SEAM

ARC TRAINING CENTRE

Surface Engineering for Advanced Materials

Since 2019....

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ABOUT **SEAM**

The Australian Research Council (ARC) Industrial Transformation Training Centre in Surface Engineering for Advanced Materials (SEAM) is Australia's premier manufacturing Research and Development centre that focuses on applied research with tangible outcomes to nurture and cultivate the industrial innovation leaders of tomorrow.

The SEAM Centre, established in 2019, aspires to provide an outstanding environment for conducting research and exploring projects with industry, government, and other organizations. SEAM targets the training of early career researchers in an industrial context, building an international collaborative research network, and pursuing ambitious outcomes. These outcomes aim to produce industry-ready researchers who provide commercial benefits for industry. The applied research and Intellectual Property creation outcomes have fostered new commercial ventures for Australian and international entrepreneurs. SEAM's technological foundation is built on three surface engineering themes, promoting interactions among these technologies: thin films, thick coatings, and additive manufacturing.

WELCOME MESSAGE

Distinguished Professor Christopher C. Berndt

SEAM DIRECTOR

Distinguished Professor Chris Berndt shares his vision for SEAM:

"SEAM covers a spectrum of important research themes and applications, including biomaterials, graphene layering, high-temperature coatings, laser metal deposition for materials repair, and Industry 4.0 manufacturing processes. SEAM trains industry-ready professionals, with early and mid-career staff considered as 'plug-&-play' by the manufacturing sector to deliver immediate economic outcomes, emphasizing Harmony, Interaction, Sustainability, and Engagement."

SEAM
ARC TRAINING CENTRE
Surface Engineering for Advanced Materials

ACKNOWLEDGEMENT OF COUNTRY

ARC SEAM respectfully acknowledges the Traditional Owners of lands across Australia, their Elders, Ancestors, cultures and heritage, and recognises the continuing sovereignties of all Aboriginal and Torres Strait Islander Nations.

In particular, we respectfully acknowledge the Wurundjeri People of the Kulin Nation, who are the Traditional Owners of the land on which the Swinburne and RMIT Australian campuses are located, in Melbourne's centre and inner-east.

We also acknowledge the Kaurna, Boandik, and Barngarla Peoples as the Traditional Owners of the lands that are now home to the University of South Australia's campuses in Adelaide, Mount Gambier, and Whyalla.

MEET OUR EXTRAORDINARY TEAM

The ARC Centre in Surface Engineering for Advanced Materials (SEAM) commenced on 14 March 2019, with the Participants Agreement being fully executed. The Centre consisted of 13 research projects, each achieving a targeted objective while working towards the common goal of creating a high-quality workforce for the surface engineering sector of the domestic manufacturing industry.

The Centre has brought together 18 Chief Investigators (CIs) and 19 Partner investigators (PIs), across three Nodes (Swinburne, UniSA, and RMIT), creating a collaborative team. The 18 CIs and the Business and Operations Manager reported directly to the Director. The Industry-Collaborative Postdoctoral Fellows (ICPDs) and Postdoctoral Fellows (PDs) reported to both the Director and the lead Chief Investigator for their respective projects.

The Industry-Collaborative Higher Degree Researchers (ICHDRs) and Higher Degree Researchers (HDRs), in collaboration with their lead Chief Investigator, were fully embedded into industrial projects that were managed by industrial project supervisors.

Our Supportive Industry Partners

The Australian Nuclear Science and Technology Organisation (ANSTO) supports the national science and research priorities by providing access to advanced nuclear-based analytical techniques and world-class facilities, such as the Australian Centre for Neutron Scattering and the Australian Synchrotron, to conduct cutting-edge research including surface engineering carried out by SEAM.

During its partnership with SEAM, the Commonwealth Scientific and Industrial Research Organisation (CSIRO) has been actively involved in the development of a cold spray process to manufacture antimicrobial coatings. CSIRO has also contributed to the supervision and mentoring of two early-career scientists, providing them with valuable lab experience.

MacTaggart Scott Australia delivers mission critical products and services to the Royal Australian Navy's ships and submarines. The ongoing partnership with SEAM on the development of lightweight composite materials for marine applications has yielded multiple significant improvements to existing and future product designs, through advances in and the application of thermal spray technologies.

Titomic partnered with SEAM to advance the Titomic Kinetic Fusion (TKF) cold spray process through the integration of real-time process monitoring and data analytics powered by machine learning. Supported by SEAM's testing and analytical capabilities, this collaboration has accelerated development, improved quality control, and opened pathways to high-value applications and global markets.

The partnership between SEAM and Sutton Tools has led to notable enhancements in the durability and performance of precision cutting tools. By integrating advanced electropolishing techniques, followed by mechanical finishing and protective wear-resistant coatings, the collaboration supports Sutton Tools in delivering high-performance products that meet global standards.

Our Supportive Industry Partners

The Defence Materials Technology Center (DMTC) has a long and successful relationship with SEAM partners. It continues the evolution and development of advanced coatings for Defence applications, and most importantly, gives industrial context to training the next generation of scientists to continue this important work into the future.

Innofocus specializes in innovative products, solutions, services, and intelligent image recognition. Researchers at Innofocus have tackled challenges in optical coating with nanometer accuracy, developing cost-effective methods to meet industry needs.

ROMAR Engineering is working with SEAM to use the full flexibility of direct energy deposition, and additive and subtractive manufacturing to improve the quality of their built components. The focus of the project is on reducing residual stresses, voids, and maximizing surface properties.

Rosebank brought a need for a high-speed thin-film surface engineering capability to SEAM. These developments in additive manufacturing increase the production efficiency and decrease costs, as well as provide lab-measured confidence in the performance of these new coatings.

SCG Chemicals (SCGC) collaborated with SEAM to develop advanced thermal spray coatings for boiler tube applications. The joint work focused on achieving superhydrophobic and anti-slagging properties to enhance boiler performance. This partnership contributes to improved energy efficiency and operational reliability in industrial settings.

Our Supportive Industry Partners

SANTOS has partnered with SEAM, focusing on developing peening and protective coating technologies for application inside internal diameters of pipelines commonly used in oil and gas industries. The collaboration aims to deliver a solution for addressing corrosion and durability issues in the field.

Laserbond partnered with SEAM on three projects: developing advanced process sensing for real-time defect detection, using additive manufacturing to enhance stainless steel components for mining equipment, and creating corrosion-resistant HVOF coatings on composites in collaboration with MacTaggart Scott. These innovations improved process control and product quality, enabling new capabilities for future products and services.

SEAM has supported D&T to develop a high-quality laser cladding process, the first of its kind in Australia. This has enabled them to refurbish a wider range of heavy-industry parts, in a range of materials - each one optimised for different end-use applications, with performance often exceeding OEM specifications.

GrapheneX Pty Ltd, in partnership with SEAM, is at the forefront of developing smart surface coatings. This collaboration focuses on enabling rapid cross-linking and sensing capabilities, aiming to enhance performance and durability across a wide range of industrial sectors.

SEAM LEADERSHIP

We sincerely thank all members for their dedication and contributions to SEAM's success. We are especially grateful to the Executive Committee Members, who have provided leadership and guidance throughout our program.

Executive Committee

A/Prof Andrew S. M. Ang (Swinburne University Node Director)
Mr Steven Benn (Independent Representative)
Dist Prof Christopher C. Berndt (Director, Committee Chair)
Dist Prof Milan Brandt (RMIT Node Director)
Industry Prof Coin Hall (University of South Australia Node Director)
Mr Hugo Howse (Industry Representative)
Ms Jiali (Julia) Jing (HDR Representative 2024-2025)
Mr Miles Kenyon (Industry Representative)
Dr Hannah J. King (Postdoctoral Representative 2022-2024)
Prof Peter Kingshott (Deputy Director, Deputy Chair)
Dist Prof Qian Ma (Other Eligible Org Representative)
Mr Neil Matthews AM (Industry Representative)
Mr Robert McMahon (Centre Business Manager 2023-2025)
Ms Fatma Mohammed (Centre Business Manager 2022-2023)
Dr Alexander Ugeshi Osi (HDR Representative 2022-2024)
Dr Samuel Pinches (Postdoctoral Representative)
Dr Anthony Roccisano (Postdoctoral Rep 2024-2025)
Ms Vesna Stefanovski (Centre Business Manager 2019-22, Other Rep to 2025)
Dr Kevin W. Thompson (Industry Representative)

PROJECT 1
Refurbishment and enhancement of mining equipment

HIGH-SPEED LASER CLADDING

D&T Hydraulics: Kevin Webb, Scott Mackenzie, Kurt Schmidt, Ben Moore, Terry Dennis

D&T Hydraulics specialises in the refurbishment of hydraulic shafts, cylinders, and accompanying components for the mining and manufacturing industries. In 2018, the company invested in a state-of-the-art high-speed laser cladding facility to strengthen its service capabilities. This investment, the first of its kind in Australia, enabled D&T to improve refurbishment efficiency and quality, while also expanding into new markets through enhanced in-house processing.

To further advance these capabilities, D&T partnered with SEAM to enhance its Extreme High-Speed Laser Cladding (EHLA) technology. Working with Swinburne University through SEAM, D&T has accelerated the optimisation of laser cladding processes across a range of industrial applications. This collaboration supports the production of high-quality, pore-free, and crack-free coatings with strong metallurgical bonding and low dilution—delivering significant cost savings compared to full component replacement.

SEAM ECRs visiting D&T Hydraulics

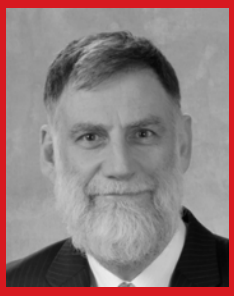
D&T Hydraulics on site

Research has focused on developing highly wear-resistant materials, robust procedures for cladding difficult alloys, and the reliable characterisation of powder feedstock. Further investigations include process control studies to refine machine parameters for chrome plating refurbishment, and evaluations of powder recycling and its effect on coating performance. The partnership enabled metallographic analysis of customer components, supporting tailored solutions and performance validation.

Project 1 Group

Distinguished Professor Christopher C. Berndt

Project Lead CI



Distinguished Professor Chris Berndt joined Swinburne University in 2007 as the founding Professor of Surface Science and Interface Engineering. A leader in thermal spray coatings, he has been a member of the Thermal Spray Society of ASM since 1991, serving as President (2002), and Editor of its conference proceedings (1992–2003). He is the Founding Editor of the *Journal of Thermal Spray Technology* and the Editor-in-Chief of *International Materials Reviews*. His research focuses on thermal spray coatings, mechanical testing, and microstructural quantification, with recent projects including advanced surface engineering, HVOF coating technology, and aerospace materials for extreme environments.

Associate Professor Andrew Ang

Deputy Project Lead CI

Refer to Project 8 for biographical details (see Page 30)

Dr Samuel Pinches

Postdoctoral Fellow

Dr Samuel Pinches joined Swinburne's SEAM team in 2019, collaborating with industry partners on surface-engineering projects, including high-speed laser cladding (EHLA) and cold spray additive manufacturing. With a PhD in Engineering from the University of Melbourne (2020) and a background in Chemical Engineering, he focuses on process development, materials science, and advanced manufacturing technologies. His work combines expertise in surface engineering, process optimization, and Industry 4.0 approaches to deliver practical solutions to complex engineering challenges.

Project 1 Group

Dr Hannah J. King

Postdoctoral Fellow

Dr Hannah King joined SEAM as an Associate Researcher. Hannah was a Postdoctoral Research Fellow working on a research project in partnership with industry partner Lightning Protection International (LPI) and the Innovative Manufacturing CRC (IMCRC) to develop the next-generation of air terminals (also known as lightning protection devices). Hannah also worked on the development of novel materials for LPI's lightning protection devices that focus on the minimisation of corona discharge.

Dr Shareen S.L. Chan

Postdoctoral Fellow

Dr Shareen S.L. Chan joined the SEAM team as a postdoctoral research fellow in 2024. She brought her robust expertise in materials engineering, processing, and characterization to the projects, making an immediate impact. Beyond her technical skills, Dr. Chan has taken on a leadership role in research activities where she applies her strong management skills.

Dr Duy Quang Pham

Postdoctoral Fellow

Dr Duy Quang Pham is a certified Mechanical Engineer and Research Engineer at Swinburne University of Technology, with expertise in surface engineering, thermal spray coatings, and biomaterials for biomedical applications. He has extensive experience in atmospheric plasma spray, cold plasma systems, and material characterization. Currently he lectures in materials and surface engineering. Dr. Pham serves as an Associate Investigator with the ARC Training Centre SEAM, and has previously held research positions at CSIRO and Flinders University.

Project 1 Group

Mr Hank Lloyd

PhD Candidate

Hank Lloyd is a dedicated materials engineering researcher with a passion for metallurgy rooted in his childhood, influenced by his father, a foundryman. He gained hands-on experience in metals at his father's foundry, leading him to study materials engineering at the University of Auckland. In his final year, he conducted a research project with Associate Professor Steve Matthews, specializing in thermal spray, which inspired his PhD journey. He joined the SEAM team at Swinburne University in 2021.

