



Project Title:	<b>Pyrolysis to improve bio-based building materials</b>
Lead Supervisor and co-supervisors:	Dr Daniel Maskell and Prof. Pete Walker
Industrial Partner:	Adaptavate Ltd

### Project Summary

To meet our net zero carbon targets we need to develop alternatives to building materials and technologies that rely on energy intensive linear manufacturing processes and products. Gypsum plasterboard, widely used for internal linings and finishes in a range of building applications, is responsible for over 3% of UK’s carbon emissions. However, in recent years available supplies of synthetic gypsum have also been reducing with the closure of coal fired power stations. In this exciting collaborative research project we are seeking to develop a net zero carbon alternative to gypsum plasterboard, focusing on the potential to use pyrolysis of waste matter to deliver net zero carbon building materials. Pilot studies have suggested that the innovative process could provide a step change in plasterboard performance and in developing net zero carbon products.

The PhD research will comprise laboratory micro-structural and chemical characterization of raw materials, developing prototype plasterboards, hygro-thermal performance testing of prototype plasterboard materials, and Life Cycle Analysis. Candidates should have a background in one of the following, or closely related, areas: civil engineering, built environment, materials science, chemistry or physics.

The research team will work collaboratively with Adaptavate, an award-winning company rethinking and redesigning the way building materials are produced, used and disposed of. Adaptavate are innovating and designing low-carbon construction products for healthy buildings.

### Sustainability issues addressed

- Reducing the carbon emissions of construction product manufacture;
- Supporting the delivery of net zero carbon buildings;
- Establishing alternatives to non-renewable linear supply chains;
- Improving energy performance of new and existing buildings.

### Eligibility criteria and selection process

#### Application:

Formal applications should be made via the University of Bath’s online application form for a PhD in Department of Architecture and Civil Engineering. Please ensure that you state the full project title and lead supervisor name on the application form.



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<http://www.bath.ac.uk/guides/how-to-apply-for-doctoral-study/>

**Funding Eligibility:**

This studentship is for 3.5 years' duration and includes Home tuition fees, a stipend (£17,668 per annum, 2022/23 rate) and a budget for research expenses and training.

Information may be found on our [fee status guidance webpage](#), on the [GOV.UK website](#) and on the [UKCISA website](#).

**Estimated start:** Before March 2023