

# Resources for a sustainable future

# Our prime focus is on delivering high quality research outcomes, innovation, and impact for the benefit of industry and society.



## Message from the Director

The Institute for Mineral and Energy Resources aims to be the principal point of contact at the University of Adelaide for the research and innovation needs of the mineral and energy resources industries. Our prime focus will be on delivering high quality research outcomes, innovation, and impact for the benefit of industry and society.

The Institute seeks to develop long term partnerships with our key stakeholders and actively fosters a deep appreciation of different perspectives.

A key advantage of the Institute for Mineral and Energy Resources will be the development of truly multi-disciplinary approaches, enhancing innovative outcomes and impacts.

Our world class research leaders are keen to disseminate the significance and innovation of their research and translate these into lasting societal impact. I look forward to working closely and productively with stakeholders across the University of Adelaide, resources and associated services industries and Government.

**Professor Stephen Grano**  
Director, Institute for Mineral  
and Energy Resources,  
University of Adelaide



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### **Mission: World Class Research**

To be a globally recognised centre of excellence in research and technology transfer for the sustainable and efficient use of the world's mineral and energy resources.

### **Vision: A Sustainable Future**

To contribute to research-led solutions that will improve the efficient use of the world's mineral and energy resources.

The Institute will bring science, technology and the social sciences together working in cross-disciplinary teams, both internally and externally to the University. This will ensure its research outcomes reach beyond industry to have a world wide impact for the benefit of society and the environment.

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### **Objectives:**

- Greater predictability, reduced risk and improved prospectivity in mineral, geothermal and petroleum exploration through an enhanced understanding of the evolving Earth and its resource potential;
  - Improve safety in the mineral and energy industries, including oil and gas;
  - Quantify, reduce and manage operating risk in the mineral and energy industries;
  - Expedite the transformation from resource discoveries to operations including technical, business, economic, social, workforce and policy issues;
  - Reduce cost and emissions in energy production, and energy consumption in both the resources industry and broader society;
  - Reduce operating costs and increase efficiencies in operating mines and oil and gas reserves including increased commodity value and recovery.
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# Our research addresses global challenges in the provision of mineral and energy commodities in a sustainable manner

## Research Capabilities

- Benefits / Costs of Energy and Mineral Technologies
- Chemical Engineering
- Combustion and Fluid Mechanics
- Environmental Sciences
- Human Dimensions of Resource Development
- Indigenous Issues
- Landscape and Rehabilitation
- Mineral Exploration
- Minerals and Energy Economics
- Minerals and Energy Law
- Minerals and Energy Psychology
- Minerals and Energy Policy and Social Impact
- Mining Engineering
- Mining Simulation and Visualisation
- Petroleum Engineering
- Petroleum Exploration
- Resource Development Labour Supply and Demand
- Risk Assessment and Decision Making
- Social, Infrastructure and Economic Implications
- Water Supply and Consumption

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## Research Impact

The Institute for Mineral and Energy Resources is an inter-disciplinary Research Institute which addresses scientific, technological, environmental and social challenges in the provision of mineral and energy commodities to the world. Only research that is competitive on a global scale and addresses grand challenges, has critical scale and focus, that measures its positive impacts both academically and in society as a whole and is effective in the communication of those positive impacts to society and industry will be successful.

The University of Adelaide is unique within Australia in having strong research and teaching groups in geology and geophysics, petroleum engineering and mining engineering. Across the University, leading researchers in economics, law, commerce, social science, environmental science, mathematics and project management enable the Institute to address the complex inter-disciplinary research challenges faced by the sector.

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## Board Members

Chair

Mr Robert Kennedy  
Chairman, Beach Petroleum

Mr Dean Dalla Valle  
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Dr Stephen Forbes  
Director, Adelaide Botanic Gardens

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Executive Director, Minerals  
and Energy Resources, PIRSA

Susan Jeanes  
Chief Executive Officer, Australian  
Geothermal Energy Association Inc.

