



Project Title:	New Porous Materials for Sensing and Energy Applications
Lead Supervisor and co-supervisors:	Professor Chris Bowen (University of Bath) and Guylaine Poulin-Vittrant (Gremam research laboratory, University of Tours)
Industrial Partner:	French MOD's Defence Innovation Agency (AID) and UK MOD's Defence Science and Technology Laboratory (Dstl)

Project Summary

This is a fully funded PhD to develop new porous piezoelectric materials for novel sensors and energy applications. This PhD will demonstrate that the introduction of porosity can be used positively to significantly improve the performance of piezoelectric materials. Materials will be created using a freeze casting process to deliver timely benefits in terms of ease and speed of processing, to tailor the porosity, to form complex shapes by freezing in a mould of the desired geometry, which will help to reduce waste.

There will be opportunity to develop existing modelling tools and freeze casting approaches at the University of Bath to enable the controlled design of porous electro-active materials. This will be demonstrated by the development of new prototype piezoelectric pressure sensors and devices that harvest mechanical and thermal energy to showcase the technology.

The research will be a collaboration between the University of Bath (UK) and GREMAN (Tours, France) will opportunities to travel between the two groups and international conference travel.

Sustainability issues addressed

The development of porous lead-free piezoelectric and ferroelectrics materials will lead enhance sustainability of a range of devices.

Eligibility criteria and selection process

The nominated Research PhD student will be either a British or French National and will be required to spend a minimum of 6 months in the partner French University.

As part of the award, the student is expected to meet the following requirements:

During year 1, attend a 1-day induction meeting in Paris (this usually takes place in April);

Attend 2-day annual conference, which alternates between UK and France. The 2021 conference will be held in the UK.



Centre for **Sustainable
& Circular** Technologies



UNIVERSITY OF
BATH

Attend 2-day meeting at Dstl each year in winter or spring.

British or French candidates can apply by sending an expression of interest to the supervisors Chris Bowen (c.r.bowen@bath.ac.uk) and Guylaine Poulin-Vittrant (guylaine.poulin-vittrant@univ-tours.fr) to include a CV which includes your academic and work experience. All applications will be reviewed rapidly and promising applicants will be invited to an interview at Bath or via Skype.