

Project Title

Electrochemical in-situ sensing of key value-added compounds from the photocatalytic valorisation of biomass

Supervisors

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Keywords

Photocatalysis, Electrochemistry, Biomass

Project Summary

Recently the photo-reforming of biomass to high value chemical compounds using green chemistry has been an active focus of research, as it results in the reduction of our carbon footprint and provides a sustainable source for the production of valuable compounds using green chemistry. However valuable products produced during these photochemical reactions can be further degraded with time. For this reason, a rapid in-situ method for monitoring these reactions are of high importance, allowing termination of the process when maximum yields of the desired product is achieved. Current analytical chemistry techniques for monitoring photocatalytic processes requires significant waiting times for generation of results. Electrochemical sensors offer an innovative approach by providing a novel portable detection method. This work will have 2 main objectives, one being the surface modification of low cost screen printed carbon electrodes, allowing them to selective for target compounds such as 5-HMF and secondly the incorporation of these modified electrodes in electrochemical platforms for the rapid in-situ monitoring of these compounds during photocatalytic reactions. These new analytical monitoring methods can increase the efficiency of this complex process and as a result improve the competitiveness of this technology achieving key energy and sustainability targets

Candidate Qualifications/Requirements

- Candidates should hold a 2.1 BSc. (Hons) or higher.
- All applicants are required to demonstrate a high level of competence in the English language and meet the Institute's English Language Requirements

Funding Notes

Stipend € 12,000 p.a.

Materials/ Travel €5,000 p.a.

Fees N/A

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To Apply: Please contact the researchoffice@lyit.ie for an application form.

Closing Date for Applications: Completed application form along with a CV and relevant supporting documentation to be received 17:00 local time, Friday 30th October 2020.