

Bath Monash Global PhD Programme in Sustainable & Circular Technologies

Project Title:	Bio-based epoxy resins: Environmental Assessment of new sustainable materials
Supervisors at Bath:	Marcelle McManus, Matthew Davidson
Supervisors at Monash:	Tony Patti, Edward Buckingham Additional advisor: John Warner (Bath and Monash)
Home Institution:	Bath
Indicative period at Host Institution:	12 months

Project Summary

Epoxy resins based on epoxidised vegetable oils (EVO) with natural hydroxyacids as cross-linkers are of considerable current interest as more sustainable replacements for current petrochemical materials. Applications are ubiquitous but as coatings and in a range of composite and adhesive uses. We are currently investigating the use of such resins as the basis for tree guards that are able to protect saplings against animal grazing for a number of years and then degrade harmlessly. We propose two joint Bath-Monash projects in this area that are independent but cover two vital research aspects of this growing family of sustainable materials

This Life-cycle assessment-based project will focus on comparative assessment of environmental impacts of these materials based on the formulations developed and the potential applications (both in a potential Bath-Monash project and in other research projects funded at Bath). The work will focus on the sustainability of EVOs themselves. In particular, looking at more sustainable catalytic processes to the current industrial stoichiometric epoxidation. It will also consider the end-of-life options of the materials, covering aspects such as recovery of thermoset materials, self-healing and biodegradation. These are vital considerations for thermoset resins in general but will also highlight innovation leverage points for enhanced sustainability of the specific materials under development at Bath.

## Features of the programme

- PhD researchers will be registered at both institutions and will be awarded a joint PhD degree.
- PhD researchers will be jointly supervised by academics from both Monash and Bath Universities.
- All PhD researchers in the joint programme will also undertake a bespoke advanced training plan covering a range of topics focusing on sustainability.
- Applicants can apply to either Monash University or the University of Bath as their nominated home institution.
- PhD researchers will undertake a period of no less than 12 months at the partner institution.
- Up to four scholarships/studentships will be offered. Additional and suitably qualified applicants who can access a scholarship/studentship from other sources will be also considered. Evidence of funding must be provided.
- The scholarships/studentships include:
  - a *full tuition fee sponsorship* provided by Monash or Bath for the course duration (up to a maximum 42 months). Note, however, that studentships for Bath-based projects will provide cover for UK/EU tuition fees ONLY.
  - a *living allowance (stipend)* provided by Monash or Bath Universities.

Note: Overseas Student Health Cover (OSHC) must be paid by the student, unless covered by the university.

## How to apply

You MUST express interest for three projects in order of preference. Please submit your application at the Home institution of your preferred project ('Home' institution details can be found in the project summary). However, please note that you are applying for a joint PhD programme and applications will be processed as such.

**The deadline to submit applications is 30th January 2022**

### ***Monash University***

Expressions of interest (Eoi) can be lodged through <https://www.monash.edu/science/bath-monash-program>. The Eoi should provide the following information:

CV including details of citizenship, your Official Academic Transcripts, key to grades/grading scale of your transcripts, evidence of English language proficiency (IELTS or TOEFL, for full requirements see: <https://www.monash.edu/graduate-research/faqs-and-resources/content/chapter-two/2-2>), and two referees and contact details (optional). You must provide a link to these documents in Section 8 using Google Drive (Instructions in Section 8).

### ***University of Bath***

Please submit your application through the following link: <https://www.csct.ac.uk/bath-monash-global-phd-programme/>

Please make sure to mention in the "finance" section of your application that you are applying for funding through the joint Bath/Monash PhD programme for your specified projects.

In the "research interests" section of your application, please name the three projects you are interested in and rank them in order of preference. Please also include the names of the Bath lead supervisors.