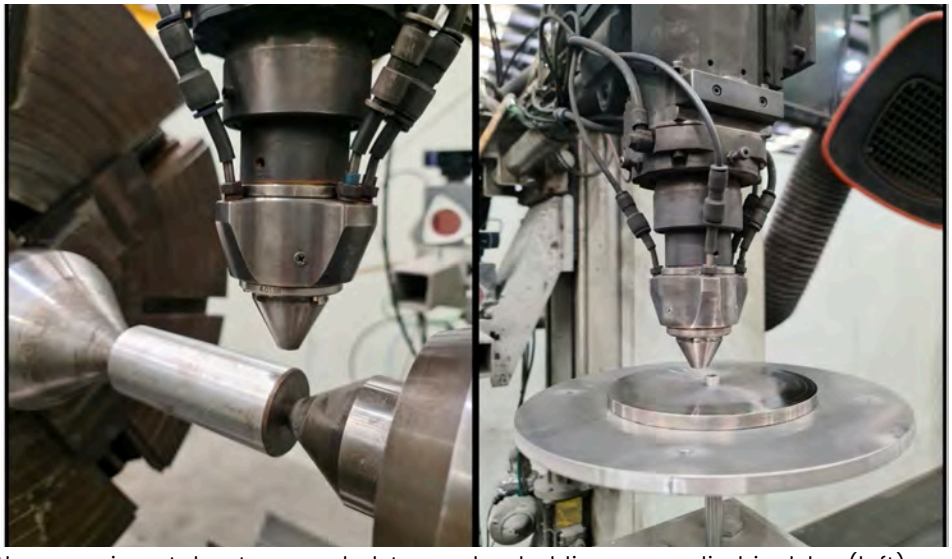
Mr Bruno Felipe Andrade Bezerra

PhD Candidate

Bruno Felipe Andrade Bezerra is a HDR Candidate with SEAM at Swinburne University of Technology. Bruno's desire to work with coatings and corrosion problems started during his studies at the University of Rio Grande do Sul in Brazil, where he was also awarded a Master of Science and Technology of Materials. Bruno first started to work with HVOF coatings in Brazil, continuing his studies and experience with an internship in Belgium at OCAS, working with maraging steels.

Project 1 Outcome

Microstructure and tribological performance of WC-Co cermet strengthened nickel alloy composite coatings manufactured by extreme high-speed laser cladding (EHLA)



Images of the experimental setup needed to apply claddings on cylindrical bar(left) and flat disc substrates (right). Resource adapted from Bezerra, B.F., Pinches, S., King, H.J., Chan, S.S., Meghwal, A., Kaur, S., Hall, C., Berndt, C.C. and Ang, A.S., 2025. Surface and Coatings Technology, p.132390. doi.org/10.1016/j.surfcoat.2025.132390

PROJECT 2
Thin films for infection control

ANTIMICROBIAL COATINGS

Commonwealth Scientific and Industrial Research Organisation (CSIRO): Helmut Thissen, Peter King

With the rising demand for orthopaedic surgeries, implant-related infections have become a significant concern in modern surgical procedures. A key factor in these infections is the adhesion of bacteria to implant surfaces, followed by biofilm formation. This process begins with bacterial attachment, proliferation, and the accumulation of extracellular matrixes, often resulting in implant failure and the need for revision surgeries.

Surface engineering offers promising strategies to address these challenges by modifying implant surfaces to reduce bacterial adhesion and delay infection at the implant–tissue interface. Given the complexity and hierarchical structure of biological systems, combining multiple antimicrobial strategies within a single device or coating is considered a more effective preventative approach.

This project developed multifunctional antimicrobial coatings that provide broad-spectrum activity and layered defence mechanisms. The project developed surface coatings as drug delivery systems with controlled release. For the first time, hafnium-based nanostructures were created via physical vapour deposition through a colloidal template, with certain designs exhibiting significant antimicrobial properties.

SEAM ECR Sandy with supervisors at CSIRO

Project 2 Group

Professor Peter Kingshott

Project Lead CI

Professor Peter Kingshott has been an academic in the School of Science, Engineering and Technology at Swinburne University since 2010. With a PhD in Chemistry from UNSW (1999) and a BSc with Honours from Murdoch University (1992), his research focuses on antimicrobial surfaces, biomaterials, tissue engineering, and micro- and nanofabrication technologies. Recent projects include developing structured biomaterial surfaces, electrospun nanofiber wound dressings, antimicrobial polymer coatings, and multifunctional surfaces for stem cell differentiation.

Distinguished Professor Elena Ivanova

Associate Project CI

Distinguished Professor Elena Ivanova joined RMIT's School of Science in 2018 after her tenure at Swinburne University of Technology (2001-2018). Her research focuses on surface science and chemistry, heavy metal removal from aqueous environments, and the interaction of biological organisms with implant surfaces to prevent bacterial attachment. Recent projects include biomimetic antibacterial surfaces, micro/nano-structured biointerfaces, planar micro-devices, biomolecule immobilization, and studying the biological effects of electromagnetic fields.

Emeritus Professor Russell Crawford

Project Associate CI

Professor Russell Crawford is the former Executive Dean of the School of Science at RMIT University. He has previously served as Dean of Science, Dean of the Faculty of Life & Social Sciences, and Head of the School of Biophysical Sciences and Electrical Engineering at Swinburne University of Technology. He is a former President of the Australian Council of Deans of Science and currently serves on its Executive Committee. His recent research explores the interactions between biological organisms and solid surfaces, with the aim of developing surfaces that resist bacterial attachment.

Project 2 Group

Dr Peter King

Project Associate CI

Dr Peter King is a Senior Research Scientist in the Robotic Manufacturing Team at CSIRO, Australia. Dr King is passionate about digital techniques for large format robotic additive manufacture, automated repair of components and toolpath planning for metal 3d printing. He has led the development of new applications of cold spray technology in areas ranging from repair of naval components, freeform production of aerospace parts, coatings for printing rollers and marine biofouling.

Dr Andrew Boden

Postdoctoral Fellow

Dr Andrew Boden received his PhD in Chemistry and Biochemistry from Swinburne University in 2020, specializing in materials science for non-fouling and antimicrobial surfaces. He joined SEAM in 2021 as a Postdoctoral Fellow where his expertise in polymer and peptide immobilization and surface analysis techniques such as XPS, MALDI-ToF MS, SPR, SEM, and AFM contribute enormously to understanding the deep science of industrial applications. His projects include developing multifunctional antimicrobial coatings, biofunctionalized TiO_2 for colloidal crystal surfaces, and multiplexed surface signals to prevent bacterial biofilms, with significant implications for healthcare and biomedical industries.

Dr Arne Biesiekierski

Postdoctoral Fellow

Dr Arne Biesiekierski joined SEAM as an ARC Postdoctoral Fellow in 2020. He held a postdoctoral role at RMIT, furthering research into Ti- and Mg-based alloys for biomedical use, before joining SEAM. After completing a Bachelor of Nanotechnology with First Class Honours at Curtin University, he earned a PhD from Swinburne, developing novel low-modulus Ti-based alloys for orthopaedic applications. He specilizes in materials characterization and design. His research focuses on metallic biomaterials for orthopaedic and vascular repair, including biodegradable magnesium alloys, low elastic-modulus titanium alloys, and shape memory alloys.

Project 2 Group

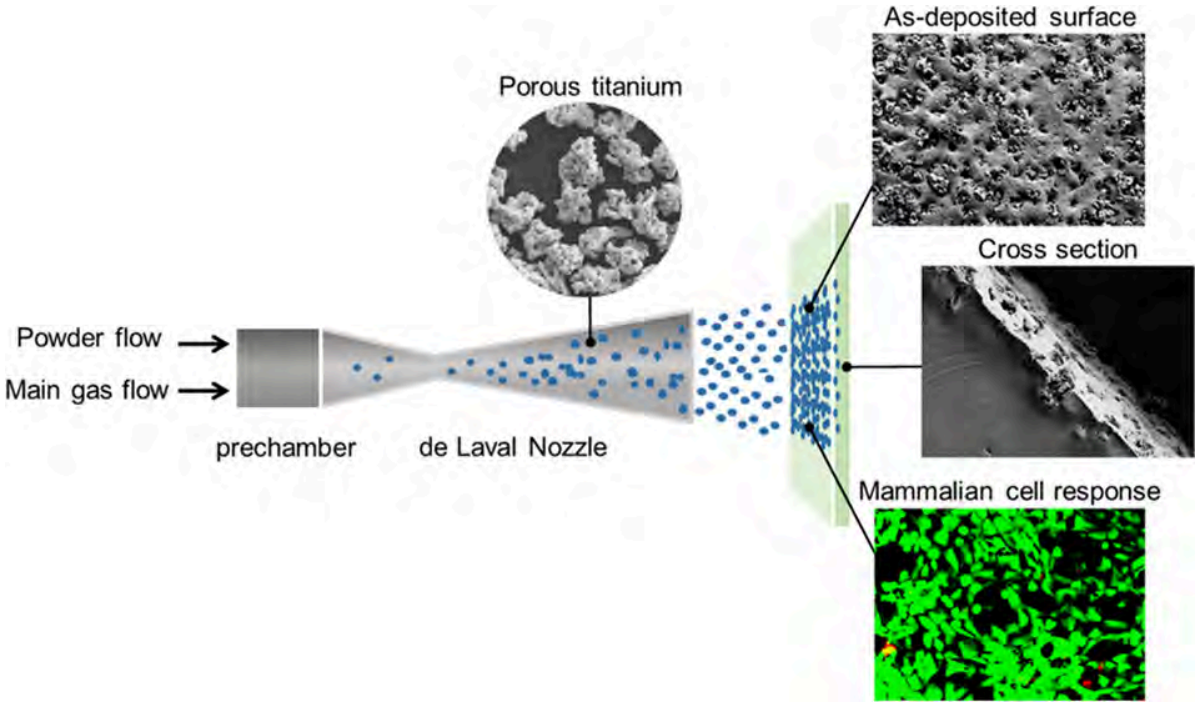
Dr Tzu-Ying (Sandy) Liao

PhD Candidate

Dr Tzu-Ying (Sandy) Liao joined SEAM with a Bachelor's and Master's degree in Chemical Engineering from National Taiwan University. Her PhD research project, conducted in collaboration with CSIRO Lab 22, focused on developing antimicrobial thin films to prevent infections in polymer-based biomaterials. Using a solid-state cold spray process that deposits particles at supersonic speeds, her materials science designs have been successfully fabricated with the Plasma Giken PCS 1000 industrial system. She has expertise in polymer synthesis, chemical characterization, and both eukaryotic and bacterial cell culture studies. Sandy currently works as a Research and Development Chemist at SECOS Group, where she continues her work in innovative materials development.

Project 2 Outcome

Surface Characteristics and Bone Biocompatibility of Cold-Sprayed Porous Titanium on Polydimethylsiloxane Substrates



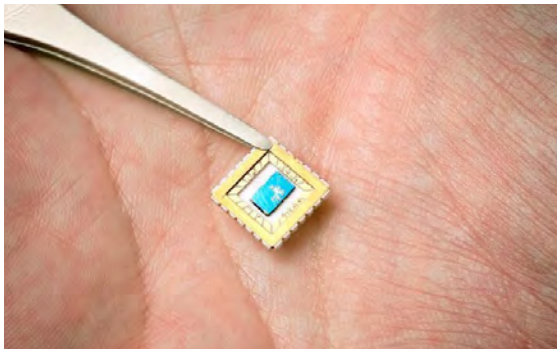
Graphical abstract from Liao, T.Y., King, P.C., Zhu, D., Crawford, R.J., Ivanova, E.P., Thissen, H. and Kingshott, P., 2023. ACS Biomaterials Science & Engineering, 9(3), pp.1402-1421. doi.org/10.1016/j.progsurf.2022.100654

PROJECT 3
Layer by layer deposition of nanometre thin films on arbitrary 3D structures

3D CONFORMAL COATINGS

GrapheneX: Stephen Wee

Conformal coatings are essential for providing additional functionalities and preventing corrosion on complex 3D structures. Traditional coating techniques, however, struggle with fully covering intricate, small-scale parts, leading to incomplete coverage and defects that compromise performance: particularly anti-corrosion properties. To overcome this limitation, the project team developed an innovative conformal coating process designed to uniformly coat complex 3D surfaces.



A nanoscale photonic device

The new coating technology supports scalable and cost-effective manufacturing, enabling the deposition of durable, multifunctional coatings suited for large-scale production. These coatings are engineered to meet demanding performance and anti-corrosion requirements across industrial applications.

In addition to corrosion resistance, the coatings demonstrate multifunctional properties such as photothermal and energy storage capabilities. Through expertise in nanocoating techniques for both flat and structured surfaces, the team established efficient protocols and refined key process parameters. These advancements provide valuable insights into complex nanostructures of coatings and support the development of environmentally responsible, high-performance surface technologies.

Project 3 Group

Distinguished Professor Baohua Jia

Project Lead CI

Distinguished Professor Baohua Jia is a globally recognized leader in photonics technology. As the inaugural Director of the Australian Centre for Atomaterials and Nanomanufacturing (ACAN) at RMIT, she has made significant contributions to translating technologies for a more sustainable future. Her research primarily focuses on light and nanomaterial interactions, particularly in laser manipulation of two-dimensional materials. This work has led to the design and development of nanostructures for clean energy harvesting, environmental purification, and ultrafast optical communications.

Professor Xiaodong Huang

Project Associate CI

Professor Xiaodong Huang holds the position of Professor of Engineering Mechanics at Swinburne University of Technology, specialising in topology optimization and its applications in advanced materials and metamaterials. Professor Huang has received several prestigious awards, including the ARC Fellowship, the Early-Career Research Award from the Australian Academy of Science, and an RMIT Teaching Award. His research primarily focuses on topology optimization and its applications in advanced structural materials, phononic and photonic crystals, and metamaterials.

Associate Professor Han Lin

Project Associate CI

Associate Professor Han Lin is a leading researcher in the evolving field of 3D printing. He plays an active role in shaping the future of 3D printing, driving progress not only through research and education, but also by exploring emerging technologies. His extensive work—particularly in 3D printing and graphene—has earned widespread recognition and citations. A/Prof Lin remains dedicated to building a lifelong career around the transformative potential of additive manufacturing.

