

## POSITION DESCRIPTION

### Academic Positions

*(In addition to the Position Classification Standards)*

Position Title: Research Fellow Surface Coating Fluid Dynamics                      Level:                      A/B  
 Faculty:                      EIS/ARC Research Hub for Australian Steel Manufacturing                      Department:                      Mechanical Engineering

#### Primary Purpose of the Position:

To undertake research into the fluid dynamic phenomena affecting liquid coating quality in a continuous galvanizing jet stripping line. Primary activities will involve the development of a fluid dynamic model of the process, optimisation of the process parameters and plant implementation of defect control procedures.

#### Position Environment:

The appointee will be a member of ARC Research Hub for Australian Steel Manufacturing, hosted by the University of Wollongong (UOW). The Steel Research Hub has 5 core Industry Partners (BlueScope, Arrium, the Australian Steel Institute, Bisalloy Steels and Cox Architecture), with BlueScope providing a major investment. In addition, the Steel Research Hub partners with 5 Australian Universities (the University of Queensland, University of Newcastle, Swinburne, RMIT and the University of NSW).

The Steel Research Hub aims to develop breakthrough process and product innovations to enable the Australian steel industry to improve its global competitiveness. It is based on an integrated, value chain-wide approach to innovation in the steel sector, including projects on innovation strategy and management, customer-focused product development, innovation in coating and surface engineering technology, and economic and environmental sustainability of iron and steelmaking. By ensuring sector-wide industry representation and collaboration with leading Universities, the Hub will deliver tangible and lasting economic and environmental benefits, and ensure the nation's future research capacity in the field.

#### Major Accountabilities/Responsibilities:

Responsibilities		Outcome	Office Use Only
1.	Designing and implementing a research program related to Steel Research Hub objectives under limited supervision either as a member of a team or, where appropriate, independently, in the area of fluid dynamics of jet stripping coating process in continuous galvanizing line	Reproducible, accurate and appropriate analytical / computational / experimental data achieving targets or milestone outcomes in a timely manner.	
2.	Review plant evidence/data to identify the initiation of the coating defect	Hypotheses of the trigger of the coating defect	
3.	Development of defect propagation, growth and stabilization mechanisms, CFD + solidification models	Models defined	
4.	Development of experimental program for the simulation of coating flow	Experimental method and apparatus set up	
5.	Identification of optimized process parameters for process based defect control	Process parameters defined	
2.	Preparation of intellectual property, scientific papers, conference presentations and other reports describing the results of the research program.	10 papers published in ISI journals and conference presentations at national and international events.	
3.	Assistance with project management and administration,	Proper functioning of the project and	

	including preparation of reports, assisting with workshops, preparation of newsletter items and maintenance of publications records.	Steel Research Hub objectives.	
4.	Assistance with mentoring and training for HDR students and supervision of student projects.	Students working in the area of fluid dynamics and control of liquid coating by jet wiping in continuous hot-dip galvanising process of for the Steel Research Hub are properly supported.	
5.	Assistance with the preparation of competitive research grant proposals to expand the activities of the Steel Research Hub.	Grant proposals are prepared to a high quality and by relevant deadlines.	
8.	Supervisory roles: Communicate and consult with staff on workplace and staffing matters.	To foster direct relationships with staff and enhance engagement with the organisation.	Ongoing
9.	Observe principles and practices of Equal Employment Opportunity	To ensure fair treatment in the workplace	
10.	Have WH&S responsibilities, accountabilities and authorities as outlined in the <a href="http://staff.uow.edu.au/ohs/commitment/responsibilities/document">http://staff.uow.edu.au/ohs/commitment/responsibilities/document</a>	To ensure a safe working environment for self & others.	

### Reporting Relationships:

Position Reports to:	Chief Investigator, Dr. Buyung Kosasih
The position supervises the following positions:	PhD student
Other Key Contacts:	Wayne Renshaw (BSL Project Champion), Oscar Gregory, Steel Research Hub Director

### Key Relationships:

#### Contact/Organisation:

Dr. Buyung Kosasih, Project Leader  
 Prof David StJohn (UQ) Program Leader (Academic)  
 Mr Wayne Renshaw, Industry Champion  
 Mr Jason Hodges (BSL) Program Leader (Industry)  
 Julie Matarczyk, Hub Manager, UOW

#### Purpose & Frequency of contact

Weekly  
 Quarterly reporting  
 Fortnightly  
 Quarterly reporting  
 Quarterly reporting

### Key Challenges:

1. Identification of the precise research path to address the coating defect issue
2. Development of the experimental program, and set-up involving BlueScope plant tests
3. Ensuring that research outcomes are in line with the expected outcomes
4. Preparation of high quality journal papers

### SELECTION CRITERIA - Knowledge & Skills:

#### Essential:

- Knowledge of computational fluid dynamic
- Ability to work both independently and in a team environment.
- Highly developed written and verbal communication skills in English, as evidenced by peer-reviewed research publications and presentations at conferences.

