

UK-France Joint Research PhD programme 2022

Calling Notice

The UK-France joint PhD programme aims to develop research in key areas of mutual interest to France and the UK. The programme was agreed at the 2010 Anglo-French Summit as one of the ten priorities in 2011 for the Anglo French Defence Research Group (AFDRG).

Full proposals should be **submitted by noon on Friday 26 November 2021**.

Via the Defence Sourcing Portal (DSP) (www.contracts.mod.uk). Further details and an application pack are provided herein.

Programme details

This PhD programme is jointly managed by the French MOD's Defence Innovation Agency (AID) and the UK MOD's Defence Science and Technology Laboratory (Dstl).

93 PhD studentships have been awarded since the scheme began in 2011. The intention is that a further five PhDs are to be funded by the UK in this latest call.

The programme is seeking proposals in the following *areas of interest*.

- Biochemical Computing;
- Nano Platforms;
- Organic Electronics;
- Quantum Materials.

Biochemical Computing

We are interested in novel suggestions for how goal-oriented computational tasks might be performed within bio-molecular systems in contrast to the more-usual use of electronics and logic gates. The self-assembling properties of biomolecules, for example, may incorporate typical computational functions, or support novel forms of computation.

Biochemical flows and reactions may be triggered by electrical output at the terminals of a dedicated sensor, or may be in direct response to an environmental signal such as impinging light of a particular colour. Hybrid systems, incorporating bio-mechanical components are of interest, but bio-electronic circuits are not included in this call.

Nano Platforms

Typically, Nano Platforms are considered to be small UxV, under remote or autonomous control, less than 250 g in weight, typically in a size range <100 mm, with low power consumption. Future generations will be even smaller, incorporating hard robotics, soft robotics or both. We are interested in proposals that extend our options for point-to-point communication between such devices when operating in fluids such as air or water, and potentially benefiting from low probability of intercept.

With strong emphasis on miniature (sub-millimetre) and low-power components, one objective could be to understand the physical properties and limitations of a novel form of transmitter and receiver, where controlled information can be exchanged, ideally with a demonstration of robust, two-way communication. All modes and bands are of interest.

Organic Electronics

Organic electronics, a.k.a. plastic electronics, is a field investigating organic compounds (including polymers) that have electronic or photonic properties that are typically electric, semiconducting or ionic conducting (or combinations thereof). Silicon electronics are typically limited to an upper operating temperature of 85oC; organic electronics offer the potential for higher operating temperatures, with wider military utility.

We would like to receive proposals that investigate the high temperature possibilities of organic systems; an example of which might be research to investigate an organic field effect transistor operating at a much higher temperature than a silicon equivalent.

Quantum Materials

In this class of materials, collective quantum behaviour and complex emergent effects are caused by interactions between vast numbers of electrons, or quasiparticles. These quantum effects remain apparent at macroscopic levels and their properties at these scales cannot be described accurately using classical approximations. 2-D materials such as graphene may be the best-known instances in which the movement of electrons is constrained within two-dimensional sheets, but in this call, we are particularly interested in research into quantum materials whose properties are not derived from reduced dimensionality.

By way of example, one area of application might be the use of topological quantum materials for a new class of thermoelectric devices whose performance exceeds that of the Seebeck effect. The investigation should ideally provide evidence to inform the wider and longer-term implications for the selected material.

Proposal Evaluation Criteria

Scientific quality and innovation

What is the state of the art/possible in this area and how is the proposed research new and innovative? What key piece of science does this project seek to develop and what is its value?

The proposal must have a description of:

- the challenge that the work seeks to address
- the work to be conducted, the proposed methodology
- the novelty of the proposed work in relation to the context, and the timelines
- how the proposed work is ambitious, adventurous, and transformative
- a pathway to impact for the proposed research.

Track record of PhD supervisors and university

The proposal must describe the relevance of the centre or research group. Information required here is:

- How the applicant's expertise aligns with the topic of the call
 - What aspect(s) have you been researching, and for how long?
 - How many PhD students have you supervised/are supervising?
 - How is the proposed PhD going to contribute to your work?
- Evidence that the research group or research centre is leading in the proposed field.
 - What is the goal of your research group?
 - What is special about this area?