PROJECT 4
Coating and Repair of Additive Manufactured Components

LASER METAL DEPOSITION

LaserBond: Thomas Schlaefer, Christiane Schulz

This project investigated Laser Metal Deposition (LMD) as an Additive Manufacturing (AM) technique used to repair or fabricate structural components in sectors such as mining, agriculture, aerospace, and the automotive industry. In collaboration with UniSA, LaserBond explored the capabilities and limitations of LMD, developed quality control strategies to ensure performance reliability, and trialled advanced feedback systems for process optimisation.

SEAM Project 4 research group working in the UniSA labs

The project achieved several key technical outcomes, including the development of an acoustic crack detection and triangulation system for laser-cladded parts. It improved the processing of large components through better heat management and operator training, and qualified LMD stainless steel (AISI 431) to ANSI-AGMA 2004-B89 gear tooth standards.

LaserBond, as the supportive industry partner, established a new capability to produce large-scale AM components using their laser cladding system, resulting in commercial applications. The SEAM-sponsored R&D work contributed to successful grant submission for the Additive Manufacturing CRC (2025–2032), with LaserBond committing resources to future collaborative research so that a sustainable funding pathway evolved.

Project 4 Group

Industry Professor Colin Hall

Project Lead CI

Industry Professor Colin Hall is a researcher at the Future Industries Institute, University of South Australia, with over 24 years of combined industry and academic experience in surface engineering in vacuum processes. His research focuses on decorative and protective coatings ranging from 2 nm to 2 cm in thickness, tribology, and scaling up research for commercialization. Recent projects include wear-resistant coatings for mining tools (in collaboration with LaserBond), electromagnetic transparent coatings for radar applications, and decorative coatings for the automotive industry.

Professor Nikki Stanford

Project Associate CI

Refer to Project 12 for biographical details (see Page 44)

Dr Christiane Schulz

Project Associate CI*

Dr Christiane Schulz is the Technical Product Manager at LaserBond, specialising in corrosion-resistant materials for industrial applications. With a background as a Research Fellow at the Future Industries Institute (UniSA), she has extensive experience in thermal spraying, laser cladding, additive manufacturing, and thick coatings for sectors such as mining, steel, agriculture, energy, and oil & gas. Her work focuses on extending component life through surface engineering, including laser-cladded mining equipment, durable basecutter blades for agriculture, and corrosion-resistant coatings for offshore wind turbines. Her research spans the full powder-to-part lifecycle, addressing key challenges in materials performance and reliability.

*Dr Christiane Schulz transitioned from CI to PI during this project.

Project 4 Group

Dr Anthony Roccisano
Postdoctoral Fellow

Dr Anthony Roccisano was a Postdoctoral Fellow with SEAM at the Future Industries Institute, UniSA, specialising in materials characterisation, electrochemical analysis, and mechanical design. His research focused on Laser Metal Deposition (LMD), including process optimisation and the development of wear- and corrosion-resistant coatings. He has expertise in thermal spraying and laser cladding. His PhD at UniSA addressed stress corrosion cracking in pipeline steels. Dr Roccisano has transitioned to a Materials Engineer role with BAE Systems.

Dr Andre Hatem
PhD Candidate

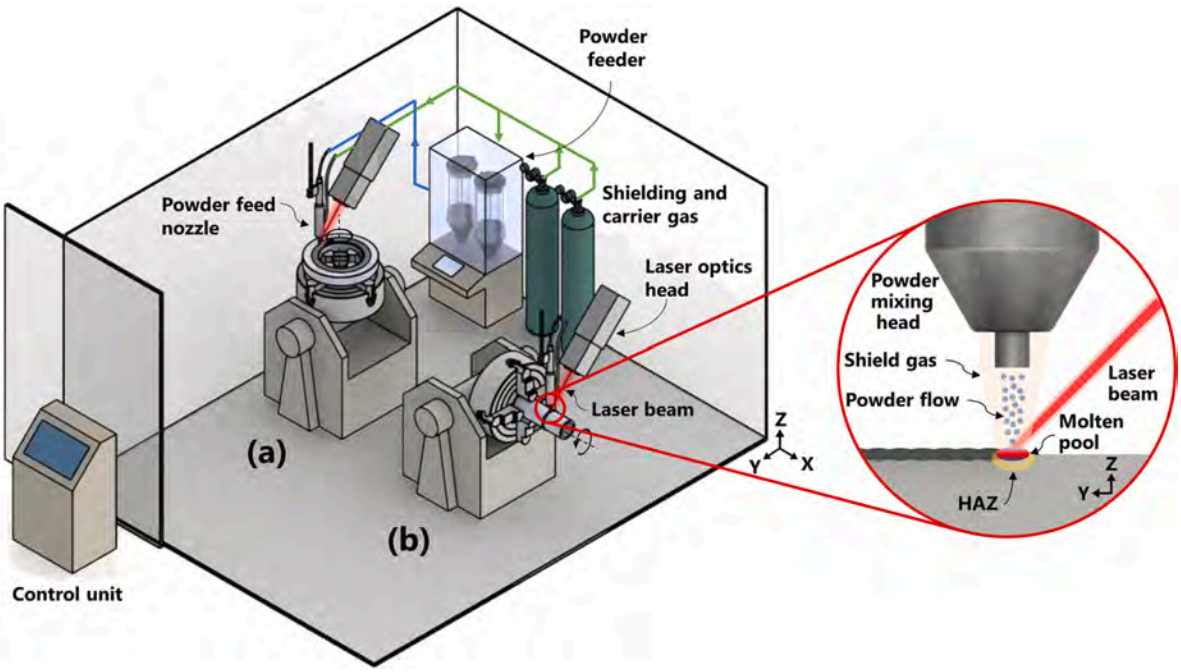
Dr Andre Hatem is a Mechanical Engineer in energy and advanced manufacturing where his expertise in materials science and surface engineering at the Future Industries Institute (UniSA) has contributed to innovative solutions. Through SEAM, he has applied additive manufacturing and laser cladding to develop robust 3D-printed stainless steel components for industrial applications. After completing his PhD, Andre moved to Submarine Systems at ASC Pty Ltd as a Mechanical Engineer, contributing to advanced manufacturing in Australia's defence sector.

Dr Md Jonaet Ansari
PhD Candidate

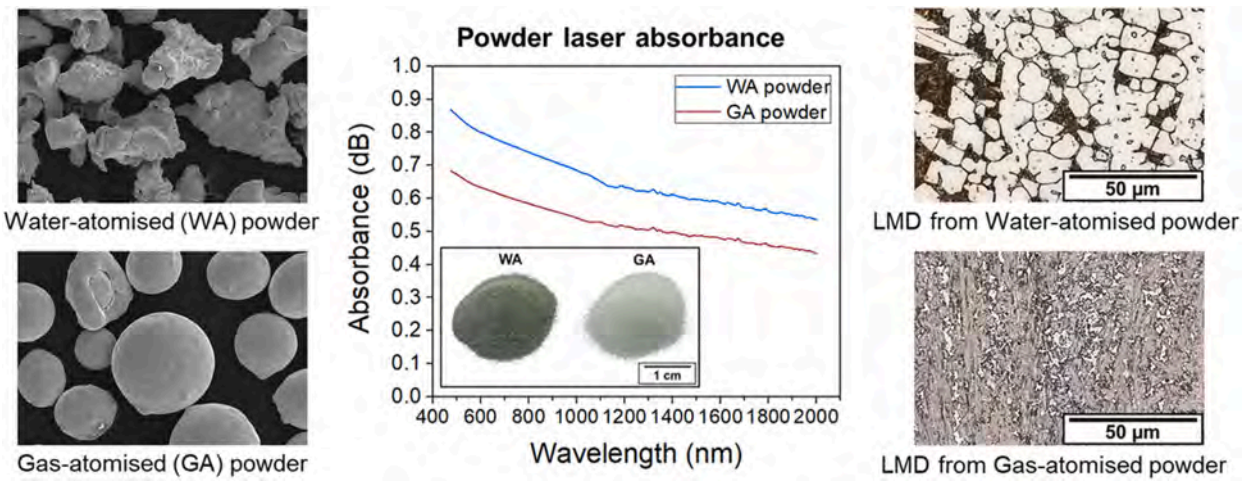
Dr Md Jonaet Ansari holds a BSc (2016) in Mechanical Engineering from Khulna University of Engineering & Technology (Bangladesh) and an MSc (2020) from the University of Ulsan (South Korea), where he researched thermal and mechanical behaviour of 3D-printed parts. His PhD at UniSA with SEAM focused on coating and repair of additively manufactured components. His research contributes to improving in-situ monitoring and closed-loop control in laser cladding processes.

Project 4 Outcome

Influence of laser absorption by water- and gas-atomised powder feedstock on Laser Metal Deposition of AISI 431 stainless steel



Schematic diagram of the Laser Metal Deposition setups, adapted from Hatem, A., Schulz, C., Schlaefer, T., Boobhun, J.T., Stanford, N. and Hall, C., 2021. Additive Manufacturing, 47, p.102242. doi.org/10.1016/j.addma.2021.102242



Graphical abstract adapted from Hatem, A., Schulz, C., Schlaefer, T., Boobhun, J.T., Stanford, N. and Hall, C., 2021. Additive Manufacturing, 47, p.102242. doi.org/10.1016/j.addma.2021.102242

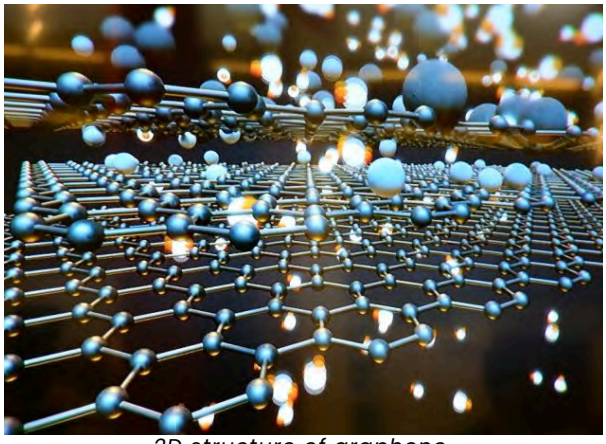
PROJECT 5
High Precision Coating with a Graphene Layer

HIGH PRECISION OPTICAL NANOCOATING

Innofocus: Frank Yao

Optics industries rely heavily on thin film coating technologies to control light reflection, transmission, and absorption across specific wavelengths. However, conventional coating techniques are costly, labor-intensive, and inefficient, limiting their scalability and accessibility. There is a growing demand for more cost-effective methods that offer nanometer-level precision in controlling coating properties and thickness.

To address these challenges, the project team has optimized laser nano-printing protocols to fabricate nanometric coatings. By systematically tuning laser parameters—such as power, pulse energy, repetition rate, and polarization—they developed precise patterning techniques with support from Partner Organisation Labs. This led to the creation of graphene oxide–polymeric film coatings with enhanced optical and mechanical properties.



2D structure of graphene

These advanced coatings have enabled the design of integrated optical devices including solar absorbers, lenses, holographic displays, sensors, and photodetectors. The team also developed high-precision nanocoatings on innovative substrates with controllable layer thickness and number. Their work not only expands the scope of optical device fabrication but also provides new insights into the behavior of complex nanostructured coatings.

Project 5 Group

Distinguished Professor Baohua Jia

Project Lead CI

Refer to Project 4 for biographical details (see Page 15)

Associate Professor Rosalie Hocking

Project Associate CI

Associate Professor Rosalie Hocking is a chemist at Swinburne University of Technology, specialising in electrochemical devices that convert solar energy into chemicals such as hydrogen and ammonia. Her research combines advanced X-ray techniques and synchrotron studies to investigate material performance, and explores low-cost sensor development for critical applications such as asbestos detection. She holds a PhD in physical and inorganic chemistry from the University of Sydney and has held roles at Stanford, Monash, and James Cook Universities as well as CSIRO. She leads a materials design program and contributes to several industry committees, including the Royal Australian Chemical Institute.

Professor Saulius Juodkazis

Project Associate CI

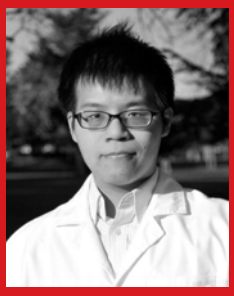
Professor Saulius Juodkazis is a Professor of Nanophotonics and Director of the Nanotechnology Facility at Swinburne University of Technology. His research focuses on light-field enhancement, spectral control, and femtosecond laser-based 3D printing for applications in sensing, solar energy, and solid-state lighting. He has developed nano-textured surfaces for antibacterial and light-harvesting functions, and contributed to high-pressure material phase generation using ultra-short laser pulses. A Fellow of OSA and SPIE, he has authored over 700 peer-reviewed publications and leads multidisciplinary projects in photonic crystal light trapping, plasmonic immunoassays, and advanced laser–matter interactions.

Project 5 Group

Associate Professor Han Lin

Project Associate CI

Refer to Project 3 for biographical details (see Page 15)



Dr Keng-Te Lin

Postdoctoral Fellow

Dr Keng-Te Lin was a Postdoctoral Fellow with SEAM, holding a PhD in Materials Science and Engineering from National Taiwan University. His research focuses on nanophotonics, plasmonics, and solar thermal energy conversion, with current work exploring nanoscale photothermal management, next-generation photovoltaic devices, and 2D material physics. He also investigates the optical and protective properties of graphene films. Dr Lin has received multiple awards, including Swinburne's Vice-Chancellor's Research Excellence Award and the Australian Nanotechnology Network Early Career Research Award.

