POSITION DESCRIPTION

Postdoctoral Fellow

Position Level: A
Faculty/Division: Science
Position Number: 00105005
Original document creation: 12/05/2022

Position Summary
The Postdoctoral Fellow will carry out research in multiple projects, requiring processing, multiscale correlative microscopy and testing of metallic samples for applications in harsh environments such as aerospace. These projects have recently received funding from the Australian Research Council’s Linkage scheme and by international industrial partners based in Europe. They are in close collaboration with researchers at The University of Sydney. The Postdoctoral Fellow will carry out research in collaboration with all of these different stakeholders. As part of the School’s academic staff, the Postdoctoral Fellow will also be expected to contribute to the co-supervision of research students, lab management, and engagement and leadership in the institution.

The role of Postdoctoral Fellow reports to AProf Sophie Primig and has no direct reports.

Accountabilities
Specific accountabilities for this role include:

- Develop new understanding of the microstructural evolution and phase transformations in advanced alloys for aerospace during processing and service.
- Propose advanced processing routes to unlock superior mechanical properties in these materials.
- Test materials subjected to thermal and thermo-mechanical profiles in laboratory furnaces and in a Gleeble thermo-mechanical simulator.
- Carry-out multi-scale correlative microscopy including state-of-the-art methods of scanning and transmission electron microscopy, electron-back-scatter and transmission Kikuchi diffraction, and atom probe tomography.
- Prepare site-specific microscopy samples using plasma and Gallium focused ion beam microscopy.
- Carry out mechanical tests including but not limited to hardness and tensile tests, experiences in
nanoindentation are highly desirable.

- Closely collaborate with the team at The University of Sydney as well as the industrial partners.
- Assist in the supervision of postgraduate and undergraduate students working on various physical metallurgy projects in the group.
- Prepare presentations and progress reports.
- Actively disseminate research outcomes through publication of papers in leading international refereed journals.
- Liaise with the related School academic and technical staff on research progress, lab management and leadership.
- Other duties as assigned in consultation with the supervisor (potential side projects, e.g. international collaborations on additively manufactured samples).
- Align with and actively demonstrate the UNSW Values in Action: Our Behaviours and the UNSW Code of Conduct.
- Cooperate with all health and safety policies and procedures of the university and take all reasonable care to ensure that your actions or omissions do not impact on the health and safety of yourself or others.

**Skills and Experience**

- A PhD degree in Materials Science and Engineering or related or close to submission of an outstanding PhD thesis in this field at an Australian University.
- Strong track record of research in Physical Metallurgy, with particular focus on phase transformations and characterisation techniques.
- Demonstrated experience in advanced microscopy techniques (scanning electron microscopy, electron back scatter diffraction, transmission electron microscopy, focused ion beam microscopy, atom probe tomography). Advanced knowledge of at least three of those techniques and willingness to gain advanced skills in the others.
- Experience and skills in thermal and thermo-mechanical treatments.
- Demonstrated experience in mechanical testing of materials.
- Experience or interests in applied research at the interface of science, engineering and technology.
- Excellent interpersonal skills and the ability to work in a team environment and with industrial partners.
- Excellent written and verbal communication skills.
- Demonstrated ability to write and publish high-quality journal papers in high-impact journals.
- Demonstrated ability to present research findings as evidenced by presentations at conferences and other venues.
- Strong organisational skills including the ability to prioritise a range of tasks and meet deadlines.
- An understanding of and commitment to UNSW’s aims, objectives and values in action, together with relevant policies and guidelines.
- Knowledge of health and safety responsibilities and commitment to attending relevant health and safety training.
Pre-employment checks required for this position

- Verification of qualifications

About this document

This Position Description outlines the objectives, desired outcomes, key responsibilities, accountabilities, required skills, experience and desired behaviours required to successfully perform the role.

This template is not intended to limit the scope or accountabilities of the position. Characteristics of the position may be altered in accordance with the changing requirements of the role.