Madrid, 29.11.2022

Title of the project

Plastic waste upcycling by radiofrequency fields and magnetic nanoparticles (RyFCycling)

Position offered (description)

We offer a position for a postdoctoral researcher in the framework of the project "Plastic waste upcycling by radiofrequency fields and magnetic nanoparticles" funded by the Spanish Ministery of Science and Innovation to be developed at the Institute of the Applied Magnetism of the Complutense University of Madrid (IMA).

Main Tasks and Responsibilities

Perform characterization experiments of high frequency induction heating mediated by magnetic nanoparticles. Design of small reactor working under hydrogen atmosphere for the study of reduction processes of magnetic nanoparticles. Conventional characterization of materials (XRD, HRETEM, SQUID, TGA, etc) Thermal in-situ XRD studies of magnetic nanoparticle under syncrothron radiation.

Requirements

- PhD degree in Physics or Materials Science or related disciplines.
- A good knowledge of English is required.
- Documented skills of communicating science.
- At least two years of expertise.

Conditions

- The contract will be full time.
- Duration of 20 months with the possibility of extension.
- The starting date will be middle March 2023

How to apply

The selection process will be continuous until a good candidate is found.
Interested persons can send an email to Patricia de la Presa (pmpresa@ucm.es) attaching:

- CV
- Letter of motivation
- Contact details of a reference persons.

About the Project

The aim of the **RyFCycling** project is to study t**he feasibility of plastic waste pyrolysis using modified zeolites impregnated with MNPs** (Z-MNPs) as catalysts, using radiofrequency fields as a source of energy as a way for improving the efficiency of the hydrocracking process. For such aim, MNPs suitable for high temperatures inductive heating will be synthesized and characterized. A reactor system will be designed and developed to take advantage of the heating generation capabilities of the Z-MNPs under radiofrequency fields for the conversion of plastic waste into added-value products. The process will be analysed and optimized in terms of the obtained products and energetic efficiency. The resulting findings will be disseminated via conference proceedings and research papers, and the potential of result exploitation will be evaluated. This process is based on a multidisciplinary point of view such as Material Science, Nanotechnology, Magnetism, and Chemical Engineering.

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