Mr Nan Zheng

PhD Candidate

Mr Nan Zheng joined SEAM in 2019 and is pursuing a PhD in Physics at Swinburne University of Technology, applying data science tools to solve applied physics research problems. He is proficient in Python, SQL, and MATLAB, with expertise in exploratory data analysis, model deployment, and data visualisation, and is certified in deep learning and large language models. Nan Zheng has delivered scalable, data-driven solutions for industry partners and is a PhD-qualified Data Scientist specialising in predictive analytics, machine learning, and statistical modelling.

PROJECT 6

Optimization of surface properties of additive components using an additive/subtractive machine

INNOVATIVE 3D VISUALIZATION TOOLS

Romar Engineering : Neil Wilson

Romar Engineering – LASERTEC 65 3D Manufacturing Facility

Metal additive manufacturing offers key advantages, including the ability to fabricate complex structures directly from CAD models, along with significant energy and material savings over traditional methods. However, challenges remain—such as slow build rates, residual stresses, rough surface finishes, and the need for high-cost, high-quality powders.

This project investigated hybrid manufacturing systems that combine additive and subtractive processes to solve these commercial limitations. Using the DMG Mori Lasertec 3D 5-axis printer, which enables both laser deposition welding and milling, the team explored improvements in build speed and surface quality. The machine demonstrated deposition rates up to ten times faster than conventional systems. By integrating milling into the process, the project aimed to reduce residual stresses and achieve better surface finish control without extensive post-processing.

The project also implemented innovative 3D visualization tools to streamline quality inspection by highlighting optimal regions for quality assessment. The technologies developed in this project have been applied in aerospace, defence, and biomedical industries, contributing to advancements in hybrid manufacturing systems.

Project 6 Group

Professor Ivan Cole

Project Lead CI

Professor Cole is a recognized leader in rapid materials discovery for corrosion protection, nanostructures, and additive manufacturing, combining computational modeling with high-throughput experimental methods. With over 30 years of experience in academia, industry, and CSIRO, he leads the Rapid Discovery & Fabrication (RDF) Team at RMIT, driving innovation in material performance and process optimization. In additive manufacturing, he integrates in-situ sensing and modeling to optimize build quality and enhance surface functionality and biocompatibility. Additionally, his nanostructure research develops optimized nano-dots for fluorescence sensing and catalytic applications in environmental and biomedical fields. Professor Cole's work accelerates material discovery and supports innovation across diverse industrial applications.

Dr Rou Jun Toh

Postdoctoral Fellow

Dr Rou Jun Toh was a Postdoctoral Fellow with SEAM at RMIT University, specializing in optimizing additive components using advanced manufacturing systems. After earning her PhD in Chemistry and Biological Chemistry from Nanyang Technological University in 2017, she gained experience at CSIRO before joining RMIT and SEAM in 2020. Her work with Romar Engineering involved innovative 3D visualization tools and quality assurance processes for additive/subtractive manufacturing using the DMG Mori Lasertec 65. Rou Jun also played a leadership role, training researchers and industry partners to enhance manufacturing capabilities. She currently works as a Trainee Patent Attorney at the Phillips Ormonde Fitzpatrick company.

Dr Milan Patel

Postdoctoral Fellow

Dr Milan Patel is a chemical engineering research fellow in the School of Engineering at RMIT University, specializing in rheology and forming of complex fluids, CO_2 sequestration with enhanced natural gas recovery, and microclimate analysis within structures. His work combines multiscale, semi-analytical, and finite element modeling with experimental validation to solve industry-relevant problems. His industry experience includes roles as a Postdoctoral Fellow at the University of Cambridge, Research Scientist at CSIRO, and Research Fellow at the University of Western Australia and RMIT University.

Project 6 Group

Mr Ikram Ul Hassan

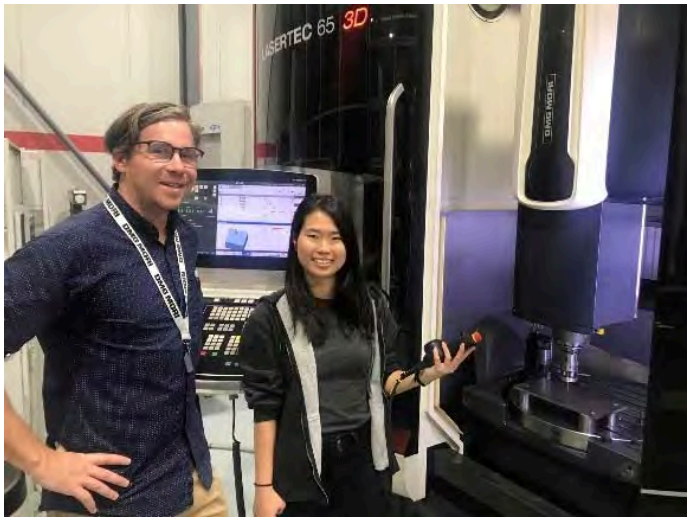
PhD Candidate

Mr Ikram Ul Hassan holds a Master's degree in Mechanical Engineering Design from Deakin University (2020) and previously worked as a design engineer in Victoria, specialising in product development and thermal analysis. Driven by an interest in sustainable additive manufacturing, Ikram is now collaborating with SEAM and Romar Engineering on optimizing surface properties of hybrid (additive and subtractive) manufactured components. Ikram's expertise includes additive manufacturing simulation tools (Digimat, Simufact Additive), CAD/CAM software (Fusion 360, SolidWorks), and surface analysis techniques (SEM, optical microscopy).

Mr Jim Jose

PhD Candidate

Mr Jim Jose holds a BSc in Mechatronics from Glasgow Caledonian University (UK). He joined RMIT in 2018 as a research assistant, contributing to projects on electrochemical testing robots, HoloLens-based virtual labs, and portable water testing devices. After working as an R&D engineer at XRF Scientific Group, he returned to RMIT in 2022 as a PhD candidate. In collaboration with Romar Engineering, his research focuses on modelling conformally cooled heat exchangers under multi-physics loading for additive manufacturing, aiming to accelerate the design of optimised AM components with strong commercial impact.



SEAM ECR operating the LASERTEC 65 3D machine at Romar Engineering Pty. Ltd.

PROJECT 7

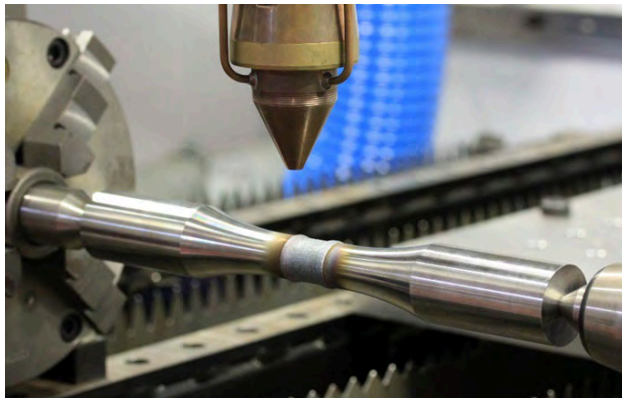
Additive metal manufacturing for aerospace applications – high speed laser deposition of thin metal coatings

HIGH-SPEED LASER DEPOSITION

Rosebank Engineering: Jarrod Watts

Laser directed energy deposition (L-DED) is a widely used surfacing technology for producing high-quality wear and corrosion-resistant coatings across multiple manufacturing industries. However, one primary limitation is a relatively low laser scanning speed, making it inefficient for repairing large surface areas, particularly in aerospace applications.

Rosebank Engineering: Innovation. Reliability. Quality.



High-speed laser deposition process

The emerging High-Speed Directed Energy Desposition *via* Laser Beam (HS-DED-LB) process offers deposition rates up to 200 m/min (equivalent to 500 cm²/min), making it a promising solution for large-scale applications. This project investigated HS-DED-LB of Stellite® 6 on mild steel and 300M steel substrates, focusing on thin coatings (less than 100 microns) for wear and corrosion protection on aerospace components.

To accelerate development, computational fluid dynamics (CFD) modelling was employed to analyse molten pool dynamics and refine processing conditions. By integrating experimental research with advanced modelling, the project delivered cost-effective, sustainable coating solutions that enhance repair efficiency and extend the service life of aerospace components.

Project 7 Group

Distinguished Professor Milan Brandt

Project Lead CI

Distinguished Professor Milan Brandt is the Director of the RMIT Advanced Manufacturing Precinct and Centre for Additive Manufacturing, which he established in 2013. As a leading Australian researcher in laser-based macro machining and additive manufacturing, Distinguished Professor Brandt has contributed extensively to laser cladding, cutting, drilling, welding, and additive manufacturing, resulting in patents, research papers, technological advancements, and commercial products recognized globally. He is a Fellow of the Laser Institute of America, an Honorary Fellow of Weld Australia, and has held positions at Melbourne University and the University of Waterloo, Canada. He served as President of the Laser Institute of America in 2018 and was named an Engineers Australia Centenary Hero for pioneering Australia's first 3D-printed spinal implant, successfully benefitting a patient in 2016.

Distinguished Professor Qian Ma

Deputy Project Lead CI

Distinguished Professor Ma Qian of RMIT University's School of Engineering is a renowned researcher with expertise in metal additive manufacturing, powder metallurgy of light alloys, solidification processing, surface engineering for medical applications, metallic biomaterials, and high-entropy alloys. He has published extensively in journals and co-authored books on titanium alloys. Distinguished Professor Qian initiated the biennial international conference on Titanium Powder Metallurgy in 2011 and played a key role as Organising Committee Chair and Conference Co-Chair for the Asia-Pacific International Conference on Additive Manufacturing, hosted at RMIT in 2017 and 2019. Actively contributing to the academic community, he serves as an editorial board member for several prestigious journals, including Associate Editor for Acta Materialia and Scripta Materialia.

Project 7 Group

Dr Patrick O'Toole

Postdoctoral Fellow

Dr Patrick joined SEAM and RMIT as a Research Fellow in 2021, focusing on laser metal deposition modelling, high-speed laser cladding, and hot cracking prediction in additive manufacturing. Previously at CSIRO, he developed a multiscale solidification model for Al-Si alloys, later applied to machine learning for part-scale simulations. He holds a first-class honours degree in chemistry from the University of Sydney and a joint PhD from the Universities of Sydney and Venice in computational chemistry. He is currently Group Leader – Simulation and Modelling at the Institut für Strahlwerkzeuge (IFSW), Stuttgart.

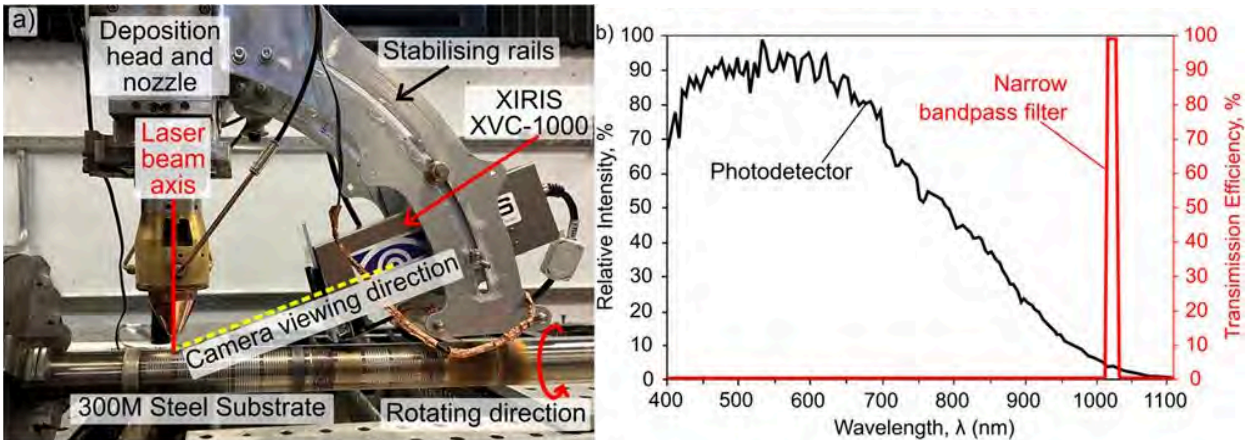
Dr Zefeng (Ricky) Wu

PhD Candidate

Dr Zefeng (Ricky) Wu completed his PhD on laser metal deposition for 3D printing of metallic alloys and surface coatings, focusing on process monitoring and instrumentation using MWIR, NIR, pyrometry, and displacement sensing. He has conducted extensive parametric studies on process–deposit relationships and is skilled in microstructure analysis (SEM, EBSD, EDS), multi-scale CFD modelling (FLOW-3D AM), and CAD design (SolidWorks). He is currently a Postdoctoral Researcher at the Centre of Excellence for Advanced Materials, Dongguan, China.

Project 7 Outcome

Melt pool dynamics on different substrate materials in high-speed laser directed energy deposition process



Experimental setup for *in situ* melt pool observation in the HSL-DED process, adapted from Wu, Z., O'Toole, P., Hagenlocher, C., Qian, M., Brandt, M. and Watts, J., 2023. Journal of Laser Applications, 35(4). doi.org/10.2351/7.0001145

PROJECT 8

Addressing ash-related challenges from biomass combustion using ceramic and composite coatings

SUPERHYDROPHOBIC COATINGS

SCG Chemicals (SCGC): Jaturong Jitputti, Churat Tiyapiboonchaiya, Noppakun Sanpo

Biomass energy systems face challenges such as high-temperature corrosion and erosive wear from particle impingement, which reduce boiler efficiency and component lifespan. To address these issues, coatings must resist slagging, corrosion, and erosion while remaining compatible with existing substrates.

Building on prior findings that Ni-Cr metal-based coatings offer strong corrosion and erosion resistance—further enhanced by ceramic phases—the team developed advanced composite coatings to improve surface durability.

