allows an adequate technical and financial follow-up
3. Present the main achievements and learning of their participation at the end of the stay
4. Accredited student visa and medical insurance for the duration of the internship and that the student has his/her thesis project approved.

4.0 Application Evaluation

The members of the evaluation committee are: the Director, two Principal researchers and two Heads of Department of UDT.

This committee will be responsible for evaluating the applications that comply with the bases of the call and the present procedure.

The proposals will be evaluated on a scale from 1 to 7 and will be ranked according to a ranking.

The evaluation criteria, with a weighting of 25% each, are the following:

- Criterion 1: Thematic relevance with UDT's task (See Annex 2)
- Criterion 2: Quality of the proposal
- Criterion 3: Feasibility of carrying out the proposed activities within UDT facilities
- Criterion 4: CV

The Evaluation Committee will develop a ranking and select the candidates, according to the mentioned criteria and the availability of funds.

Annex 2

Areas of Work

UDT

At UDT the topics of interest are preferably the following:

1. Bioenergy Department

Pyrolytic processes

- Bio-oil as a platform to obtain bioactive products and materials.
- Biochar for application in agriculture, production of activated carbons and catalytic processes use.
- Pyrolysis of post-consumer plastics for wax and fuel production.

Organic waste energy recovery as a circular economy alternative

- Standardized solid fuels production (pellets / briquettes / roasted pellets, charcoal)
- Organic waste energy use through pyrolysis or gasification.
- Alternative liquid fuels production through waste pyrolysis (NFU, plastics, used lubricating oils, others).

Low temperature energy storage systems with phase change materials (PCM)

- Phase change materials (PCM) development from pyrolytic waxes.
- Low temperature energy storage device with PCM.

Hyb&Car Group

- Hybrid and carbon-based materials development, for applications in energy, environmental remediation and energy storage.
- Bio-carbons design and functionalization from biomass residues, for production of activated carbons and advanced carbonaceous materials (supercapacitors).
- Hybrid and multifunctional materials production, for solar cells and photocatalysts.
- Solar photoreactors design for water treatment.

2. Biomaterials Department

Lignocellulosic materials

- Pulp and separation processes of biomass components
- Wood composite materials
- Adhesives for wood
- Macro, micro and nanofiber of cellulose
- Chemical and physical modification of Wood

Containers and packaging

- Biodegradable / compostable containers and packaging
- Active containers and packaging
- Food containers and packaging
- Edible coatings

Bioplásticos

- Thermoplastic starches
- Wood-plastic compounds
- Compounds based on algal and agroindustrial biomass
- Bioplastics for agricultural, fruit and forestry applications
- Recovery of plastic waste

Bioactive materials

- Polymers with antimicrobial capacity based on nano / micro copper particles
- Natural additives with biocidal capacity
- Bioactive materials for the cosmetic, food, health and agriculture industry
- Synthesis of inorganic additives for the polymer industry

Elastomeric materials

- Recovery of recycled rubber
- Thermoplastic rubber / polymer compounds
- High performance rubber compounds
- Rubbers reinforced with nanostructures and natural fibers
- Recovery of forest industry waste for rubber applications