

ALI ABBAS – Professor of Chemical Engineering
School of Chemical and Biomolecular Engineering (J01)
The University of Sydney, Sydney, NSW 2006 Australia

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[University of Sydney Profile](#)
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Chief Circular Engineer, Circular Australia

Founder and Executive Director Innovation, Scimita Group



EXPERTISE & INTERESTS

Process Systems Engineering (PSE), Circular Economy, Net Zero, Green Chemicals, Green Energy, Materials Systems Engineering, Eco-industrial parks, Multiscale Modelling, Process Intensification & Design, Techno-Economics, Process Scale-up & Optimization, Low Emission Technologies, Waste Transformation, Waste to Energy, Clean Energy, Energy Storage, Carbon Capture Technologies, Carbon Markets Integration, Policy, Biotechnology, Biomedical Systems.

QUALIFICATIONS

Ph.D in Chemical Engineering, 2004, The University of Sydney
Graduate Certificate in Educational Studies (Higher Education), 2001, The University of Sydney
Bachelor of Engineering (Chemical), 2000, The University of Sydney
Bachelor of Medicinal Chemistry, 1996, University of Wollongong

CURRENT APPOINTMENTS

JUNE 2023	Associate Dean (Research) Faculty of Engineering The University of Sydney
FEB 2023	Deputy Head of School School of Chemical and Biomolecular Engineering The University of Sydney
NOV 2022	Australia's Inaugural Chief Circular Engineer Circular Australia
FEB 2022	Acting Head of School School of Chemical and Biomolecular Engineering The University of Sydney
JAN 2022	Professor of Chemical Engineering School of Chemical and Biomolecular Engineering The University of Sydney
JAN 2022	Deputy Director (Industry Innovation & Commercialisation) Sydney Nano Institute The University of Sydney
JAN 2015	Founder and Director Waste Transformation Research Hub The University of Sydney

ACADEMIC APPOINTMENT RECORD

JAN 2014 – Dec 2021	Associate Professor School of Chemical and Biomolecular Engineering The University of Sydney
AUG 2016 – DEC 2016	Visiting Professor Harvard Medical School / Harvard-MIT Division of Health Sciences and Technology Harvard University, Boston
OCT 2007 – DEC 2013	Senior Lecturer School of Chemical and Biomolecular Engineering The University of Sydney
FEB 2007 – SEP 2007	Assistant Professor Division of Science and Engineering, University of New South Wales Asia, Singapore

DEC 2004 – JAN 2007	Assistant Professor School of Chemical and Biomedical Engineering Nanyang Technological University, Singapore
MAY 2004 – NOV 2004	Postdoctoral Fellow – Research Associate School of Chemical Engineering The University of Sydney
JAN 2003 – JUN 2003	Lecturer School of Chemical Engineering The University of Sydney
JAN 2005 – DEC 2017	Visiting Professorships University of Sydney, Tokyo Institute of Technology, Technische Hochschule Mittelhessen Giessen, Masdar Institute of Technology, King Abdullah University of Science and Technology, Jilin University, MIT-Harvard, American University of Beirut, Louisiana State University.

MANAGEMENT AND PROFESSIONAL EXPERIENCE

2021 –	Core Team Member Net Zero Initiative, The University of Sydney
2021 –	Cluster Co-Chair - Circular Construction & Lifecycle Analysis Cluster Smart Sustainable Building Network, The University of Sydney Nano Institute
2021 –	Advisory Group Member Sydney Environment Institute
2020 –	Founder and Director Trofica Pty Ltd, Sydney
2016 –	Founder and Director Scimita Ventures Pty Ltd, Sydney
2015 –	Advisory Board Member Nanoscience and Nanotechnology Centre, Kumaun University, India
2008 – 2016	MIPPS Supervisory Board and Supervisor MIPPS Industrial Placements
2013 – 2015	Acting Head of School School of Chemical and Biomolecular Engineering, The University of Sydney
2012 –	Advisory Panel Member Renewable (solar) Technology Technical Advisory Panel Office of the Renewable Energy Regulator (CER), Canberra
2011 – 2012	Technical Advisor Government's Office of Renewable Energy Regulator (ORER) Solar Water Heater and Air-Sourced Heat Pumps.
2010 –	Founder and Director Process Systems Studios Pty Ltd, Sydney
2008 – 2012	Industry Continuing Professional Development Trainer Applied Process Control for Professionals (Short Course), Sydney
2002-2004, 2007 –	Engineering Research Consultant BHP Billiton, VISY, Phytex, Techmas, Schering Plough, Ignite, Licella, Schneider, ECR Instruments Australia, Japan, Singapore.
2006 –	Founder and Director Process Systems Studios Pte Ltd, Singapore

