

RESOURCING/

JOB DESCRIPTION:

Postdoctoral Research Associate



Ref Number:	STM-167-20
Salary Scale:	Grade 7: £34,804–£40,322 Appointment likely to be made at £34,804 due to funding restrictions
Contract:	For a fixed term period until 31 August 2023 AND full time
School/Department:	School of Physical Sciences
Location:	University of Kent, Canterbury
Responsible to¹:	Dr Paul Saines
Expected start date:	1 September 2020

The Role

A three-year postdoctoral research associate (PDRA) position is available in the School of Physical Sciences (SPS) at the University of Kent. We are looking for an enthusiastic candidate to join the Materials for Energy and Electronics group to pursue work in inorganic materials chemistry under the supervision of Dr Paul Saines. The successful applicant will work as part of a team on an Engineering and Physical Sciences Research Council (EPSRC) funded project, including researchers from the Universities of Kent and Cambridge. This research programme will develop new magnetocaloric materials for low temperature cooling applications, with the aim of developing technologies that reduce dependence on scarce and expensive liquid helium. This PDRA post will involve the synthesis of metal-organic frameworks and other coordination polymers, typically by solvothermal and solid-state synthesis. They will also characterise their crystal structures and magnetic properties using a range of techniques, including powder and single crystal X-ray diffraction and SQUID magnetometry, using facilities available in SPS. Advanced structural characterisation, requiring the use of central facilities e.g. synchrotrons or neutron scattering facilities, will be utilised as required by the project.

Key Accountabilities / Primary Responsibilities

- Undertake research at an internationally competitive level.
- Contribute to the development of the research project, specifically:
 - Synthesise metal-organic frameworks and other coordination polymers
 - Structurally characterise these using a combination of single crystal and powder diffraction, primarily using X-rays

¹ Line Manager may be subject to change and will be confirmed in the employment contract issued to the successful candidate.



- Characterise the physical properties of these materials using a range of techniques, chiefly SQUID magnetometry
- Disseminate research results through peer-reviewed publications and conference presentations.

Key Duties

- Carry out the research programme described in the grant application
- Work closely with the supervisor and, as necessary, collaborative partners, including at the University of Cambridge and Entropy GmbH
- Design and independently execute the necessary experiments maintaining an up-to-date log of the research activity undertaken and of the obtained results
- Carefully plan the research activity making sure the milestones of the project are achieved within the expected timeframe
- Regularly update the supervisor on the progress of the research
- Write up the research outcomes for publication in high quality peer reviewed journals.
- Attend and present research findings at relevant national and international conferences
- Disseminate findings to a wider audience, including non-scientists
- Contribute to further applications for funding an extension of this project or related work
- Assist in the supervision of undergraduate and postgraduate student research projects
- Be committed to your own personal career development, including continually updating knowledge and understanding in fields related to this research project - This will be supported by the provision of a small book allowance to allow access to specialist textbooks
- Such other duties, commensurate with the grading of the post that may be assigned by the Head of Department or their nominee.

Such other duties, commensurate with the grading of the post that may be assigned by the Head of Department or their nominee.

Health, Safety & Wellbeing Considerations

This role involves undertaking duties which include the Health, Safety and wellbeing issues outlined below. Please be aware of these, when considering your suitability for the role.

- Regular use of Screen Display Equipment
- Working with chemicals (inc. requirement to wear latex gloves and inc. work with CO₂ or N₂ gasses)
- Working with radiation
- Night work and/or Shift work during central facility experiments
- Working with low and high temperature apparatus, including ovens and instruments using cryogenic gases.

Internal & External Relationships

Internal: Dr Paul Saines, supervisor; the post is situated within the Materials for Energy and Electronics group, part of the School of Physical Sciences, which encourages interactions in a dynamic interdisciplinary research environment. The group includes several permanent academics working on inorganic materials chemistry and physics, with expertise in both experimental and theoretical approaches.

External:

Work with external collaborators involved in the project, including Professor Malte Grosche and other members of the Quantum Matter Group at the University of Cambridge, who are part of the project team, and project partners Entropy GmbH. More broadly liaise with the chemistry, physics and materials community pursuing relevant research both in the UK and overseas.

Person Specification

The Person Specification details the necessary skills, qualifications, experience or other attributes needed to carry out the job. Please be aware that your application will be measured against the criteria published below.

Selection panels will be looking for clear evidence and examples in your application, or in your cover letter where applicable, which back-up any assertions you make in relation to each criterion.

Qualifications / Training	Essential	Desirable	Assessed via*
PhD (or equivalent) in Chemistry or related, relevant discipline or to be in the final stages of obtaining such a qualification	✓		A

Experience / Knowledge	Essential	Desirable	Assessed via*
Experience in related inorganic materials synthesis	✓		A, I
Experience of structural refinement of diffraction data from inorganic materials	✓		A, I
Experience with Powder X-ray Diffraction		✓	A, I
Experience with Single Crystal X-ray Diffraction		✓	A, I
Experience with Physical Property Measurements including SQUID magnetometry		✓	A, I
Experience working at central facilities e.g. synchrotrons or neutron scattering facilities		✓	A, I
A track record of publications as first author in high quality peer review journals		✓	A
A track record of presentations at national and international conferences		✓	A, I

Skills / Abilities	Essential	Desirable	Assessed via*
Ability to carry out research independently	✓		I

Good written and oral communication skills	✓		A, I
Good team working skills	✓		I
Ability to meet deadlines	✓		I
Willingness to travel to central facility experiments and for conferences	✓		I

Additional Attributes	Essential	Desirable	Assessed via*
Enthusiasm and motivation for research	✓		I
Able to work flexible hours when necessary	✓		I
The potential to initiate, develop, and deliver high quality research	✓		A, I
Teaching experience in a Higher Education setting		✓	A, I

***Criterion to be assessed via:**

- A = application form or CV/cover letter
I = interview questions
T = test or presentation at interview