MINISTÉRIO DA EDUCAÇÃO
UNIVERSIDADE FEDERAL DE SANTA CATARINA
CENTRO DE CIÊNCIAS FÍSICAS E MATEMÁTICAS
DEPARTAMENTO DE FÍSICA

Job Description and Person Specification

Royal Society International Science Partnerships Fund International Collaboration Award ICAO\R1\241050 - ISPF - International Collaboration Awards 2024

Research Fellow in Photoluminescence Spectroscopy

This is a project for the development of pesticide sensors based on thin films (Layer-by-Layer) of molecules that exhibit aggregation-induced emission (AIE) and aggregation-induced delayed fluorescence (AIDF). The project is funded by *The Royal Society* and is titled '*Aggregation-induced delayed fluorescence in Pesticide and Herbicide Detection (APHiD) for the Brazilian Agricultural Industry*'.

We are looking to fill a postdoctoral research associate (PDRA) position for this project, with particular expertise in photoluminescence spectroscopy and with desirable knowledge of thermally activated delayed fluorescence (TADF) and aggregation-induced emission. The position is available for 1 year and extendable for another 2 years subject to funding body requirements (i.e. a total of 3 years for the project). The annual salary is budgeted at £15,647 (and will be equivalent to approximately R$116,074 subject to exchange rates). The researcher will spend 9 months of this project based at Northumbria University in Newcastle upon Tyne in the UK with all travel costs, accommodation and subsistence included within the project budget. The contract will be expected to start as soon as possible, but flexible start dates can be discussed. **Applications will be screened on an ongoing basis until a suitable candidate is identified.**

The postdoctoral fellow will develop part of the project at the Physics Department of Universidade Federal de Santa Catarina (UFSC) in Florianópolis/Brazil and part at Northumbria University in Newcastle/UK in conjunction with the principal investigators Dr Leonardo Furini (UFSC) and Dr Marc Etherington (Northumbria University).

Qualifications:
The candidate must have a PhD or equivalent in Physics, Chemistry, Materials Science or a related discipline. Experience of photoluminescence spectroscopy is essential with desirable experience in optical spectroscopies, and Raman scattering. (See end of document for Person Specification)

Specific responsibilities

- Sample preparation using fume hoods, organic solvents, cuvettes, sapphire substrates for optical and spectroscopic characterisation.
- Handling of pesticides and herbicides in a controlled lab environment.
- Use of layer-by-layer deposition to produce samples for investigation.
- Use of UV-vis spectrometers, fluorimeters and Raman spectrometers for the measurement of photophysical parameters of the prepared samples.
- Use of time-resolved photoluminescence spectroscopy to obtain fluorescence lifetimes of the organic molecules under investigation in the presence and absence of pesticides and herbicides.

- Measurement of photoluminescence quantum yield of the organic molecules in the presence and absence of pesticides and herbicides.
- Use of analysis software such as OriginLab or Matlab for the extraction and plotting of data and parameters.
- Lifetime fitting of time-correlated single photon counting data and other time-resolved photoluminescence.
- Liaise and interface with internal project partners and stakeholders on the advisory board regularly to showcase findings and develop the technology for desired applications.
- Organise regular meetings with the project supervision team to discuss scientific outcomes.
- Develop strong collaborative research relationships with PhD students, postdoctoral researchers and academics working within your research area.
- Working on multidisciplinary projects to develop a potential prototype for pesticide sensing.
- Work collaboratively with academic, technical and administrative teams across the university.
- Prepare research findings and data for publication in refereed journals and conferences with the support of your supervisory team.
- Prepare research findings and progress reports for submission to the funding body.

General duties and responsibilities

- To take full ownership of the research project, be self-motivated and driven toward delivery of a successful project outcome.
- To manage time with the requirements of the key deliverables and expectations from the project.
- To collate, process and present analytical data in an appropriate fashion and use suitable IT tools to facilitate progression of the project.
- To comply with all Health and Safety regulations and practices within Universidade Federal de Santa Catarina (and Northumbria University when visiting)
- To liaise with technical staff to complete safety risk assessments in line with the requirement of your role.
- Supporting the day-to-day operation of the research group and supporting academics and students in relevant equipment use and training.
- Identify and secure any potential IP portfolio related to the developed technology.

Location:
The job holder will be based at the Universidade Federal de Santa Catarina (Florianópolis, Brazil) but a 9-month secondment based at Northumbria University (Newcastle upon Tyne, UK) is required.

Informal Enquiries
For informal enquiries please contact both Dr Leonardo Furini and Dr Marc Etherington (leonardo.furini@ufsc.br; marc.k.etherington@northumbria.ac.uk) to discuss this role further.

How to Apply:
Candidates will need to send a cover letter and full CV including publication list to Dr Leonardo Furini at leonardo.furini@ufsc.br
Deadline: Ongoing

Person Specification

Specific Knowledge			
Criteria	**Weight**	**A**	**I**
Subject expertise in spectroscopy	Essential	☒	☒

Subject expertise in UV-Vis, photoluminescence and time-resolved photoluminescence spectroscopy and photoluminescence quantum yield (PLQY)	Essential	☒	☒
Expertise in thermally activated delayed fluorescence (TADF) and aggregation-induced emission (AIE).	Desirable	☒	☒
Expertise in Raman and related spectroscopy	Desirable	☒	☒
Expertise in layer-by-layer deposition of films	Desirable	☒	☒
Expertise in morphological characterisation techniques such as atomic force microscopy, scanning electron microscopy etc.	Desirable	☒	☒
Be available to travel to the UK for a 9-month secondment during the 3-year project	Essential	☒	☒

Skills, Abilities & Behaviours			
Criteria	**Weight**	**A**	**I**
Ability to analyse scientific data and results, and to develop conclusions from the data.	Essential	☒	☒
Self-management, including the ability to meet deadlines.	Essential	☒	☒
Ability to work independently and collaborate within a multidisciplinary team.	Essential	☒	☒
Excellent record keeping and attention to detail, particularly in the collection and interpretation of scientific data.	Essential	☒	☒
Willingness to adapt working patterns if demanded by process parameters.	Essential	☐	☒
Willingness to learn new knowledge, techniques and skills.	Essential	☒	☒
Experience of managing project and laboratory resources.	Desirable	☒	☒
Good interpersonal and communication skills.	Essential	☒	☒
Ability to support and guide students (undergraduate and postgraduate) and technical and academic staff for training and research activities.	Desirable	☒	☒

Experience			
Criteria	**Weight**	**A**	**I**
Laboratory experimentation experience (e.g., gained through a university research project, PhD or through industrial research experience).	Essential	☒	☒
Experience of data analysis and use of data in creating technical/project reports or dissertations.	Essential	☒	☒
Experience of working with multidisciplinary teams or across multiple scientific disciplines would be desirable (e.g. across chemistry, engineering, biosciences, physics).	Desirable	☒	☒
Experience in research translation to commercial application	Desirable	☒	☒

Education & Training			
Criteria	**Weight**	**A**	**I**
A PhD in a relevant discipline	Essential	☒	☐
Appropriate postdoctoral experience	Desirable	☒	☐

Legend: A = Application I = Interview