



OVERVIEW

SEAM targets the training of early career researchers in an industrial context. The proposed area of surface engineering for advanced materials is a core need in all manufacturing sectors that controls the efficiency, productivity and sustainability of Australian industry.

PROJECT SUMMARY

This project aspires to be the model centre that integrates industry-university cooperation for applied training within an industrial setting. This Centre desires to be the nexus for an international collaborative network. The Centre pursues ambitious outcomes that are reflected in terms of industry fit researchers and commercial benefits for industry. The spectrum of applications addressed ranges from thin films to thick coatings and additive layered materials.

BENEFIT AND IMPACT STATEMENT

The centre expects to provide pathways for job creation and a high quality work force in manufacturing. The outcomes of the applied research and IP creation will promote new commercial ventures for entrepreneurs. Spin off benefits to university staff are expected due to the intense coaching concerning industrial needs and expectations. Additional projects will be leveraged and mentored as the centre aspires for self-sustainability. Interaction and cross-fertilisation of technologies is envisioned to create novel research outcomes.

Participants of the centre, on exposure to many engineering technologies, will benefit by mitigating risk to manufacture improved products by the clever application of surface engineering for advanced materials.

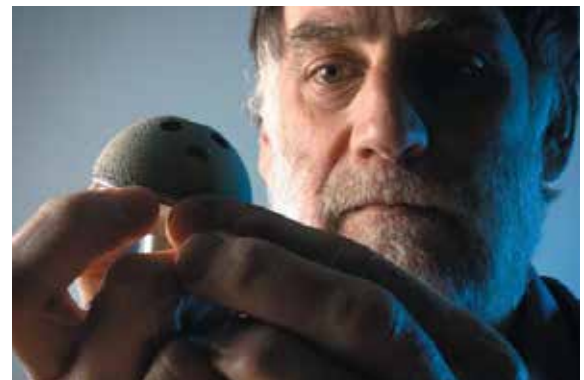
COMPARISON TO OTHER UNIVERSITIES/CENTRES/HUBS

SEAM is the first Training Centre of its kind, with a specific focus on surface engineering across (i) very thin films less than 10 μm , (ii) coatings less than 250 μm , or (iii) thick overlays up to tens of millimetres thick. The third category encompasses additive manufacturing (AM) since this is, fundamentally, a layer-by-layer material deposition process. Application fields include:

- Biomaterials
- Corrosion
- Graphene Layering
- Machining, Cutting and Grinding
- Thick coatings for heavy industries, e.g. mining
- High Temperature Coatings
- Laser Metal Deposition for Materials Repair
- Additive Manufacturing for Aerospace
- Industry 4.0 manufacturing processes.

Other distinguishing features

- A large cohort of PhDs (24) and Postdoctoral Fellows (7)
- 15 Partner Organisations
- 17 Other Organisations, professional bodies and leading research organisations supporting SEAM through intellectual input, knowledge sharing, staff and student exchanges, and other.



ARC Industrial Transformation Training Centre

Surface Engineering for Advanced Materials - SEAM

DIRECTOR

Professor Christopher Berndt (Swinburne)

DEPUTY DIRECTOR

Professor Peter Kingshott (Swinburne)

CHIEF INVESTIGATORS

Dr Andrew Ang (Swinburne)

Professor Milan Brandt (RMIT)

Professor Ivan Cole (RMIT)

Professor Russell Crawford (RMIT)

Associate Professor Colin Hall (UniSA)

Dr Nishar Hameed (Swinburne)

Dr Rosalie Hocking (Swinburne)

Professor Xiaodong Huang (Swinburne)

Professor Elena Ivanova (RMIT)

Professor Baohua Jia (Swinburne)

Professor Saulius Juodkazis (Swinburne)

Professor Guoxing Lu (Swinburne)

Professor Ma Qian (RMIT)

Dr Christiane Schulz (UniSA)

Professor Nikki Stanford (UniSA)

Associate Professor Scott Wade (Swinburne)

Associate Professor James Wang (Swinburne)

BUSINESS AND OPERATIONS MANAGER

Ms Vesna Stefanovski (Swinburne)

UNIVERSITIES

Swinburne University of Technology

RMIT University

University of South Australia

PARTNER ORGANISATIONS

1. ANSTO

2. CSIRO

3. D&T Hydraulics & Engineering Pty Ltd

4. DMTC Limited

5. GrapheneX Pty Ltd

6. Innofocus Photonics Technology Pty Ltd

7. Laserbond Limited

8. MacTaggart Scott Australia

9. Romar Engineering Pty Ltd

10. RUAG Australia Pty Ltd

11. SANTOS Limited

12. SCG Chemicals Co Ltd

13. Sutton Tools Pty Ltd

14. Titomic Limited

15. United Surface Technologies Pty Ltd

OTHER ORGANISATIONS

1. ASB Industries Inc

2. Australasian Corrosion Assoc Inc

3. Flame Spray North America Inc

4. GTV Verschleißschutz GmbH

5. Indian Institute of Technology Hyderabad, India

6. Indian Institute of Technology, Madras, India

7. Inovati Inc

8. Institute of Plasma Physics, Czech Academy

9. International Thermal Spray Association (ITSA)

10. Jinan University

11. Materials Australia

12. Nanyang Technological University, Singapore

13. Oerlikon Metco WOKA GmbH

14. State University of New York, Stony Brook

15. Welding Technology Institute of Australia

16. Victoria University of Wellington, NZ

17. University of Nottingham, UK

We acknowledge support from the Australian Research Council (ARC). The Centre in Surface Engineering for Advanced Materials (SEAM), has been funded under the ARC Industrial Transformation Training Centre (ITTC) scheme via Award IC180100005. We are grateful for the support of the industrial, university and other organisation partners who have contributed to the establishment of SEAM.