- What are potential application areas for this research?

Dstl Commercial Process following Proposal Evaluation

Commercial Assessment	Compliance (Pass/Fail)
The Contractor must confirm their unqualified acceptance of the Authority's Terms and Conditions of Contract as detailed on the Competition Page on gov.uk	Pass / Fail Failure to confirm unqualified acceptance of the Authority's Terms and Conditions will render your proposal non-compliant and will not be considered any further.
The Contractors proposal does not exceed the Authority's funding limit of £100K per proposal	Pass / Fail

Not selected for funding

If following the evaluation the proposal is not selected for funding, the University's Commercial POC will be notified via email from Dstl Commercial by the 31st January 2022.

Selected for funding

If following the evaluation the proposal is selected for funding the following process will apply:

- Dstl Commercial will email the University's Commercial POC detailed on the application form advising that the proposal has been selected for funding and in order to progress request completion and return of some mandated forms, for example, the Personal Particulars Research Workers Form.
- Once the forms have been received by Dstl Commercial and are deemed satisfactory an offer of contract will be issued.

Please note an Offer of Contract will not be issued until a Student has been identified and approved by Dstl.

UK and French Academic Supervisors

Each proposal for a PhD studentship must have a named UK supervisor and a co-supervisor from a French University/Laboratory.

Research PhD Student Requirements

PhD students (UK or French nationals only) will be expected to spend time at both the UK and French institutes over the course of the PhD. Given this, applicants should have, or demonstrate a plan to develop, strong English and French language skills.

Further expectations are:

- Each student is expected to spend a minimum of six (6) months at the French institute (during years 1-3);
- All new students are expected to attend an 'Induction to Defence' day in France which is normally held in spring each year (1st Year only);

- Participate in the 2-day Anglo-French PhD Conference (which alternates between UK and France in summer each year (years 1-3), for information the 2023 conference will be held in the UK);
- Attend 2-day workshop in Dstl each year (organised in winter or spring) (years 1-3);
- The University will provide soft copies of the PhD Thesis and any publications (e.g., Conference and Journal papers) by the student.

Dstl Technical Support

Government oversight of the PhD is carried out through a Dstl Technical Partner and an AID Tuteur. The Dstl Technical Partner is also responsible for fostering academic engagement. As part of this role, and PhD oversight, the Dstl Technical Partner will visit University twice a year (years 1-3) for up to 3 days per visit. The visit dates are to be agreed between the Supervisor and the Dstl Technical Partner.

Formal Contract

The Contract Terms and Conditions provided as part of the competition as advertised on gov.uk will apply to any resultant contract(s) placed under this competition.

The Cyber Risk Profile for this requirement identified by the Cyber Risk Assessment is [Not Applicable] (Reference RAR-NDKA7JQV).Application Process.

Each proposal is for one PhD, which must have a supervisor from both the UK and French academic institution. There is no limit on the number of proposals that an organisation can be involved with.

Submission of Proposals

Proposals should be submitted electronically by **12:00 noon on Friday 26th November 2021** via the Defence Sourcing Portal (DSP) (www.contracts.mod.uk). The Authority reserves the right to reject any Tender received after the stated date and time.

Completed proposals must include:

- completed application form
- CV of supervisor in the UK (2 page maximum – it must list relevant experience and publications to the topic of interest)
- CV of supervisor in France (2 page maximum – it must list relevant experience and publications in the topic of interest)
- a single PowerPoint slide which summarises the scope of the proposed work
- a completed Personal Particulars Research Workers Form for each student (if already identified) and supervisor who will work on the UK Dstl funded requirements.

Proposals are requested from universities in the areas of interest and should propose a French co-Supervisor.

The deadline for Proposal is: **noon on Friday 26 November 2021.**

Applicants will be informed of the outcome by: **31 January 2022.**

Contact details

For further information, please contact: via the Defence Sourcing Portal (DSP) (www.contracts.mod.uk) please include in the subject line 'Anglo-French PhD Call 2022'.