Position Description

Research Associate

Position Number: 00081279 *Position Title: Research Associate* *Date Written: December 2018*	*Faculty / Division: Faculty of Engineering* *School / Unit: School of Chemical Engineering* *Position Level: Level A*

ORGANISATIONAL ENVIRONMENT

UNSW is currently implementing a ten year strategy to 2025 and our ambition for the next decade is nothing less than to establish UNSW as Australia's global university. We aspire to this in the belief that a great university, which is a global leader in discovery, innovation, impact, education and thought leadership, can make an enormous difference to the lives of people in Australia and around the world.

Following extensive consultation in 2015, we identified three strategic priority areas. Firstly, a drive for academic excellence in research and education. Universities are often classified as 'research intensive' or 'teaching intensive'. UNSW is proud to be an exemplar of both. We are amongst a limited group of universities worldwide capable of delivering research excellence alongside the highest quality education on a large scale. Secondly, a passion for social engagement, which improves lives through advancing equality, diversity, open debate and economic progress. Thirdly, a commitment to achieving global impact through sharing our capability in research and education in the highest quality partnerships with institutions in both developed and emerging societies. We regard the interplay of academic excellence, social engagement and global impact as the hallmarks of a great forward-looking 21st century university.

To achieve this ambition we are attracting the very best academic and professional staff to play leadership roles in our organisation.

VALUES IN ACTION: OUR UNSW BEHAVIOURS

UNSW recognises the role of employees in driving a high-performance culture. The behavioural expectations for UNSW are below.

Values in Action
Our UNSW Behaviours

Demonstrates Excellence	Delivers high performance and demonstrates service excellence.
Drives Innovation	Thinks creatively and develops new ways of working. Initiates and embraces change.

Works effectively within and across teams. Builds relationships with internal and external stakeholders to deliver on outcomes.

Values individual differences and contributions of all people and promotes inclusion.

Treats others with dignity and empathy. Communicates with integrity and openness.

OVERVIEW OF RELEVANT AREA AND POSITION SUMMARY

The School of Chemical Engineering has been delivering excellent teaching and research for over sixty-five years. The research clusters in the school broadly span the areas of Energy, Food and Health, Environmental Technology, Macromolecular and Interfacial Engineering, and Product and Process Design. It offers degrees in Food Science (Technology and Nutrition), Chemical Engineering and Chemical Product Engineering. The school is ranked in the top 37 (QS World Ranking) in Chemical Engineering. For further information about the School, please visit http://www.engineering.unsw.edu.au/chemical-engineering/

The Research Associate will undertake research and development in the fields of photocatalytic hydrogen generation via photoreforming of organic contaminant/biomass for both energy and environmental remediation. The research aims to develop efficiency noble metal-free photocatalysts with suitable optical properties (e.g. band structures and charge carrier properties), to optimise photocatalytic hydrogen production rate as well as improve the selectivity towards favourable reaction products. The research will involve extensive mechanistic studies to investigate the surface chemistry and reaction pathway using various metal-deposited and defect-intensive metal oxide photocatalysts. The research intent to obtain deep understanding on suitable photocatalysts for simultaneous hydrogen generation and pollutant degradation, contributing to design of feasible photocatalytic reforming system. The Research Associate will closely collaborate with a team of UNSW researchers, research engineers from industry partners and supervise HDR students.

The role of Research Associate reports to Scientia Professor Rose Amal and has no direct reports.

RESPONSIBILITIES

Specific responsibilities for this role include:

- Conduct research in the area of photocatalytic hydrogen generation independently and as part of a team;
- Design and develop strategies to synthesise photocatalytic materials for sustainable hydrogen production via photoreforming of organic compound/biomass;
- Optimise hydrogen production rate and tune selectivity of the reaction towards desirable end products using various photocatalytic metal oxide particles;
- Contribute in the set up and optimisation of lab-based photocatalytic spiral reactor and be responsible for adapting the best-performing photocatalysts to the array;
- Participate in development and maintaining comprehensive database in the domain of catalysis including heterogeneous catalysis, electrocatalysis, etc.
- Contribute to the conception, definition and refinement of project objectives;
- Contribute to the writing of scientific papers and reports for international journals and progress reporting to other researchers and industry partners;

- Assist with the coordination of research activities and actively contribute to research outputs to meet project milestones;
- Contribute to the preparation of research proposal submissions to funding bodies and activity seek collaboration with industry partners as appropriate;
- Participate in and/or present at conferences and/or workshops relevant to the project as required;
- Assist with the supervision of research students in the research area where required;
- 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.

SELECTION CRITERIA

- PhD (or soon to be awarded) in Chemical/ Process Engineering or related discipline;
- Expertise and experience in material synthesis including hydrothermal, impregnation and photodeposition techniques;
- Extensive understanding of photocatalytic reforming reactions with a focus on photocatalyst design and characterisation;
- Knowledge on metal oxide surface chemistry and optical properties (i.e. band structures and charge carrier properties);
- Demonstrated ability to conduct independent research with limited supervision;
- Demonstrated track record of publications and conference presentations relative to opportunity;
- Demonstrated ability to work in a team, collaborate across disciplines and build effective relationships;
- Strong interpersonal skills with demonstrated ability to communicate and interact with a diverse range of stakeholders and students;
- Knowledge of health and safety responsibilities and commitment to attending relevant health and safety training.

It is not the intention of the position description to limit the scope or accountabilities of the position but to highlight the most important aspects of the position. The aspects mentioned above may be altered in accordance with the changing requirements of the role.