Aberdeen Curtin Alliance PhD Scholarship

Status: Archived
Applications open: 20/11/2018
Applications close: 10/01/2019

About this scholarship

Description/Applicant information
The Aberdeen-Curtin Alliance was established in early 2017, combining 500 years of academic strength, history and tradition at Scotland’s University of Aberdeen with the ambition and innovation of the rapidly growing Curtin University, based in Perth, Western Australia. The alliance offers students the opportunity to undertake a collaborative PhD in projects across a broad range of focus areas including energy and engineering, health and medicine, and business.

The available PhD scholarships for 2019 are:

**Theme: Energy**
Area of Research: WASM: Minerals, Energy and Chemical Engineering
Project: Pore Scale Modelling of Multiphase Reactive Systems
Curtin Supervisor: Dr Ranjeet Utikar, Dr Monica Gumulya and Prof Victor Calo
Aberdeen Supervisor: Prof Jos Derksen

**Theme: Energy**
Research Area: Civil and Mechanical Engineering
Curtin Supervisor: Prof Ian Howard and Dr Andrew King
Aberdeen Supervisor: Prof Marian Wiercigroch and Dr Peter Dunning

**Theme: Energy**
Research Area: Environment
Project: The Implications of Renewable Energy for Sustainable Rural Development
Curtin Supervisor: A/Professor Amanda Davies
Aberdeen Supervisor: Dr Lorna Philip

**Theme: Creative Arts**
Research Area: Humanities
Project: Into the New World: Diaspora in Australian and Scottish Writing
Curtin Supervisor: Dr Rachel Robertson
Aberdeen Supervisor: Professor Alison Lumsden

**Theme: Global Health**
Research Area: Health Sciences
Project: Exploring health issues associated with rotation/FIFO work employing intensive longitudinal assessment methods.
Curtin Supervisor: Dr Dominika Kwasnicka and Professor Suzanne Robinson
Aberdeen Supervisor: Dr Daniel Powell

Student type
- Future Students

Course type
- Higher Degree by Research

Citizenship
- Australian Citizen
- Australian Permanent Resident
- New Zealand Citizen
- Permanent Humanitarian Visa
- International Student

Scholarship base
- Merit Based

Value
Students undertaking a collaborative PhD under the alliance are offered a seamless international experience as well as a fully funded
scholarship with living stipend. You will spend time at each institution and will be supervised by both Aberdeen and Curtin research staff.

Living stipends will be awarded to the successful applicants. The living stipend is paid by the home institution when the student is studying at the home institution, and then by the host when the student is offshore at the host institution. The stipend rates are payable at the rate for each country. Curtin University will pay its stipend at the Australian Government RTP scholarship base rate of AU$27,596.00 (2019) per annum. The University of Aberdeen will pay the UK Research and Innovation National Minimum Doctoral Stipend for 2018/19 of £14,777 per annum.

Further information about the Curtin/Aberdeen scholarship entitlements will be made available through the Aberdeen and Curtin Alliance website [http://aberdeencurtinalliance.org/](http://aberdeencurtinalliance.org/)

**Scholarship Details**

**Maximum number awarded**

5

**Eligible courses**

PhD programs only

**Eligibility criteria**

Meet the standard PhD course entry requirements for both institutions. If English is not your first language, please visit the following link for details of the requirements: [https://international.curtin.edu.au/apply/english-prerequisites/](https://international.curtin.edu.au/apply/english-prerequisites/)

**Enrolment requirements**

Please select base content

**Changes to Enrolment**

Please select base content

**How to apply**

**Application process**

Provide an Expression of Interest (EOI) reflecting your academic background in the area of study, and why you are interested in pursuing a PhD in this field. The EOI should be a maximum of 500 words that must include your name, your project of interest in addition to your academic background and suitability. It would be great to attach your CV/Resume with your EOI and send these two files in PDF format on email to ac-alliance@curtin.edu.au

Students will be expected to commence by April 2019.

**Need more information?**

**Enquiries**

For specific project/research information please contact the Curtin supervisor for your project of interest:

- **Curtin Supervisor: Prof Victor Calo**
  Email: [Victor.Calo@curtin.edu.au](mailto:Victor.Calo@curtin.edu.au)
- **Curtin Supervisor: Professor Ian Howard**
  Email: [I.Howard@exchange.curtin.edu.au](mailto:I.Howard@exchange.curtin.edu.au)
- **Curtin Supervisor: Associate Professor Amanda Davies**
  Email: [A.Davies@curtin.edu.au](mailto:A.Davies@curtin.edu.au)
- **Curtin Supervisor: Dr Rachel Robertson**
  Email: [R.Robertson@curtin.edu.au](mailto:R.Robertson@curtin.edu.au)
- **Curtin Supervisor: Dr Dominika Kwasnicka**
  Email: Curtin Supervisor: [dominika.kwasnicka@curtin.edu.au](mailto:dominika.kwasnicka@curtin.edu.au)

For general information contact [ac-alliance@curtin.edu.au](mailto:ac-alliance@curtin.edu.au)

**Further information**

[https://scholarships.curtin.edu.au](https://scholarships.curtin.edu.au)
Project details
A better understanding of multiphase flow and reaction in porous media is critical as it underpins several essential subjects such as hydrology, energy storage, carbon sequestration, mineral processing, material manufacture, and renewable energy. It is an extremely challenging problem as it involves processes such as diffusion, chemical reaction, and advection occurring over multiple time and length scales. Evolution of pore geometry and properties due to reactions results in changes in hydrological properties, which further complicates the problem.