SEAM visiting SCG Chemicals

A key achievement was the development of an in-house Slag Testing Rig to simulate boiler environments, significantly accelerating the evaluation of anti-slagging performance compared to lengthy in-situ testing. Through material optimisation and improved deposition techniques, the team produced four types of slag- and ash-resistant coatings, including superhydrophobic coatings via suspension plasma spray (SPS). Beyond technical advancements, the project also contributed to workforce development by training researchers with practical, industry-ready skills in materials engineering and surface protection technologies.

Project 8 Group

Associate Professor Andrew Ang

Project Lead CI

Associate Professor Andrew Ang, a senior research engineer at Swinburne University since 2009, is Co-Director of the Space Technology and Industry Institute (STII), Director of the Microscopy & Advanced Analytical Facility (MAAF), and Chief Investigator at SEAM. Specializing in surface engineering, thermal spray, and additive manufacturing, he focuses on material characterization, mechanical testing, and process innovations for defence, aerospace, and manufacturing industries. As President of the ASM Thermal Spray Society and Associate Editor of the Journal of Thermal Spray Technology, Andrew collaborates with industry partners and contributes to ARC-funded projects, advancing surface engineering and supporting SEAM as a leading training centre.

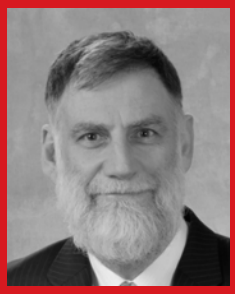
Professor Peter Kingshott

Deputy Project Lead CI

Refer to Project 2 for biographical details (see Page 11)

Distinguished Professor Christopher C. Berndt

Project Associate CI



Refer to Project 1 for biographical details (see Page 7)

Associate Professor Rosalia Hocking

Project Associate CI

Refer to Project 5 for biographical details (see Page 21)

Project 8 Group

Dr Surinder Singh

Postdoctoral Fellow

Dr Surinder Singh joined SEAM at Swinburne University in April 2021 as a postdoctoral fellow, contributing to surface engineering and thermal spray projects with five industry partners. He holds a PhD in Mechanical Engineering from IIT Ropar (2019), where he received the Director's Fellowship for research excellence. With 23 journal publications and an Excellent Reviewer Award from the Journal of Thermal Spray Technology, his expertise includes cold spray and laser-cladded copper coatings for applications in public health, marine, energy, and automotive sectors. Surinder is now working as an R&D Engineer at LaserBond.

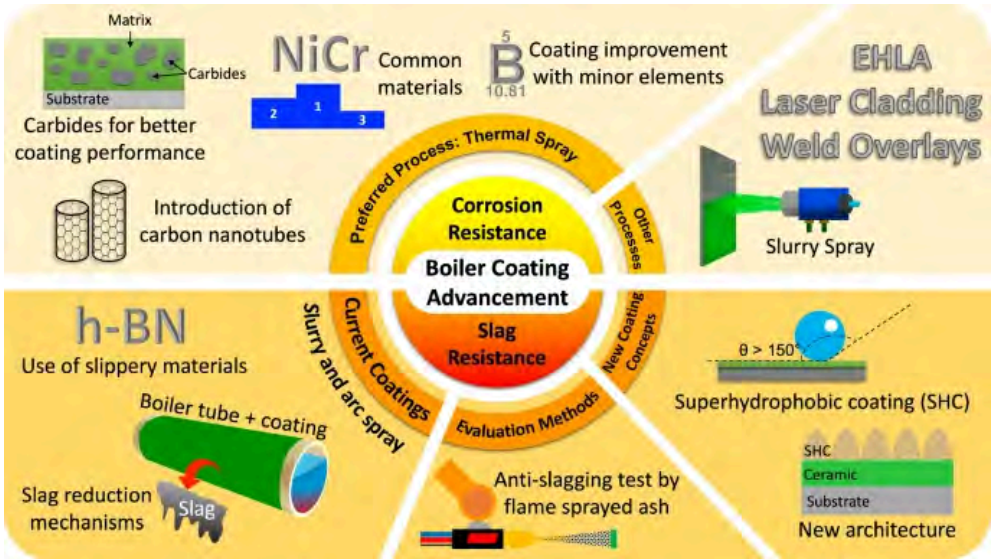
Dr Kritkasem Khantisopon

PhD Candidate

Dr Kritkasem (Kris) Khantisopon holds a BSc in Materials Science from Chulalongkorn University, Thailand. His PhD research at SEAM focused on developing thermal spray coatings to mitigate ash-related issues in industrial boilers and high-temperature pipe systems; including anti-slagging, corrosion-resistant, and superhydrophobic coatings. He collaborated with SCG Chemicals, designed boiler simulation apparatus, and performed material characterisation using SEM-EDS and XRD. Kris currently works as a Materials Characterisation Technician at Swinburne University of Technology.

Project 8 Outcome

High Temperature Corrosion Resistant and Anti-slagging Coatings for Boilers: A Review



Graphical abstract adapted from Khantisopon, K., Singh, S., Jitputti, J., Berndt, C.C. and Ang, A.S., 2024. High Temperature Corrosion of Materials, 101(Suppl 1), pp.1-55. doi.org/10.1007/s11085-024-10251-0

PROJECT 9

Edge preparation, surface finish, and their effects on modern precision cutting tool performance

ELECTROPOLISHING

Sutton Tools: Guy Stephens, Angelo Papageorgiou, John Navarro

This project optimised edge preparation and surface finish for precision cutting tools, which are vital to industrial performance and commercial durability. Traditional abrasive methods like drag finishing and micro-blasting are cost-effective but limited when applied to high-hardness materials and precise geometries. To overcome these issues, the team evaluated current methods, identified key edge characteristics, and developed an innovative electro-polishing edge-honing process.

The project team successfully developed an in-house electropolishing arrangement for complex-shaped cutting tools, capable of controlling voltage, current, and rotation speed for optimized performance. A two-step electropolishing process—combining electrolyte-based electropolishing and abrasive polishing—achieved nano-level surface finishes and precise edge preparation on tungsten carbide (WC) tools.

Electropolished tungsten carbide tools

Key outcomes of the project included the optimisation of electropolishing parameters, the generation of new intellectual property, and valuable industry insights that supported decision-making around Physical Vapar Deposition (PVD) machine procurement. The project's success also opened avenues for future collaborations with Sutton Tool's customer base and prompted interest in exploring dry electropolishing techniques, and led to the recognition and recruitment of team members for industry roles.

Project 9 Group

Associate Professor James Wang

Project Lead CI

Associate Professor James Wang, from Swinburne University's Faculty of Science, Engineering and Technology, specializes in thin solid films, coatings, magnetic materials, and surface modification. His research focuses on applications in biomaterials, high-performance machining, and wear-resistant coatings. Recent projects include enhancing the biological performance of titanium alloys for biomedical applications, preparing and characterizing magnetic thin films, investigating exchange bias effects in multilayers, and optimizing surface finishes to improve cutting tool performance and high-performance grinding.

Professor Scott Wade

Deputy Project Lead CI

Refer to Project 11 for biographical details (see Page 40)

Associate Professor Rosalie Hocking

Deputy Project Associate CI

Refer to Project 5 for biographical details (see Page 21)

Dr Surinder Singh

Postoctoral Fellow

Refer to Project 8 for biographical details (see Page 31)

Project 9 Group

Dr Arne Biesiekierski
Postdoctoral Fellow

Refer to Project 2 for biographical details (see Page 12)

Dr Thomas Pattison
Postdoctoral Fellow

Dr Thomas Pattison joined SEAM as an ARC Postdoctoral Fellow in 2021 and worked until October 2022 He completed his PhD in Chemical Engineering at the University of Melbourne, collaborating with IBM's Almaden Research Center, where his thesis focused on nanofabrication using surface-initiated polymerization and crosslinked thin films for nanoscale device development. With a background in Chemistry and Nanotechnology and Applied Science, he has also undertaken research internships at CSIRO and The Australian National University. His research interests include surface modification, thin polymer coatings, device fabrication, additive manufacturing, and biomaterials. Dr Pattison undertook an invited position at IBM in 2022 as a Surface Chemistry Scientist before returning to Australia in 2025.

Dr Minh Nhat Dang
PhD Candidate

Dr Minh Nhat Dang completed his PhD at Swinburne University of Technology,. During his PhD journey, he participated in fully-funded research visits to top institutions in the US, Australia, and Europe. His doctoral research focused on developing nano-smooth surface finishes and micro-honing edge preparation for cutting tools, supported by industry funding and his role as a Research Intern at Sutton Tools. Minh also held roles as Principal Investigator, Lead Researcher, and Lab Manager in leading Vietnamese research institutions, focusing on nanocarbon applications for environmental and clean energy solutions. He now works as a Product Engineer at ANCA and continues to collaborate with Swinburne University as a PhD industry supervisor.

PROJECT 10
Titomic Kinetic Fusion (TKF) Process

TITOMIC KINETIC FUSION® SMART FACTORY

Titomic: Neil Mathews AM*, Michael Rochford, Peter Lockett, Shannon Minett
Australian Nuclear Science and Technology Organisation (ANSTO): Vladimir Luzin

Titomic Kinetic Fusion (TKF) facility

Titomic, an Australian company, specializes in large-scale metal additive manufacturing using its patented Titomic Kinetic Fusion® (TKF) technology, which competes directly with traditional manufacturing methods. Serving industries like aerospace, defense, shipbuilding, and automotive, Titomic also offers OEM production, R&D services, and an extensive range of metal powders, including titanium and super alloys.

Titomic partnered with SEAM to enhance its TKF cold-spray technology by integrating advanced sensors, real-time data analysis powered by machine learning, and SEAM's robust testing and analytical capabilities. SEAM and Titomic optimised the TKF process further, by exploring mixed-material operations, and developing advanced predictive models for validating part manufacturing and ensuring reliability. This collaboration has accelerated process development, improved product quality, and enabled high-value applications, opening doors to global markets. Key outcomes included the integration of predictive models into customer platforms, the adoption of Machine Learning *via* bespoke Python constructs, and the commercialization of *in-situ* velocity data for Industry 4.0.

SEAM on-site visit to Titomic

*Member of the Order of Australia (for distinguished service to Australia)

Project 10 Group

Associate Professor Andrew Ang

Project Lead CI

Refer to Project 8 for biographical details (see Page 30)

Distinguished Professor Guoxing Lu

Project Associate CI

Distinguished Professor Guoxing Lu was Associate Dean Research at Swinburne and has previously served as Chair of Mechanical and Product Design Engineering and Deputy Dean Academic. A global expert in impact engineering, his research focuses on the dynamic behaviour of lightweight structures and materials for aerospace, automotive, civil, and defence applications. Since joining Swinburne in 1995, he has established the world-class Impact Engineering Laboratory, equipped with advanced testing systems and computational tools, widely used by researchers and industry partners worldwide.

Professor Xiaodong Huang

Deputy Project Lead CI

Refer to Project 3 for biographical details (see Page 15)

Dr Samuel Pinches

Postdoctoral Fellow

Refer to Project 1 for biographical details (see Page 7)

Project 10 Group

Dr Hannah J. King
Postdoctoral Fellow
Refer to Project 1 for biographical details (see Page 8)

Dr Shareen S.L. Chan
Postdoctoral Fellow
Refer to Project 1 for biographical details (see Page 8)

Dr Duy Quang Pham
Postdoctoral Fellow
Refer to Project 1 for biographical details (see Page 8)

Dr Pablo Guzman
Postdoctoral Fellow

Dr Pablo Guzman is a mechatronic engineer with expertise in 3D CAD, virtual and augmented reality, and over eight years' experience investigating material behaviour at the micro- and nano-scale. His research includes morphological and microstructural manipulation for biomaterial applications and microelectromechanical systems for sensing under temperature effects. During his PhD, he collaborated with leading researchers from the University of Michigan, Simon Fraser University, and the California Institute of Technology. He joined SEAM in 2022, applying his skills in advanced material characterisation, including XRD, AFM, SEM, and tribometry.

Project 10 Group

Dr Martin Eberle
PhD Candidate

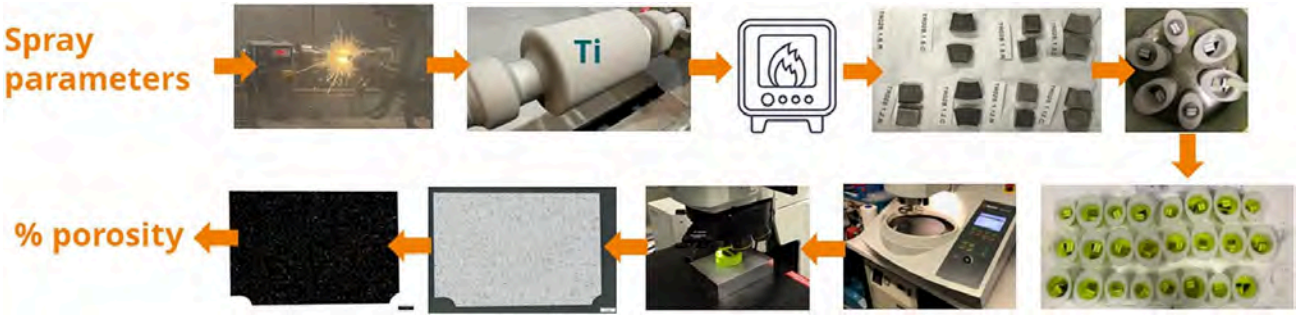
Martin Eberle joined SEAM in 2020 as a PhD Candidate with SEAM, at Swinburne University. He graduated from Technical University Kaiserslautern, Germany and was awarded a Master of Engineering. In his Bachelor and Master studies he worked on projects related to materials science and additive manufacturing. Martin has also worked as a Project Manager in the pharmaceutical and in the logistics industry. After completing his PhD project with SEAM, Martin now works as a Research Engineer at Titomic.