#### Desirable:

- Knowledge of high performance computing implementation

## SELECTION CRITERIA - Education & Experience:

Essential:

- PhD in relevant field such as fluid dynamic of complex flow
- Experience in multi-disciplinary research.
- Experience in report writing/manuscript preparation.

Desirable:

- Experience in fluid dynamic experimental techniques
- Experience with advanced turbulence models and multiphase effects e.g. LES, surface tension / marangoni effect
- Strong publication track record relative to opportunity.
- Demonstrated capacity to undertake collaborative research.
- Experience in mentoring students and supervising student projects

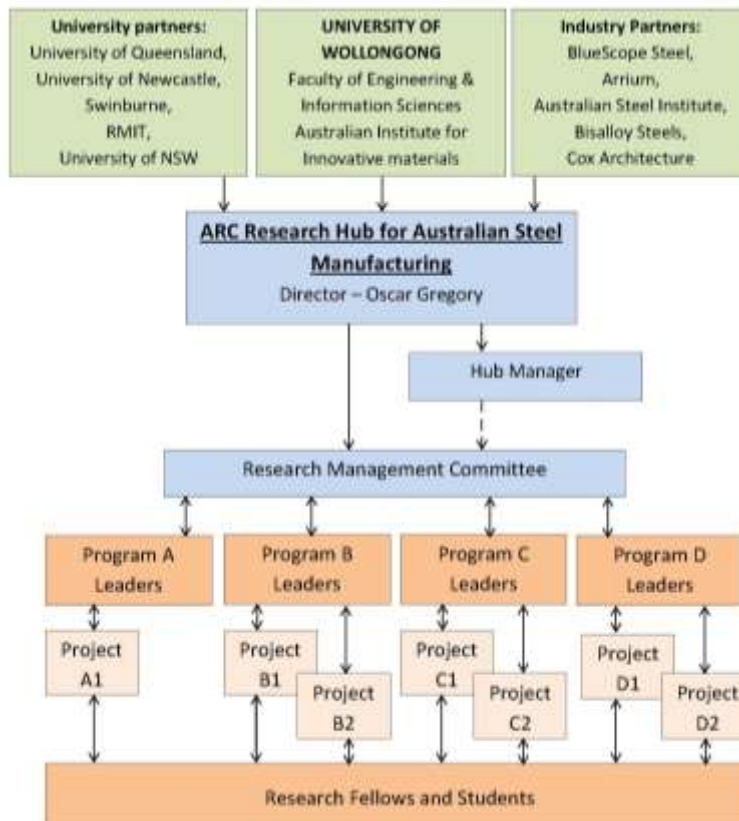
## Personal Attributes:

- Work in a team involving external bodies
- Work independently without constant supervision
- Enthusiasm for research and team work
- Willingness receive positive feedback and constructive criticism
- Look for solutions, rather than merely presenting problems
- Flexible approach to work assignments
- Responsive to change

## Special Job Requirements:

- WH&S inductions to workplace and laboratory procedures. This person must adhere to safe laboratory practices.

## Organisational Chart:



## **Roles and Responsibilities in Relation to Workplace Health and Safety:**

The University of Wollongong is committed to providing a safe and healthy workplace for its workers, students and visitors. All members of the University community have a collective and individual responsibility to work safely and be engaged in activities to help prevent injuries and illness.

In addition to the major accountabilities/responsibilities required for your position, you also hold the following roles and responsibilities in relation to Workplace Health and Safety:

### *All Staff*

- Take reasonable care for your health and safety as well as others.
- Comply with any reasonable instruction by the University.
- Cooperate with any reasonable policies and procedures of the University including reporting of hazards or incidents via the University reporting process.
- Certain staff have specific responsibilities for Work Health and Safety (WHS), further information is available in the document [Roles And Responsibilities for WHS](#) and [WHS Management System](#).
- Ensure risk management activities are undertaken to minimise WHS risk including hazard and incident reporting, risk assessment and safe work procedures.
- Provide the necessary instruction, information, induction, training and supervision to enable work to be carried out safely.
- Ensure Work Health and Safety (WHS) activities and requirements are implemented for area as outlined in the [Roles And Responsibilities for WHS](#) and [WHS Management System](#).

## **Inherent Requirements:**

This position description outlines the major accountabilities/responsibilities and the selection criteria against which you will be assessed as suitable for the position. As such there will be specific job requirements that we refer to as Inherent Requirements.

Inherent Requirements refer to your ability to:

- Perform the essential duties and functional requirements of the job;
- Meet the productivity and quality requirements of the position;
- Work effectively in the team or other type of work organisation concerned; and
- Do the job without undue risk to your own or others health, safety and welfare at work.

If you have any injuries, illness, disorder, impairment, condition or incapacity that may affect your ability to perform the inherent requirements of the position, we encourage you to discuss this with the University to assist in the process of identifying reasonable adjustments to enable you to perform the duties of the position. The University wants to place you in the best situation to use your skills effectively in the position you are applying for at the University.