

# ERC Starting Grant-funded PhD positions

## Turning Biomass Into High-Value Products

University Institute of Electrochemistry – **Guijarro's Research Lab**

Contract: 4 years (PhD)

We invite applications for several PhD positions within the ERC Starting Grant Project “**RE**fining **L**ignin by advanced **C**atalytic schemes powered by **S**unlight- **RELICS**”.

The envisioned start date for these positions is 1<sup>st</sup> of June 2021 (the starting date could be discussed). The positions include a net salary of approximately EUR 1'350 per month.

*We extend this invitation on to students who are keen to apply for any PhD grant such as FPU or FPI, etc.!*

### Who are we? - **Guijarro's Research Lab**

The Advanced Solar Schemes and Electrochemical Technologies (ASSET) lab will be launching by mid-2021. Our goal is to deliver upscalable technologies to **source chemical commodities** (Hydrogen, petrochemicals, ethylene, etc.) solely from sunlight and abundant feedstocks such as water, biomass, flue gas, among others, to enable a **sustainable chemical industry**. We will build our research on an interdisciplinary approach whereby the custom-engineered materials and operando characterization tools will merge together to afford a precise understanding of the **catalytic phenomena** and the **record-performing devices**. ASSET envisions to be a very international research laboratory, with members from multiple backgrounds, all working together in a very much collaborative, inquisitive and nurturing research environment.

### What is your mission? - **Job description**

The overall goal of RELICS is the development of a novel photocatalytic machinery (nanoparticles that upon being activated by sunlight trigger precise catalytic reactions) capable of fragmenting lignin (see Scheme below). Your mission will be to work in an exciting new field at the vanguard of the photoelectrochemistry and photocatalytic devices field. The PhD thesis work will include (but is not limited to):

- Fabrication of state-of-the-art semiconductor devices and electrolyzers
- Synthesis and manipulation of nanoparticle systems as well as characterization of photocatalytic reactors
- Evaluation of the optoelectronic properties and in-depth characterization of the reaction mechanism by on-line and off-line analytical techniques
- Attendance to international conferences for dissemination of the work
- Publication in peer-reviewed journals
- Possibility for research stays abroad with partner institutions in the UK, Japan or Switzerland

### What are we looking for? - **Profile of the candidate.**

We are looking for highly-motivated and ambitious individuals who are interested in applying their basic training in chemistry / chemical engineering / materials science to develop new technologies for photoelectrochemical/photocatalytic energy conversion. Previous experience in electrochemistry, nanoparticle synthesis, analytical techniques or organic chemistry is desirable but not a requirement. **Application Documents:** Resume, Bachelor and Master Diplomas and grades, an honest letter of motivation.

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