Mr Wesley Tai
Master Candidate

Wesley Tai is a Master by Research candidate collaborating with Titomic. He holds a B.Sc. in Applied Physics and Applied Mathematics from the University of Tasmania and previously worked as a Physical Process Engineer at Titomic. His research interests stem from early projects in astrophysics and now focus on cold spray and metal 3D printing technologies in additive manufacturing. In addition to his academic pursuits, he has founded TRE 3D Print, a company dedicated to promoting STEM education through hands-on 3D printing programs in Malaysia.

Project 10 Outcome

Porosity prediction of cold sprayed titanium parts using machine learning



Resource adapted from Eberle, M., Pinches, S., Tai, W.K.W., Guzman, P., King, H., Zhou, H. and Ang, A., 2025. Computational Materials Science, 246, p.113426. doi.org/10.1016/j.commatsci.2024.113426

PROJECT 11

Developing technologies for thermal spray coatings onto novel substrates

NEXT-GEN THERMAL SPRAY COATINGS

Defence Materials Technology Center (DMTC): Miles Kenyon
MacTaggart Scott Australia: Peter Richings, Ryan Yeates
LaserBond: Chris Dempsey, Hugo Howse, Thomas Schlaefer, Christiane Schulz

Thermal spray coatings have shown the ability to improve the properties of a variety of structures/components in relation to their wear, corrosion, conductivity and/or thermal protection performance. This project developed thermal spray coating processes to enhance the functionality of composite structures, targeting industry needs for lightweight components that perform reliably in harsh environments. Traditionally applied to metals, thermal spray coatings were adapted here for innovative substrates to improve wear, corrosion resistance, conductivity, and thermal protection. In collaboration with industry partners, the team produced and field-tested prototype components to validate performance under real-world conditions.

The project delivered major advancements in thermal spray process optimization, achieving durable, lightweight, and corrosion-resistant coatings for composite components. Key outcomes included a robust metallization process with strong adhesion, refined cooling and HVOF spray conditions to reduce porosity and carbide loss, and an enhanced coating with superior mechanical performance, highlighting the technology's industrial potential.

SEAM Project 11 research group on-site visit to industry partner

Project 11 Group

Professor Scott Wade

Project Lead CI

Professor Scott Wade joined Swinburne University of Technology in 2009 and leads a research team investigating corrosion, biofouling, and novel coating development. His research focuses on microbiologically influenced corrosion, accelerated low water corrosion, corrosion sensing, and protective coatings, addressing challenges in marine, industrial, and environmental settings. Widely published and deeply engaged with industry, government, and academia, Professor Wade is a long-standing member of the Australasian Corrosion Association (ACA), having served as Victorian Branch President, Federal Council member, and technical chair of the ACA annual conference.

Associate Professor Andrew Ang

Deputy Project Lead CI

Refer to Project 8 for biographical details (see Page 30)

Dr Surinder Singh

Postdoctoral Fellow

Refer to Project 8 for biographical details (see Page 31)

Dr Arne Biesiekierski

Postdoctoral Fellow

Refer to Project 2 for biographical details (see Page 12)

Project 11 Group

Dr Azadeh Mirabedini

Postdoctoral Fellow

Dr Azadeh Mirabedini holds a BSc in Polymer Engineering and Coatings from Amirkabir University of Technology and an MEng from the Iran Polymer and Petrochemical Institute. She completed her PhD in 2012 at the University of Wollongong, focusing on biocompatible electroactive multiaxial fibres for implantable biomedical applications, and has published over 10 peer-reviewed papers and a book on multifunctional fibres for bioapplications. Her postdoctoral research at the Intelligent Polymer Research Institute advanced electroactive 3D hybrid scaffolds for nerve and muscle regeneration. An affiliate investigator with SEAM, her research interests include smart hybrid macro/nano structures, conducting polymers, and nanomaterials.

Dr Thomas Pattison

Postdoctoral Fellow

Refer to Project 9 for biographical details (see Page 34)

Dr Alexander Osi

PhD Candidate

Alexander completed a Bachelor of Engineering in material science and metallurgical engineering, with honours, at the department of material and metallurgical engineering, Federal University of Technology, Owerri, and later completed his Master of Engineering in manufacturing, with distinction at the Department for Mechanical, Materials, and Manufacturing Engineering, RMIT University. Alexander developed an interest in materials science and metallurgical engineering as a teenager, which grew into a passion for understanding material failures. He later pursued formal education in the field and successfully completed his PhD in 2024. He is now working in industry, applying his expertise to real-world engineering challenges.

Project 11 Group

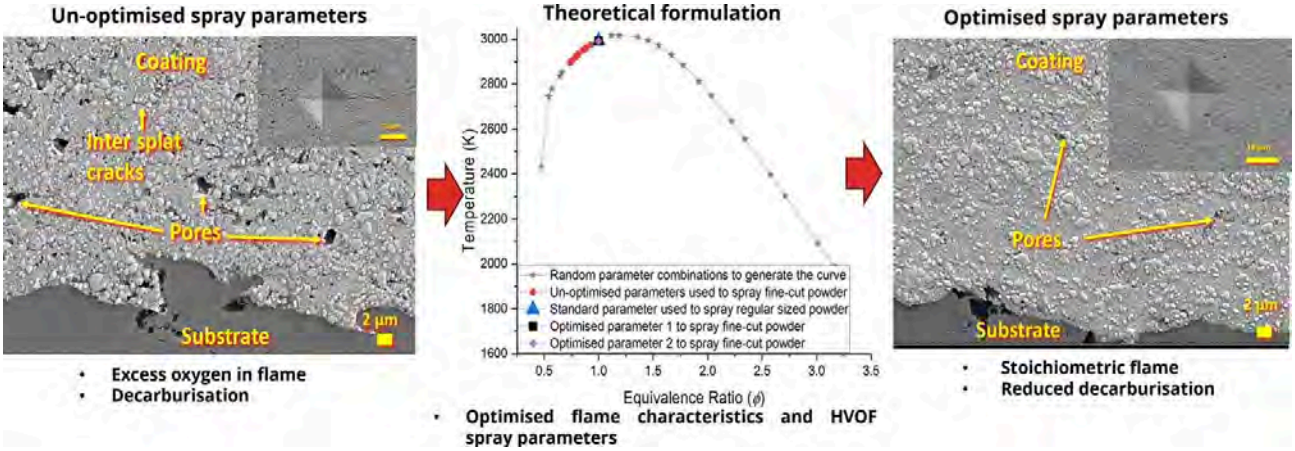
Mr Vinit Vilas Joshi

PhD Candidate

Vinit Vilas Joshi, a PhD candidate at ARC-SEAM, Swinburne University, focuses on the metallisation of polymer-based substrates using thermal spray processes. His work includes investigating High Entropy Alloys (HEAs) produced *via* mechanical alloying, analyzing powder phases using XRD, and interpreting XRD and SEM data. He has developed technical expertise in sample preparation, including sectioning, mounting, polishing, and etching to reveal microstructures, as well as particle characterization techniques like flowability and size analysis. Vinit has extensive experience in preparing innovative feedstocks where there is emphasis on quality control and maintaining international standards concerning OH&S.

Project 11 Outcome

Development of fine WC-NiCr powder coatings by optimising HVOF spray parameters



Graphical abstract adapted from Singh, S., Osi, A., Joshi, V.V., Wade, S., Berndt, C.C., Schläfer, T., Howse, H. and Ang, A.S.M., 2024. International Journal of Refractory Metals and Hard Materials, 121, p.106667. doi.org/10.1016/j.ijrmhm.2024.106667

PROJECT 12
Remote maintenance and repair of ageing infrastructure

CORROSION PREVENTION STRATEGIES

SANTOS: Glenn Lydyard, Michael Little, Damien Doherty, Dean West

Like many companies in the oil and gas sector, SANTOS have an extensive pipeline network made from steel. Some of these pipelines suffer accelerated corrosion inside the pipes due to the activity of microbes. This project, in collaboration with SANTOS, focuses on mitigating microbially induced corrosion (MIC) in steel pipelines using thermal spray coatings. It also explores corrosion prevention strategies for large infrastructure assets like reaction vessels and pumps through lab and field testing. Additionally, the project investigates how copper ions interact with polymer pipe joints to improve the durability of polymer pipeline systems.

The project focused on advancing additive and layered manufacturing for on-site parts production and repair, including the development of a certification test procedure for additively manufactured parts. It also investigated hard coating solutions for pump and pipe components to extend their service life.

SANTOS: Reliable Energy, Sustainable Future.

Key outcomes include producing industry-relevant outputs such as patents, research papers, conference presentations, and internal reports. The findings have demonstrated that retaining Cu in solid solution within thermally sprayed Cu-bearing coatings significantly enhances corrosion resistance and antimicrobial properties, ensuring long-term pipeline protection.

Project 12 Group

Professor Nikki Stanford

Project Lead CI

Professor Nikki Stanford is a Research Leader at the University of South Australia with expertise in magnesium alloy design, green processing technologies, strip casting, fatigue and fracture, advanced high-strength steels, and advanced microstructure characterization using advanced techniques such as small angle scattering, electron microscopy, and atom probe tomography. Previously part of UniSA's Future Industries Institute, she worked on industry-sponsored projects involving pipeline integrity, coatings, and 3D printing. Professor Stanford's research bridges engineering and science, applying advanced characterization techniques to real-world challenges such as fatigue, lightweight materials, and casting.

Industry Professor Colin Hall

Deputy Project Lead CI

Refer to Project 4 for biographical details (see Page 17)

Dr Christiane Schulz

Project Associate CI

Refer to Project 4 for biographical details (see Page 17)

Dr Ting Chong Chen

PhD Candidate

Dr Ting Chong Chen, originally from Malaysia, overcame early educational challenges to pursue a successful academic path in Australia. He earned a First Class Honours in Science for his thesis on the oxidant-dependent morphology of a vapour-deposited high technology polymer called PEDOT, which sparked his strong interest in research and development. He began his PhD with SEAM in the Thin Film Coating Group at the Future Industries Institute, UniSA, and completed it in 2024. He now works as a Graduate Design Engineer in Advanced Surface Technology at SMR Automotive Global, continuing to grow professionally while maintaining ties with SEAM.

Project 12 Group

Dr Hongshou Huang

PhD Candidate

Dr Huang completed his PhD in 2024 under the supervision of Professor Nikki Stanford at the University of South Australia. His research focused on developing antimicrobial stainless-steel coatings to control microbiologically influenced corrosion (MIC) in natural gas pipelines, a major contributor to pipeline degradation. The project aimed to enhance coating properties such as hardness, wear, and corrosion resistance to extend pipeline service life. He currently works as a Postdoctoral Fellow, continuing his research in advanced corrosion-resistant coatings.

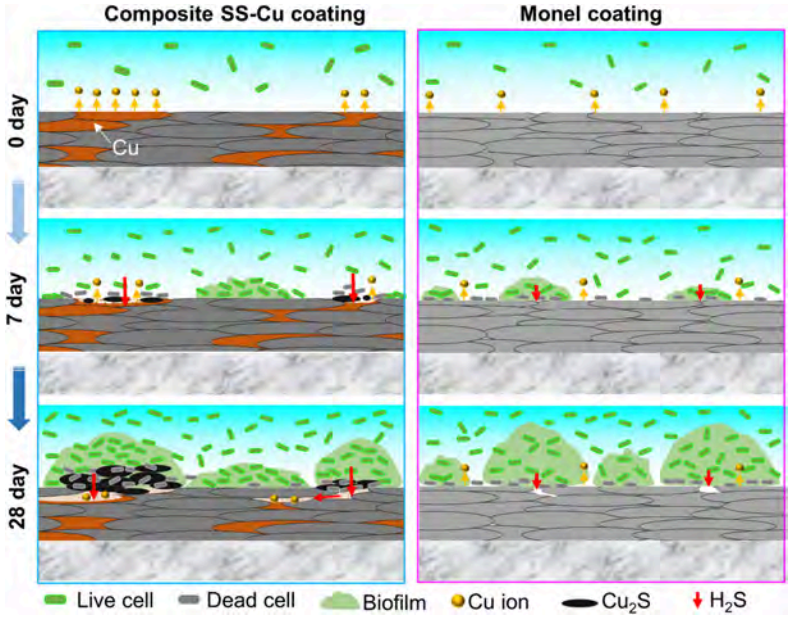
Mr Ky Nam Mai

PhD Candidate

Mr Nam Mai achieved a Bachelor of Science in Advanced Materials (2017) and a Master of Engineering in Energy and Advanced Manufacturing (2021) from the University of South Australia. He is currently pursuing a PhD in the same field, focusing on "Anti-corrosion Coating for the Hydrogen Economy." His research aims to develop internal coatings for natural gas pipelines to resist corrosion and hydrogen embrittlement, enabling the safe and efficient use of existing infrastructure for hydrogen transport.

