Job Description

Role: Research Associate - Wear and Corrosion Resistant Coatings on Steel

Reports to: Professor Pagona Papakonstantinou

Responsible to: Professor Pagona Papakonstantinou

Job Purpose

The postholder will be required to engage in the research activities of Proof of Concept project (POC 714) funded by INVEST NI. More specifically, he/she will be required to grow protective graphene based coatings on steel surfaces using chemical vapour deposition approaches, characterise the coatings and assess their wear and corrosion behaviour. Also, the appointee will be expected to publish the findings on high quality peer-reviewed publications.

Main Duties

1. Plan and perform experiments to understand the dependence of graphene-based coatings on the plasma enhanced CVD growth conditions.
2. Operate and maintain plasma enhanced chemical vapour deposition (CVD) systems.
3. Characterize the coatings by Raman Spectroscopy, X ray photo emission spectroscopy, Scanning electron microscopy and contact angle technique
4. Undertake electrochemical studies, including potentiometry and electrochemical impedance spectroscopy to evaluate their corrosion resistance behaviour.
5. Undertake tribological studies including pin on disk tester, nanoindentation studies
6. Communicate research progress and produce reports within specific deadlines.
7. Present at conferences, meetings/seminars and to team members and project partners.
8. Assist with organisation of project meetings, engage with project partners and travel to meetings organised for the project, as required.

11. Any other duties appropriate to the grade and nature of the post.

Appraisal Review (DAR) which is mandatory. You will be required to meet with your manager at least once every two years as part of the DAR process. If you have line management responsibility for other staff you will be required to conduct a DAR meeting with your staff at least once every two years.

All staff in the University have a responsibility to comply with the University's Equal Opportunities Policy and Health and Safety Policy. Line Managers have particular responsibility for ensuring compliance with these Policies within their own area.

This project is funded by Invest NI

Invest Northern Ireland

Personnel Specification

Post: Research Associate - Wear and Corrosion Resistant Coatings on Steel

Ref: 1701444

Educational and Professional Qualifications	*Essential*	PhD in Engineering, Materials Science, Physics, Physical Chemistry or a closely related discipline.
	Desirable	PhD in a subject with focus on (i) graphene and carbon based nanomaterials growth by chemical vapour deposition (CVD) approaches or (ii) development of wear and corrosion resistant coatings.
Previous Experience/ Training	*Essential*	Evidence of experimental research or engineering experience in at least two of the following: (i) CVD synthesis of coatings. (ii) Structural characterisation of coating. (ii) corrosion resistant development. (iii) electrochemical characterisation of coating or nanomaterials. (iv) tribological studies.
	Desirable	Evidence of experimental research experience in any of the following: (i) Growth of graphene or other carbon nanomaterials and process optimisation using chemical vapour deposition. (ii) Relevant graphene or other carbon nanomaterials characterisation techniques (Raman spectroscopy, SEM, AFM, XPS). (iii) Electrochemical methods for corrosion testing of coatings (iv) Tribocorrosion / wear prevention and testing.
Job Related Achievements	*Essential*	Evidence of practical, relevant skills and experience working with complex instrumentation and tools in a laboratory as relevant and specific for this research project.
	Desirable	Evidence of ability to translate research findings into reports, publications and presentations that can be considered of high quality in the specific context of this research project.
Inter-Personal Skills	*Essential*	Evidence of good communication, presentation and technical writing skills through conferences and/or publicly available work that can be considered of high quality in the specific context of this research project.

	Desirable	Evidence of independence, initiative and an innovative outlook with a high level of motivation demonstrated within the topics as relevant for this research project. Evidence of potential as research or team leader with ability to generate and promote new ideas and establish links and collaborations. Ability to establish and maintain technical credentials with scientific end-users, potential commercial partners and funders.
Research	*Essential*	A strong publication track record in prestigious peer-reviewed international scientific or engineering journals.
	Desirable	Peer-reviewed journal publications in journals with a high impact factor.
Other	*Essential*	Willingness to travel as required supporting collaborations. Travel and present at international conferences.

Immigration, Asylum and Nationality Act 2006

The University is legally required to confirm that all new appointees are eligible to work in the UK. If you are offered an appointment and prior to taking up the post offered at Ulster you must confirm your eligibility to work within the UK (for non EEA nationals this may involve Tier 1 or Tier 2 of the Points Based System).

The UKVI Resident Labour Market Test has not been applied to this vacancy and therefore only applicants with unrestricted entitlement to live and work in the UK can apply (i.e. applicants who do not require a certificate of sponsorship).

You must also attend a 'New Start' session and produce relevant original documents in order to confirm your identity and entitlement to work in the UK prior to taking up an offered post.

It is our policy not to accept CVs as an alternative to completing the University's application form. The application form can be completed on-line at https://www.ulster.ac.uk/about/jobs **or alternatively you can apply in hard copy.**

SHORTLISTING PLAN

Post Title: Research Associate – Wear and Corrosion Resistant Coatings on Steel **Ref No: 1701444**

The University may conduct a shortlisting exercise based on the written information you have provided. The initial shortlisting exercise will be based on the following essential criteria from the personnel specification.

Initial Shortlisting Criteria

1. PhD in Engineering, Materials Science, Physics, Physical Chemistry or a closely related discipline.

2. Evidence of experimental research or engineering experience in at least two of the following:
   (i) CVD synthesis of coatings.
   (ii) Structural characterisation of coating.
   (iii) corrosion resistant development.
   (iv) electrochemical characterisation of coating or nanomaterials.
   (v) tribological studies.

3. Evidence of practical, relevant skills and experience working with complex instrumentation and tools in a laboratory as relevant and specific for this research project.

4. A strong publication track record in prestigious peer-reviewed international scientific or engineering journals.

5. Willingness to travel as required supporting collaborations

The University reserves the right to supplement these shortlisting criteria by using the following desirable criteria from the personnel specification as essential shortlisting criteria in subsequent stages of the shortlisting process.

Supplementary Shortlisting Criteria

Evidence of experimental research experience in any of the following:

(i) Growth of graphene or other carbon nanomaterials and process optimisation using chemical vapour deposition.

(ii) Relevant graphene or other carbon nanomaterials characterisation techniques (Raman spectroscopy, SEM, AFM, XPS).

(iii) Electrochemical methods for corrosion testing of coatings

(iv) Tribocorrosion / wear prevention and testing.