Position Offered: POSTDOCTORAL RESEARCHER

Project: *Development of sustainable aviation biofuels with machine learning and artificial intelligence*

Technological and scientific fields: Massive data and information processing technologies; Artificial intelligence; Machine learning; Nanotechnology; New Materials

Location: Zaragoza, Aragon, Instituto de Carboquimica (ICB), www.icb.csic.es

Research Group/PI: Fuels Conversion Group/Isabel Suelves Laiglesia

PROJECT SUMMARY

The general objective of the project is the training of a postdoctoral researcher in the development and application of digitalization strategies that transform the way of developing new processes or products, such as sustainable aviation biofuels produced through different processes (hydrotreatment of oils and fats, hydrocracking/hydrosiomerization of Fischer-Tropsch products). As an innovative part of the project, the objective is to develop machine learning and artificial intelligence (AI) models in combination with first principles models that allow us to understand the materials and processes investigated. This is expected to improve data analysis and interpretation of results that direct and accelerate the experimentation and development of new materials, molecules or processes. The project will answer questions such as: How can the synthesis of a catalyst be optimized through data analysis and machine learning and AI models? Is it possible to predict the properties of new materials and molecules to define if they are good candidates to be used as fuels? Can AI help recognize reaction patterns and detect reaction pathways or networks that explain catalyst performance and product distribution?

PROFESSIONAL PROFILE

Minimum requirements:

- Doctor in Chemical Engineering
- Proficiency in Spanish and English

Merits to be considered:

- Management of experimental facilities to obtain biofuels
- Basic knowledge of digital tools

WHAT IS OFFERED

The project aims to promote a new paradigm by applying a data approach, digitization of experimental procedures and results, as well as the application of machine learning, artificial intelligence and hybrid models as a new research and development tool applied to the production of biofuels from waste and/or biomass. The training plan includes supervised and unsupervised activities that will be included in the Annual Report, training activities in digital skills (Courses/Master), training stays in other national and international research centers as well as other complementary activities (dissemination, TFG/TFM direction ,…)

Contract conditions:

Indefinite contract for a Postdoctoral Researcher associated to the Momentum Project of 4 years' duration according to Spanish science law. Gross annual salary (41.000 € - 52.000 €).

Start of contract: before 31 December 2024

PRINCIPAL INVESTIGATOR CONTACT

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