Position Offered: PREDOCTORAL RESEARCHER Project: Integral Electrokinetic Decontamination of Dredged Sediments by Artificial Intelligence (DESedIA)

Technological and scientific fields: Artificial Intelligence, Massive Data and Information Processing Technologies, Sensorisation, Digital Tools, Dredged Sediment, Decontamination, Circular Economy

Location: Madrid, Madrid, IETcc, https://www.ietcc.csic.es/

Research Group/PI: Sustainable Interaction of Construction Materials with the Environment (ISCMA)/ Marta Castellote/ <u>https://www.ietcc.csic.es/en/construction-department/sustainable-interaction-of-construction-materials-with-the-environment/</u>

PROJECT SUMMARY

The volume of material dredged just in Spanish ports is around 334 Mm3, of which barely a 50% can be reused due to its high level of contamination, which has a major impact on human health and marine ecosystems, as pollutants accumulate in living organisms and reach the food chains. There is currently no technology capable of decontaminating them to acceptable limits, which prevents them from being considered a valuable resource instead of toxic waste and from being incorporated into the principles of the circular economy. In this context, the objective of the project is the development, using machine learning techniques, of a decision support tool that will enable the comprehensive decontamination of dredged sediments for their reuse as construction material. This tool will offer, for each specific case, the optimal option for complete decontamination, including not only the degree of cleanliness but also the sustainability of the process in terms of resources (reagents, time, energy) as well as economic and social efficiency.

PROFESSIONAL PROFILE

Minimum requirements:

- Graduate in science (physics, chemistry), mathematics, computer science or degree in engineering (civil, materials, industrial or equivalent).
- Master's in science, computer science, mathematics or engineering in any specialisation

Merits to be considered:

- Knowledge of AI
- Programming skills in PHYTON or equivalent programmes
- Accredited English level minimum B2 (Cambridge, TOEIC, TOEFL or equivalent)

WHAT IS OFFERED

The completion of a doctoral thesis in a field that constitutes a social challenge of first level, carrying out a project that represents an advance in the frontiers of knowledge in relation to the applicability of electrokinetic methods for the decontamination of complex granular mixtures. It has a multidisciplinary character as it is co-directed by researchers from 2 CSIC centres -IETcc and ITEFI- specialists in the fields of decontamination and IA respectively, recognised at international level. During these 4 years, intensive training in digital competences will be carried out, including a master's degree in AI, as well as complementary training and training stays both nationally and internationally. The PhD is expected to be awarded with an international mention.

Contract conditions:

Predoctoral Researcher contract of 4 years' duration. Gross annual salary of 23,871.33 €.

Start of contract: before 31 December 2024

PRINCIPAL INVESTIGATOR CONTACT

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