Dr Kevin Wills  
Managing Director,  
Flinders Mines Ltd

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## Internal Board Members

### Members of the Board from within the University of Adelaide community:

Professor Stephen Grano  
Director, Institute for Mineral and Energy  
Resources, University of Adelaide

Professor Robert Hill  
Executive Dean, Faculty of Sciences,  
University of Adelaide

Professor Peter Dowd  
Executive Dean, Faculty of Engineering,  
Computer and Mathematical Sciences,  
University of Adelaide

Professor Mike Brooks  
Deputy Vice Chancellor and  
Vice President (Research),  
University of Adelaide

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### **Centre for Tectonics, Resources and Exploration (TRaX)**

**Director, Nigel Cook**  
**Deputy Director, Simon Holford**

The Centre for Tectonics, Resources and Exploration (TRaX) was formed in July 2009 by consolidating expertise from the University of Adelaide, the South Australian Museum, and the Australian School of Petroleum.

The Centre aims to become the foremost provider of University research and teaching in tectonics, resources and exploration in the nation. The Centre has a staff cohort of 30 people, with access to world-class analytical and geophysical facilities to understand the evolving Earth and its resource potential.

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### **Centre for Energy Technology (CET)**

**Director, Gus Nathan**  
**R&D Manager, Jordan Parham**

The Centre for Energy Technology (CET) fosters and promotes research that results in cleaner energy generation, storage, distribution and utilisation of energy.

A strong team has been created from the four disciplines of Mechanical Engineering, Chemical Engineering, Electrical Engineering and Applied Mathematics. The centre aims to support Australia's transition from a high to low CO<sub>2</sub> emission society and seeks to identify, develop and support the implementation of technologies that make clean energy use cost effective.

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### **South Australian Centre for Geothermal Energy Research (SACGER)**

**Director, Martin Hand**  
**Deputy Director, Yung Ngothai**

The South Australian Centre for Geothermal Energy Research (SACGER) is a world-class centre for Geothermal Energy Research. It was the first project to be funded by the State Government's Renewable Energy Fund.

This funding will help South Australia to achieve its target of 33% for renewable energy production by 2020. SACGER conducts research into enhanced geothermal and power systems that provide an economically and environmentally viable delivery of geothermal energy.

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## Centre for Mineral Exploration Under Cover (CMXUC)

Director, **David Giles**

The South Australian Centre for Mineral Exploration Under Cover (CMXUC) was established in 2005 as part of the Plan for Accelerated Exploration (PACE) and is a collaboration between the University of Adelaide and Primary Industries and Resources South Australia (PIRSA). The aim of CMXUC is to facilitate mineral discovery by defining and implementing the next generation of mineral and exploration science, building on the research strengths of Tectonics and Metallogeny, Regolith and Landscape Evolution and Geophysical exploration. The major focus of CMXUC is to understand and penetrate the veneer of weathered rock and alluvium that covers the prospective geology of much of Australia. This cover represents the single most important impediment to the discovery and exploitation of Australia's untapped mineral wealth.

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## Program in Resource Recovery (Australian School of Petroleum, Mining, Chemical Engineering, Chemistry and Physics)

**Emmanuel Chanda, Peter Ashman, Bruce Ainsworth**

Resource recovery focuses on the energy efficient and cost effective extraction of mineral and energy resources, and their transformation to valuable products.

Specific research interests include enhanced hydrocarbon recovery from conventional and unconventional reservoirs, reservoir modelling and characterisation, carbon capture and storage, rock fracture mechanics and flow, geostatistical resource estimation, mine design and production scheduling, predicting and monitoring the behavior of fractures and faults, gas release in underground coal mines, mine modelling and optimisation, dissolution, oxidation, precipitation and scaling in hydrothermal solutions, rheology, slurry pipeline transport, minerals tailings treatment and disposal, and environmental impact studies of mining and related activities.


## Program in Socio-Economic Impacts of Mineral and Energy Resources (Economics, Business, Institute of Social Research)

**John Spoehr, Barry Burgan, Christopher Findlay**

The area of socio-economic impact modelling draws on a range of disciplines, and requires research around a number of issues, many of which are technical. The disciplines include Finance, Economics, Demography, Geography and Sociology.

The area links from advanced economic modelling into benefit cost modelling and covers multi-criteria decision making frameworks and triple bottom line assessment and environmental impact assessment.

Some specific areas of interest include the inter-relationship between social and economic outcomes, implications of using time value of money principles and commercially oriented discount rates in social welfare evaluation, and the applicability of alternative economic models for economic impact and methodologies.



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