The main objective of the PhD project is to develop computational models and experimental methods to understand the multi-scale physics and (surface) chemistry of the flow of complex fluids in porous media with applications in enhanced oil recovery, energy storage, renewable energy, carbon capture and sequestration (CCS), improved battery design, and clean fossil fuels. The project is an interdisciplinary research effort combining mathematical modelling with experimental work. Detailed meso-scale computational models using direct numerical simulations will be developed based on the fundamental theories of Navier-Stokes and the governing partial differential equations. The models will be modified to include heat transfer, mass transfer, reactions and other effects. The chemical reactions and mass transfer will lead to topological changes at the pore level, which feeds back to fluid flow. Representative experiments will be designed to aid the model validation process.

Theme: Energy
Research Area: Civil and Mechanical Engineering

Project details
The main aim of this research project is to create theoretical foundations for a new generation of wave energy converters by developing a novel concept of extracting energy from random sea waves using the principle of a parametrically excited pendulum. In particular, the project will focus on development of a new method of energy extraction based on conversion of three-dimensional oscillatory motion of sea waves into rotational motion of the energy generator using a nonlinear pendulum. The natural dynamic response of the pendulum to the vertically oscillating base is a wide range of oscillatory motions, from simple periodic to complex chaotic. However, if the system is appropriately tuned and excited, a stable rotational mode can occur in one of the nonlinear resonance zones being the central point of the proposed scheme.

The research consists of three strongly interwoven themes: (i) mathematical modelling, analysis and control of various parametric pendulum systems with a view to energy extraction; (ii) design and testing of physical models; and (iii) integration of these themes into design principles for a new generation of wave energy extraction devices. In theme one, more complex systems and forcing scenarios will be thoroughly investigated. The second theme will provide experimental verification of the developed mathematical models and assist in understanding the efficiency of the designs when excited by sea waves. The third theme will outline design principles for new energy converters, linking the project with the next, applied, step in developing this technology.

Theme: Energy
Research Area: Environment
Project: The Implications of Renewable Energy for Sustainable Rural Development

Project details
It is evident that for rural communities and regions to remain viable diversifying the economic base away from a reliance on traditional agriculture and extractive resource operations is critical. For more than two decades new industries associated with renewable energy production have been identified as having the potential to underpin the sustainable transition of rural economies. Indeed, globally there has been a considerable uptake of renewable technologies at the hyper local scale, particularly amongst the farming communities. Rural residents have pursued individual or small group investments in wind turbines, micro-hydro, anaerobic digesters, solar panel fields and other renewable energy technologies. In some cases, excess power is sold into the National Grids and the funds given to community initiatives or used as a revenue stream to increase the viability of more traditional rural industries.

This study will examine the experiences of rural communities in Scotland and Australia in developing renewable energy operations. The study will examine the geographic, policy, social and economic settings that have shaped investment in rural renewable energy enterprises. Furthermore, the study will seek to identify opportunities for hyper-local initiatives to be up-scaled or used as a model for other communities. The study will use a mixed methods approach, drawing on theoretical and methodological traditions in human geography to examine why the potential synergies between renewable energy policy and sustainable rural development remain mostly unrealised in advanced industrial economies.

Theme: Creative Arts
Research Area: Humanities
Project: Into the New World: Diaspora in Australian and Scottish Writing

Project details
Immigration and Emigration are dominant features of our current global experience but they are foundational to the relationship between Scotland and Australia. Many Scots left Scotland to make a new home in Australia and arrived at the port of Fremantle near Perth and many modern Australians trace their origins to Scotland.

This PhD project invites submissions on the theme of emigration and immigration between Scotland and Australia (whatever the direction of travel) with particular emphasis on diasporic experience. Proposals are welcomed from those wishing to undertake a creative writing project that deals with the historical experience of emigration and immigration between the two countries, or one that considers more recent experience by taking either a fictional or life-writing approach. Proposals from those who wish to take undertake a more literary study exploring existing literary works on the topic of Scottish-Australian diasporic experience will also be welcomed.

Theme: Global Health
Research Area: Health Sciences
Project: Exploring health issues associated with rotation/FIFO work employing intensive longitudinal assessment methods.

Project details:
Working as a rotation worker/FIFO has specific health consequences including disruption to life routine caused by varying work patterns, potential fatigue, stress, and social life disruption [1-3]. The proposed PhD project will explore these health challenges in three phases: (1) systematic review of studies addressing health issues relevant to the rotation workers; (2) Ecological Momentary Assessment study conducted with off-shore workers in Aberdeen and with FIFO workers in Perth assessing their health predictors and health outcomes related to their varying work pattern; (3) EMA dyadic study with close relatives of rotation workers, assessing the social and economic impacts of presence and absence of the worker on the health indicators of the relatives (e.g., the spouse, children’s wellbeing). Based on the evidence synthesis and EMA study findings a potential health intervention will be proposed that can improve the health of the population of interest and lead to potential economic savings for individuals and their employers—this intervention will be a subject of further funding applications. Rotation/FIFO work is typically well paid; however, negative short and long term health consequences have not been explored for this population.