

## **The Fundación Cepsa Professorship of the ULL sponsors its first industrial doctorate**

- **The focus will be on obtaining biofuels by processing oils and fats in hydrotreatment units, placing special emphasis on the preparation of new catalysts**
- **This is the second industrial doctorate organized at the University of La Laguna**
- **These industrial theses bring the academic world and industry closer together to help solve real-world problems**

The 'Fundación Cepsa Professorship for Innovation and Energy Efficiency at the University of La Laguna' is committed to industrial research with the development of its first doctoral thesis of this kind, focused on the processing of used cooking oils and other non-food fats in fuel hydrotreatment units.

The initiative, which is the second industrial doctoral thesis organized at the ULL, will be developed by the pre-doctoral researcher Virginia Torres, chosen after a selection process open to university students from all over the country. Torres has a degree in Chemical Engineering from the University of Malaga and a Master's degree in Chemical Engineering from the same college.

The thesis will have a maximum duration of three years and will be co-directed by Carlos Prieto, refining coordinator of the Cepsa Research Center, and by the professors of the University of La Laguna, Luis Antonio González and Karina Rodríguez.

The study developed will emphasize the development of new catalytic materials that allow biofuels to be obtained from oils and fats in a single stage. In this case, various catalysts will be prepared and the suitability of the new materials with different oils and fats will be studied, comparing them with the results obtained in the processes currently used, which require two phases.

Joana Frontela, head of the Cepsa Research Center, points out that with this industrial thesis "the Fundación Cepsa Professorship for Innovation and Energy Efficiency of the ULL aims to take a step forward in the integration and optimization of refining operations with biofuel production."

At the same time, she points out that "the adequate balance between academic research, directed by the ULL, together with the more applied management supported by the Cepsa Research Center, form the perfect team for directing this research work."

For her part, the director of the Fundación Cepsa Professorship-ULL, Andrea Brito, states that "this initiative will see the existing relations between the University of La Laguna and the Cepsa Research Center deepened, fulfilling one of the objectives of the industrial doctoral theses, which is to bring the academic world closer to industry to help solve industrial problems."

“It will consist of a thesis on a subject of great interest, not only for Cepsa, but for the scientific world in general, where, taking into account both industrial and academic bases, it will address such an important issue as obtaining biofuels from oils and fats, which are waste products from other processes or from consumption,” says Brito.

### **Reduction of greenhouse gases**

The transition to advanced biofuels, with a focus on obtaining residual raw materials such as used cooking oils and inedible fats, represents an advance over the use of refined vegetable oils, which could lead to a significant reduction in greenhouse gas emissions.

To this end, experiments will be carried out to develop and synthesize new catalysts, which will be tested in laboratory reactors at the University of La Laguna, so that the best prototypes can be chosen and, at a later stage, taken to a pilot plant scale at the Cepsa Research Center, located in Alcalá de Henares.

Until now, research with vegetable oils has been one of the aspects on which the Tenerife Refinery has been working, in collaboration with the Cepsa Research Center, establishing itself as the pioneering entity at a national level in this field. At the moment, in line with the new policy marked by the European directive on renewable energies, the focus is on researching how to process these used cooking oils and other animal and vegetable fats on a large scale.

The directive stipulates that Member States must oblige fuel suppliers to ensure that at least 14% of their fuel is of renewable origin by 2030, while setting limits for biofuels from raw materials with a high impact due to their form of cultivation, land use, or water consumption.

Instead, it states that the bioenergy contribution of advanced biofuels should reach a minimum of 0.2% in 2022, 1% in 2025, and 3.5% in 2030. These biofuels are those obtained from non-food raw materials, by-products or waste from other industries.

The commitment to sustainability represents one of Cepsa’s main values, an aspect that has led to this aspect being chosen for the industrial doctorate, in order to make progress in new formulas focused on renewable energies and the development of the circular economy.

### **Other industrial doctorates with which the Cepsa Foundation collaborates**

This industrial doctorate with the University of La Laguna merges together two others in which the Cepsa Foundation participates through its chairs: one, with the Higher Technical School of Mining and Energy Engineering (ETSIME) of the Polytechnic University of Madrid; and the other, with the Research Center for Sustainable Chemistry of the University of Huelva. In all cases, they are co-directed by teaching staff from the University in question and from the Cepsa Research Center.

The business and academic environments come together, therefore, around the company’s research projects, in which the doctoral students hired by the company develop their research training, in collaboration with each university. Industrial doctorates allow for progress to be made not only in scientific knowledge, but also in the possible industrial



application of the knowledge generated. In this way, they act as bridges for the transfer of knowledge from the company to the university, while at the same time contributing to strengthening the relationship between the industrial and university sectors.

Cepsa chairs, which are managed through its Foundation, at the Universities of La Laguna, Huelva, Cádiz, Seville and Madrid, are being continually strengthened thanks to contributions and involvement from professionals at the Company and academic institutions dedicated to enhancing research, innovation and education.

Cepsa is a great ally of these universities. Its chairs have already enabled thousands of students to access the world of employment while bringing university professors closer to the energy and chemical reality. Knowledge and experience exchanges between Cepsa professionals and university teachers and students represent an enrichment for everyone.

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**Fundación Cepsa**  
[comunicacion.canarias@cepsa.com](mailto:comunicacion.canarias@cepsa.com)  
Tel.: 922 60 27 07  
[www.fundacioncepsa.com](http://www.fundacioncepsa.com)