Project 12 Outcome

Influence of Cu distribution in thermally sprayed Cu-bearing coatings on the prevention of *Desulfovibrio vulgaris* corrosion



Resource adapted from Huang, H., Singh, S., Juhasz, A., Ang, A.S.M. and Stanford, N., 2024. Surface and Coatings Technology, 487, p.130975. doi.org/10.1007/s11666-025-02013-4

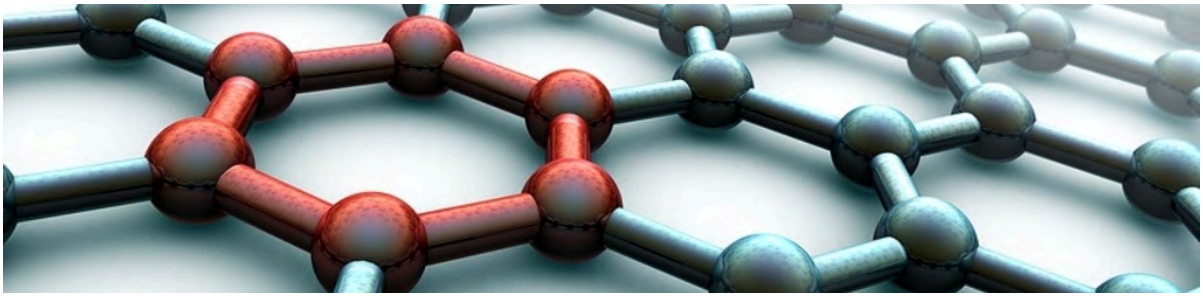
PROJECT 13

Functional coating materials for industrial applications

GRAPHENE COMPOSITE CONDUCTIVE SURFACES

GrapheneX: Stephen Wee

Graphene, known as the material of the future, is the lightest, strongest, and most electrically conductive material ever discovered. Its potential to revolutionize industries such as structural materials, energy, and communication is immense, with the global graphene market expected to grow rapidly as mass production technologies advance. Graphene-based coating materials exhibit remarkable properties such as excellent chemical resistance, impermeability to gases, anti-bacterial effects, mechanical strength, and thermal stability, making them ideal for creating durable coatings with outstanding electrical conductivity and sensing capabilities.



Graphene- Unique 2D structure

This SEAM project focused on developing graphene/composite conductive surfaces that incorporate advanced sensing functionalities. Researchers have developed innovative sensing materials that can be embedded into advanced substrates and composites, offering high sensitivity to detect multiple parameters. These flexible, energy-efficient sensors are suitable for applications in biomedical, aerospace, and gas sensing. The team is continuing to improve their performance and durability, aiming to expand their applications into multifunctional devices, such as thermal analysis equipment, and make them commercially viable for large-scale industrial use.

Project 13 Group

Distinguished Professor Baohua Jia

Project Lead CI

Distinguished Professor Baohua Jia is a globally recognized leader in photonics technology. As the inaugural Director of the Australian Centre for Atomaterials and Nanomanufacturing (ACAN) at RMIT, she has made significant contributions to translating technologies for a more sustainable future. Her research primarily focuses on light and nanomaterial interactions, particularly in laser manipulation of two-dimensional materials. This work has led to the design and development of nanostructures for clean energy harvesting, environmental purification, and ultrafast optical communications.

Professor Saulius Juodkazis

Project Associate CI

Refer to Project 5 for biographical details (see Page 21)

Associate Professor Andrew Ang

Project Associate CI

Refer to Project 8 for biographical details (see Page 30)

Ms Hsin-Hui Huang

PhD Candidate

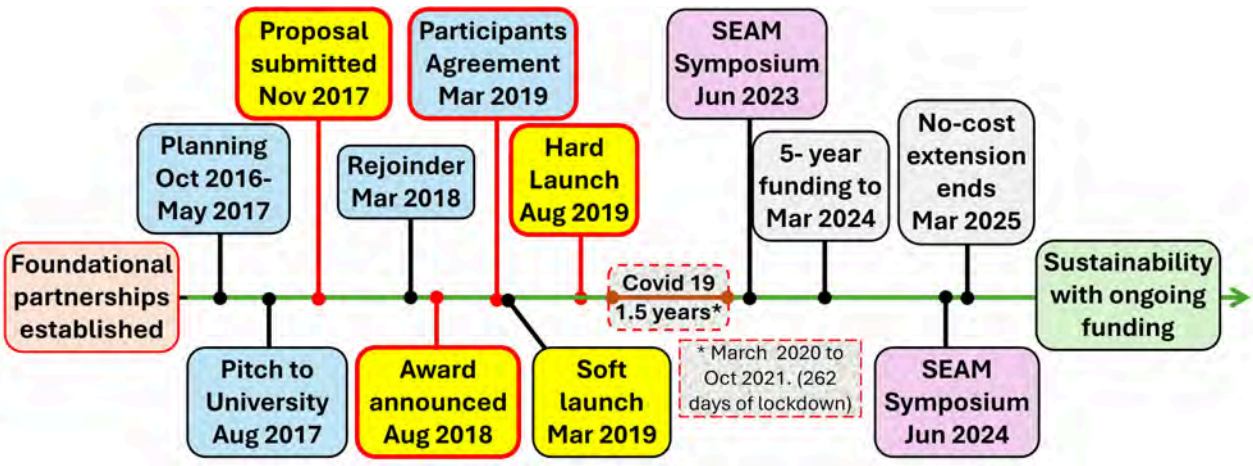
Ms Hsin-hui Huang is currently pursuing her PhD at Swinburne University of Technology, focusing on the optical and structural properties of high-entropy alloys (HEAs). With a background in physical chemistry and nanomaterials, she now explores laser-material interactions and spectroscopy. Her project aims to understand the fundamental properties of HEAs using X-ray and THz spectroscopy, as well as synchrotron and free-electron laser facilities, to explore how elemental connectivity influences mechanical and chemical properties.

Outstanding Achievements

PEOPLE

SEAM's success is attributed to its vibrant team of postgraduate students, Postdoctoral Fellows, and interns, who were instrumental in advancing research and innovations in partnership with government labs and industry. The team was guided by strong leadership and industry collaboration, achieving groundbreaking results in materials science and engineering. SEAM was also successful in securing substantial funding from the Australian Research Council (ARC), university contributions, and industry partnerships. This financial backing supported the development of cutting-edge technologies in surface engineering and nanomaterials, enhancing SEAM's capacity to continue leading in its field.

A Long Journey of Exploration and Discovery



Outstanding Achievements

Research outputs

Year	2019	2020	2021	2022	2023	2024	Total
Journal Articles	113	246	175	135	114	102	885
Conference Publications	4	23	11	13	28	10	89
Book Chapter	1	1	1	1	9	10	23
Total	118	270	187	149	151	122	997

Prizes & awards

Award Title/Name	Awarded by/Description	Awarded Year
Fellow of American Society for Metals International (Qian, M.)	ASM International	2020
Capability Improvement for projects (Brandt, M.)	Defence Materials Technology centre	2020
Arthur L. Schawlow Award (Brandt M.)	Laser Institute of America	2020
2020 Best ECR Talk Award at ICNASA (Lin, K-T)	International Conference on Nanomaterials & Atomaterials Science Applications	2020
3-minute ECR research presentation (Pinches, S.)	ATA Scientific at Materials Innovations in Surface Engineering conference	2020
Arthur L. Schawlow Fellowship (Brandt, M.)	Laser Institute of America	2020
2019 Royal Society of Chemistry Award (Juodkazis, S.)	Royal Society of Chemistry	2020
Faculty of Science, Engineering, and Technology Early Career Researcher Award (Lin, K-T)	Swinburne University of Technology	2020
Victoria Price for Science and Innovation in the Physical Sciences (Berndt, CC.)	State Government	2021
Study Melbourne Research Partnerships program grant (Jia, B.)	Veski	2021
STEM Research Team Award (2021)	University of South Australia	2021
People's choice price as the UniSA's 3MT STEM competition 2021 (Hatem, A.)	University of South Australia	2021
3rd prize (Hatem, A.)	University of South Australia	2021

Outstanding Achievements

Prizes & awards

Award Title/Name	Awarded by	Awarded Year
Victoria Prize (Berndt, CC.)	ASM International	2022
Hall of Fame Induction (Matthews, N. AM.)	Thermal Spray Society	2022
Chairman/President (Dang, MN.)	Swinburne MDEPE HDR Student Association	2022
Honorary membership (Berndt, CC.)	ASM International	2022
Next Generation Graduates Program	The Australian Institute of Nuclear Science and Engineering	2022
Honorary Membership (Berndt CC.)	ASM International	2022
Vice Chancellor Engagement Award 2022	Swinburne University of Technology	2022
Enterprise Partnership Team Award (Hall, C., Stanford, N.)	University of South Australia	2022
Best paper award (Hall, C., *et al.*)	Corrosion and Protection	2022
Outstanding paper award (Hall, C. *et al.*)	Association for Iron and Steel Technology	2022
Certificate of appreciation (Hatem, A.)	Treasurer of the Future Industries Institute	2022
Materials Australia Silver Medal (Qian, M.)	Materials Australia	2022
Rolls TC best paper award (Hall, C. *et al.*)	Association for Iron and Steel Technology	2023
Best Contributor Award in 2022 (Brandt M.)	International Journal of Extreme Manufacturing	2023
Student Travel Award (Liao, T-Y)	U.S. National Science Foundation	2023
Excellent Reviewer Award	Journal of Thermal Spray	2023
Samuel Geijsbeek PACRIM International Award (Berndt, CC.)	The American Ceramic Society	2023
Second best poster award (Dang, MN.)	The 3rd Asia-Pacific International Conference on Additive Manufacturing	2023
Ray Reynoldson Award (Hall, C.)	Materials Australia	2023
School of Engineering Postgraduate of the Year 2023 (Dang, MN.)	Swinburne University of Technology	2023
Young Corrosionist (YCG) award (Roccisano, A.)	The Australasian Corrosion Association INC.	2024
School of Engineering ECR of the Year 2024 (Megwhal, A.)	Swinburne University of Technology	2024
Vice Chancellor's award	Swinburne University of Technology	2024
Fellow of American Powder metallurgy Institute International (Lifetime Honour, maximum 2 recipients annually) (Qian, M.)	Association for Powder Metallurgy Industries	2025

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PRODUCTIVITY | INNOVATION | CONSERVATION

SEAM
ARC TRAINING CENTRE
Surface Engineering for Advanced Materials

Annual Research Highlights

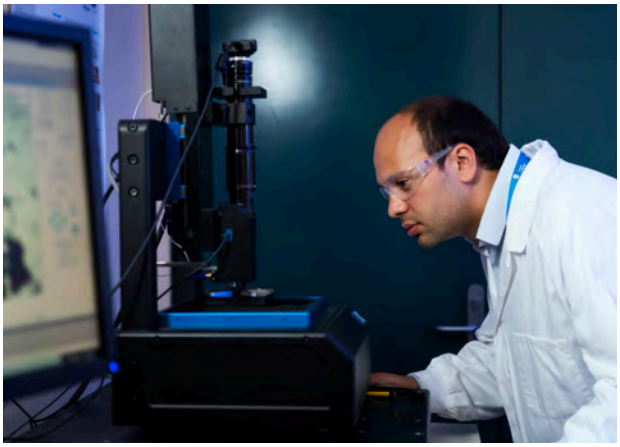
Research highlight 2020

Topic: Anti-virus Copper thermal spray coatings

SEAM's Project 4 team (UniSA):
CI Hall (Project lead), CI Stanford, ICPD Roccisano, and PhD candidate Andre Hatem in collaboration with Thomas Schlaefer and Christiane Schulz, as PIs from industry partner LaserBond, Adelaide.

The project is designed to develop a reliable industrial-scale process through which common contact surfaces such as door handles can be coated with copper to prevent the spread of disease. Flame spray technology, a method by which metallic powders are fed into a high-temperature acetylene flame, melting the particles and shooting them onto the waiting structure, was employed. This process can rapidly apply a strongly adherent coating to metallic structures and is well established in Australian industry. A proof of concept study was conducted whereby a stainless-steel door handle, commonly used in commercial premises was coated with copper through thermal spraying in minutes.

This research offers a promising solution for reducing virus transmission through surface contact, streamlining sanitization protocols in hospitals, airports, train stations, and other public areas. With potential applications for government agencies and public institutions, this permanent antimicrobial coating could improve cleaning practices and enhance public health and safety.



Dr Andre Hatem working in UniSA lab

Annual Research Highlights

Research highlight 2021

Topic: Edge preparation, surface finish, and their effects on modern precision cutting tool performance

SEAM's Project 9 team (Swinburne):
CI Wang (Project lead), CI Wade, CI Hocking, ICPD Pattison, ICPD Singh, and PhD candidate Dang in collaboration with Guy Stephens, Angelo Papageorgiou, and John Navarro, as PIs from Sutton Tools, Melbourne.

HDR Dang successfully removed cobalt and tungsten from complex cutting tool substrates by targeting electrochemically active species, using careful electrolyte selection and electrochemical conditions. This process enables even surface treatment of manufactured cutting tools, effectively reducing surface roughness across their complex three-dimensional geometry.

Analysis using scanning electron microscopy (SEM) and 3D optical profilometry confirmed successful material removal and its impact on surface roughness, while energy-dispersive X-ray spectroscopy (EDS) characterized the voids and differences in the substrate material before and after treatment. These insights provide a deeper understanding of process parameters and their influence on surface quality. This achievement represents a critical step forward in refining the surface treatment process, laying the foundation for commercial applications that will reduce manufacturing complexity and enhance drill bit quality.