LEADERSHIP AND GOVERNANCE

- Board Member, Council for Australian-Arab Relations (CAAR), DFAT (2024–present)
- Founding Chair, Australian Circular Economy Conference (2018–present)

AWARDS & FELLOWSHIPS

- 2024 IESGA Fellowship Award
- 2023 Eureka Prize Finalist 2023, Innovative Research in Sustainability
- 2017 The University of Sydney SOAR Fellowship
- 2015 PSE Model-Based Innovation prize Runner up (London)
- 2012 Australia-China Emerging Future Leaders in Low Emissions Coal Technology Fellowship, Australian Academy of Technological Science and Engineering (ASTE)
- 2011 Australia-Harvard Fellowship
- 2011 Honeywell UniSim Design Prize (Supervisor)
- 2010 AIFS best review paper award
- 2010 Dean's Award for Outstanding Teaching, University of Sydney
- 2008 PSE Model-Based Innovation prize (London)
- 2005 NTU Research Outcome Award & Recognition recipient
- 2004 Postdoctoral Fellowship, The University of Sydney
- 2000 University Postgraduate Award, The University of Sydney
- 1999 ABB Prize – Best Thesis Poster

RESEARCH FUNDING

Source	Career total amount (AUD)	
Internal research funds	\$2,625,470	14%
External funds	\$15,512,285 (1:5.9)	86%
Lead Chief Investigator	\$10,177,534	56%
Consulting income	\$609,084	3%
Industry related funds	\$11,065,621	61%
Total funds	\$18,137,755	

RELEVANT GRANT EXPERIENCE & ALIGNMENT WITH GLOBAL DIPLOMACY FUND

- Lead CI, Biogas-to-Hydrogen Demonstration Project (2022-ongoing): Scalable clean energy solution aligned with Australia's renewable hydrogen diplomacy and decarbonisation agenda.
- Lead CI, Circular Economy Technology Hub (\$250k, 2023): Partnership with NSW Government to develop a tech sandbox for international collaboration on circular solutions.
- Senior Researcher, IEAGHG-Waste to Hydrogen project (2024): Collaborative international study with UNSW and IEA on low-carbon hydrogen pathways from waste.
- Chief Investigator, Lithium-ion Battery Recycling Platform (Scimita): Direct alignment with critical minerals strategy and recycling diplomacy.

RESEARCH IMPACT

Book chapters: 10; Research output total: 295; Citations: 7926; h-index: 49; i10 index: 132; ([Google Scholar Citations](#))

Clarivate Highly Cited Researcher 2022 – Global Top 2% Scientific Influence

KEY RESEARCH THEMES

- Circular Economy Transitions
- Clean Energy and Net Zero Systems
- Hydrogen Innovation and Integration
- Eco-Industrial Parks and Resource Optimisation
- Critical Minerals Recovery and Processing
- Waste Valorisation and Green Manufacturing

COMMERCIALISATION & INDUSTRY ENGAGEMENT

- Founder & Executive Director, Scimita Group: 50+ innovation commercialisation projects supported across energy, waste, materials sectors.
- Founder, Scimtek Hydrogen: Spin-out focusing on distributed hydrogen scale-up and integration into transport and power.
- Founder, Trofica Pty Ltd: Circular food systems startup leveraging IIoT and AI for nutrient valorisation.
- Licensee, Circrete Pty Ltd: Patented fly ash to eco-pavement technology in commercial deployment.

INTERNATIONAL COLLABORATIONS & DIPLOMACY EXPERIENCE

- Visiting Professor at leading global institutions: Harvard, MIT, Tokyo Institute of Technology, KAUST, Tsinghua University, Universiti Teknologi Malaysia, and numerous others.
- Participant, Australian Hydrogen Research Delegations to Japan and Netherlands (2023–2024).
- Board Member, Council for Australian-Arab Relations (CAAR), DFAT (2024–Present): Promoting bilateral science diplomacy initiatives.
- Led partnership on net-zero infrastructure strategies with Mitsubishi Heavy Industries (Japan).