Dr Minh Nhat Dang featured in Materials Australia Magazine

Annual Research Highlights

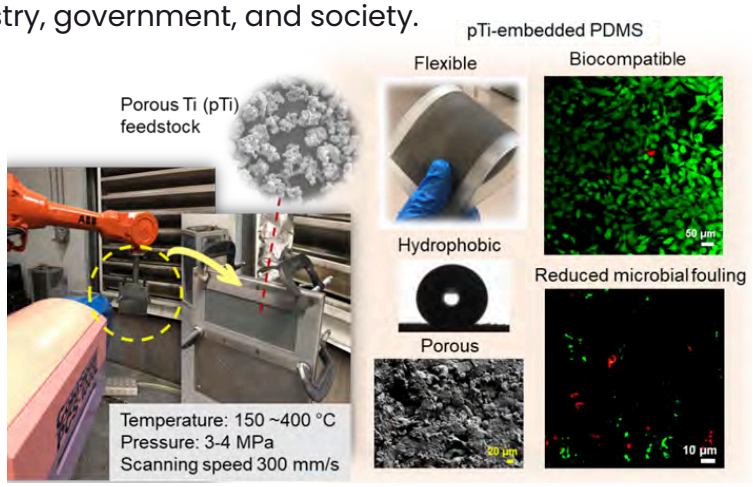
Research highlight 2022

Topic: Tailored cold-spray fabrication of multifunctional biomedical device surfaces

SEAM's Project 2 team (Swinburne):
CI Kingshott (Project lead), CI Thissen, CI Ivanova, CI Crawford, CI King, ICPD Boden, and PhD candidate Tzu-Ying (Sandy) Liao, in collaboration with Helmut Rhissen and Peter King, as PIs from RMIT and CSIRO, Melbourne.

This research successfully demonstrated the cold spray deposition of porous titanium (pTi) particles onto polydimethylsiloxane (PDMS), achieving surface functionalization while retaining PDMS flexibility. The resulting pTi-PDMS composite surfaces exhibited increased hydrophobicity and roughness, supporting osteoblast-like MG-63 cell adhesion and promoting early cell spreading and integration. The surfaces also showed antimicrobial properties, reducing *Escherichia coli* and *Staphylococcus aureus* attachment by 76% and 48%, respectively.

These findings provide critical insights into structure-property relationships, guiding the design of biocompatible and antimicrobial composite materials. The study also explored the impact of cold spray parameters on coating characteristics, contributing to intellectual property advancements. These findings establish a new class of biomaterial coatings applicable to medical devices, offering commercial benefits for industry, government, and society.



Research Highlights – Project 2: pTi-embedded PDMS composite

Annual Research Highlights

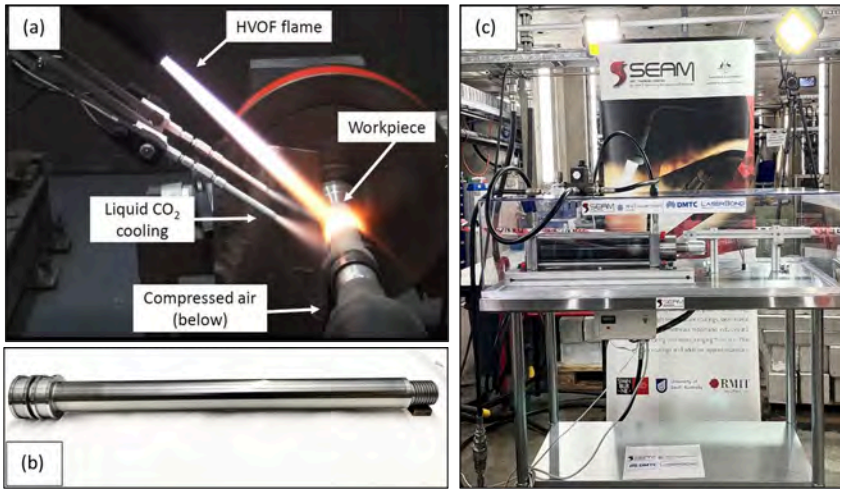
Research highlight 2023

Topic: Developing thermal spray coating onto polymer matrix composites for marine applications

SEAM's Project 11 team (Swinburne): CI Scott (Project lead), CI Ang, ICPD Singh, and PhD candidate Alexander Ugwechi Osi, in collaboration with PI Miles Kenyon from DMTC; PIs Peter Richings and Ryan Yeates from MacTaggart; and PIs Chris Dempsey, Hugo Howse, and Thomas Schlaefer from LaserBond.

This research made a significant scientific contribution by successfully applying thermal spray coatings to temperature-sensitive substrates like polymer matrix composites (PMCs) without causing physical or thermal degradation, expanding the potential applications of thermal spray technology.

The project provided valuable insights into optimal cooling conditions, examining the relationship between cooling media, heat flux transfer, and time between passes to ensure high-quality coatings while preserving substrate integrity. Additionally, the study optimized WC-10Ni-5Cr (-30+5) HVOF thermal spray energy parameters, enhancing the understanding of how different HVOF spray conditions impact final coating properties. These findings are crucial for researchers and engineers aiming to improve coating quality and component durability across various industries.



Research Highlights – Project 11: HVOF process parameter optimization

Annual Research Highlights

Research highlight 2024

Topic: Addressing ash-related challenges from biomass combustion using ceramic and composite coatings

SEAM's Project 8 team (Swinburne): CI Ang (Project lead), CI Kingshott, CI Berndt, CI Hocking, ICPD Singh, and PhD candidate Kritkasem Khantisopon, in collaboration with Dr Jaturong Jitputti and Dr Churat Tiyapiboonchaiya, as PIs from SCG Chemicals, Thailand.

To accelerate the evaluation of anti-slagging coatings, an in-house apparatus was designed to simulate boiler environments. The team successfully developed four types of slag and ash-resistant coatings through optimized material formulations and deposition methods, including superhydrophobic coatings created using suspension plasma spray (SPS).

Dr Kritkasem Khantisopon operating suspension plasma spray in SEAM

The SPS method produced the most favorable results, forming a cauliflower-like surface structure that, like surfaces found in nature, created air pockets when in contact with molten fly ash. Swinburne's P8 team has developed a strong professional relationship with SCGC, leveraging this collaboration to apply for ARC grants such as Mid-career Industry Fellowships and Industry Laureate Fellowships 2023, which address critical industrial challenges. Additionally, the project demonstrated its broader success by preparing skilled researchers for industry roles.

SEAM's Enduring Success

More than 160 people have contributed directly to the enduring success of SEAM. These people, many of whom are listed below, include early career researchers, post graduate students, undergraduate interns, academic staff, national lab researchers, Partner Organisation staff, international collaborators, research administrators and many more. In recognition of the SEAM Team; here is our roll call of honour. Thank you.

Hoda Adelkhah
Andrew S.M. Ang †
Md Jonaet Ansari †
Ameey Anupam †
Miles Apperley
James Bachelor
Elias Baini
Steven Benn
Christopher C. Berndt
Bruno Felipe Andrade Bezerra
Tania Bezzobs †
Arne Biesiekierski
Andrew Boden
Michael Boschen
Milan Brandt
Guiyuan Cao
Shareen S.L. Chan
Ting Chong Chen †
Daniel Chew
Theo Huseyin Citak
Ivan Cole
Russell Crawford
Ransini Dahanayake
Minh Nhat Dang †
Chris Dempsey
Terry Dennis
Aditya Dhapola
Regan Ding
Damien Doherty
Lachlan Doughney †
Deepa Dumbre
Martin Eberle †
Gustavo Fernandes
Daniel Garnham
Pablo Guzman
Colin Hall †
Nishar Hameed †
Karen Hapgood
Ikram Ul Hassan
Andre Hatem †
Rosalie K. Hocking †
Dora Horvath
Hugo Howse
Hongshou Huang
Hsin-Hui Huang
Xiaodong Huang
Margaret Hyland
Elena Ivanova
Muhammad Awais Javed
Baohua Jia
Jiali (Julia) Jing
Jaturong Jitputti
Rhys Jones AC
Jim Jose
Vinit Vilas Joshi
Ecio Bosi Junior
Saulius Juodkazis
Bruno Kahl †
Miles Kenyon
Kritkasem (Kris) Khantisopon †
Peter King
Hannah J. King
Peter Kingshott
Songsak Klamklang
Marco Krischer †
Deniz Kuyucak
Jeff Lang
Justin Leontini †
Qinye Li
Tzu-Ying (Sandy) Liao †
Rogerio S Lima
Keng-Te Lin †
Han Lin
Michael Little
Wenbo Liu
Hank Lloyd
Peter Lockett
Guoxing Lu †
India Luscombe
Vladimir Luzin
Glenn Lydyard
Scott Mackenzie
Niroj Maharjan
Ky Nam Mai
James Malin
Adriana Mare
Steven Matthews †
Neil Matthews AM
Robert McMahon
Ashok Meghwal †
Shannon Minett
Azadeh Mirabedini
Mark Mogeke
Fatma Mohammed
Ben Moore
Atalanta Mowat
Budaraju Srinivasa Murty
Adriana Teixeira do Nascimento
John Navarro
Nonthapat Nawbuntud
Soo Ming Ng
Duy Hien (Henry) Nguyen
Alexander Ugwechi Osi †
Patrick O'Toole
Angelo Papageorgiou
Varham Papyan †
Milan Patel
Thomas Pattison
Duy Quang Pham †
Finlay Pickrell †
Samuel Pinches †
Jacob Plowman
Ma Qian
Sudharsan Seenivasa Raghavan
Sri Ramayanti
Jermey Rao †
Jacinta Richards
Peter Richings
Anthony Roccisano †
Michael Rochford
Sanjay Sampath
Noppakun Sanpo
Rene Santander
Paul Savage
Matthew Schipper
Thomas Schlaefer
Kurt Schmidt
Christiane Schulz
Malkeet Singh †
Surinder Singh †
Harpreet Singh
Warren Smith
Nikki Stanford
Vesna Stefanovski †
Guy Stephens
Aleks Subic †
Mahsa Taherimandarjani
Wesley Tai †
Tania Tambiah
Nouman Tariq
Helmut Thissen
Kevin W. Thomson
Churat Tiyapiboonchaiya
Rou Jun Toh
Filofteia-Laura Toma
Stephen van Duin †
Anton Vilder
Liz Visher
Scott Wade †
James Wang †
Jarrod Watts
Ludwig Wedemeyer
Lucy Weaver †
Kevin Webb
Stephen Wee
Dean West
Neil Wilson
Zefeng (Ricky) Wu †
Tao Frank Yao
Ryan Yeates
Carlos Mario Espinal Zapata
Nan Zheng
Andy Moore

†: Graduations and promotions during SEAM's 2018-2025 operational period.
AM: "Member of the Order of Australia"
AC: "Companion Order of Australia"

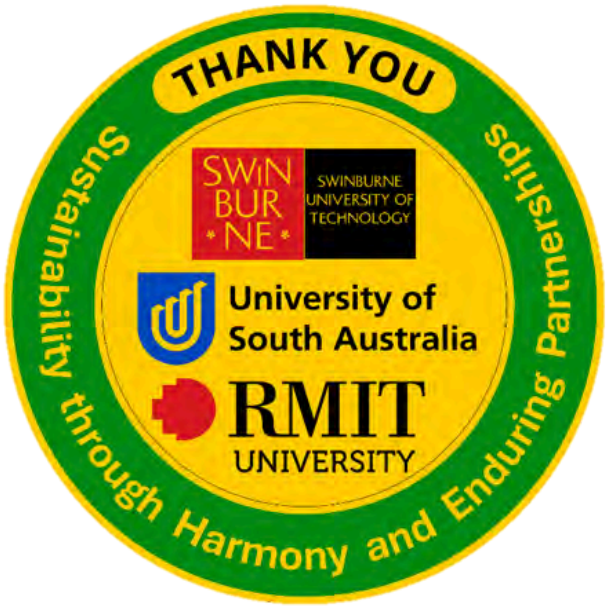
SEAM Legacy Coin

The "Legacy Coin" is a token that reminds us of our exploration in science and engineering that was focussed on "Surface Engineering for Advanced Materials". The Coin reminds us of people, projects, reports, meetings, conferences, dinners... and a host of emotional and professional experiences over six and a half years.

The "Thank You" face indicates the three collaborating Universities of SEAM: Swinburne University of Technology, RMIT University, and the University of South Australia. The consistent ethos of SEAM has been "Harmony", which has led to Sustainability and Enduring Partnerships.

The reverse face the Coin has the tessellated 'S' graphic in the centre. This represents the many contributors and facets of the SEAM collaborations. The inner rim signifies the Australian Research Council (ARC) as the major funding agency of SEAM. The middle rim states the specific ARC program, which is the "Industrial Transformation Training Centre" (ITTC) scheme.

The SEAM Legacy Coin is a keepsake to suggest reflection on this highly successful R&D that has established a foundation for the future



SEAM
ARC TRAINING CENTRE
Surface Engineering for Advanced Materials

Acknowledgements: ARC, Industry and University Stakeholders

SEAM project leaders and staff acknowledge that SEAM is funded by the Australian Research Council (ARC) under the Industrial Transformation Training Centre (ITTC) scheme (Award IC180100005) and recognizes the contributions of industry, university, and other partners. Furthermore, the SEAM Team is proud to acknowledge the Early Career Researchers who have made immense contributions to science, manufacturing and industrial outcomes.

FOR MORE INFORMATION :

http://arcseam.com.au

SEAM 2018-2025

Thank you to our Supporting Partners

We start a new dawn with an enduring legacy

SEAM
ARC TRAINING CENTRE
Surface Engineering for Advanced Materials

Australian Government
Australian Research Council

SWINBURNE UNIVERSITY OF TECHNOLOGY

University of South Australia

RMIT UNIVERSITY

Australian Government
ANSTO

CSIRO

D&T HYDRAULICS AND ENGINEERING

DMTC

INNOFOCUS

LASERBOND
PRODUCTIVITY | INNOVATION | CONSERVATION

ROMAR
Scalable Manufacturing Solutions

Santos

TITOMIC

Rosebank Engineering

MACTAGGART SCOTT
Innovators since 1898

SCGC

GRAPHENEX

suttontools
world class cutting tools

Acknowledgement: Industrial Transformation Training Centre project IC180100005