INTERNATIONAL ADVANCED COAL TECHNOLOGY CONFERENCE 2014

Sharing knowledge and expertise to advance low emission coal initiatives in Australia, China and the United States.

18-19th March, 2014
CSIRO Queensland Centre for Advanced Technologies, Brisbane, Australia
Conference Organising Committee:
Dr Mark Northam | University of Wyoming
Mary Byrnes | University of Wyoming
Professor Chris Greig | University of Queensland
Dr David Harris | CSIRO Energy Technology

International Advanced Coal Technology Conference 2014 is proudly supported by:
On behalf of the Commonwealth Scientific and Industrial Research Organisation (CSIRO), and the University of Queensland in Australia, with our partners from the University of Wyoming in the United States and the Shaanxi Provincial Institute of Energy Resources & Chemical Engineering (SPEIRCE) in the People’s Republic of China, it is my great pleasure to welcome you to the 4th International Advanced Coal Technologies Conference.

Over the next two days we will hear from leading energy experts from government, industry and research sectors who will share their unique perspectives, experiences, vision and expertise in delivering research, industry and policy initiatives supporting development and deployment of low emissions coal-based power and energy technologies in Australia, China and the United States.

We are greatly honoured by the participation of Governor Matt Mead from Wyoming. I am continually impressed by the advanced coal technology R&D program and extensive collaborative initiatives that the University of Wyoming, in conjunction with the State of Wyoming, have been able to create and propagate through collaborative networks among the leading energy research and technology groups across the world. We are proud to be part of this network and to have been part of its growth and success since the first of these conferences which was held in Brisbane in 2008. Governor Mead, and his predecessor, Governor Freudenthal, have been closely engaged with all four of these conferences, the most recent being held in Xi’an China in 2012.

We hope to continue the tradition of past conferences, focussing on technologies and policy initiatives, to facilitate collaboration and coordination to advance international technology programs to enable environmentally sound and economically affordable use of coal to meet growing world energy demand. We encourage you to take advantage of the unique networking opportunities available through this event. Through your active engagement we hope that this meeting will provide a catalyst for development of new and enhanced collaborative links between our three nations.

Welcome to the Queensland Centre for Advanced Technologies (QCAT), Australia’s largest integrated research and development precinct for the resources and associated technology industries.

We also acknowledge the Yuggera and Turrbal people who are the Traditional Custodians of this Land and pay respect to the Elders both past and present.

Lastly, I would like to express my thanks to all the people who have worked so hard to make this conference happen. I am especially grateful to my colleagues on the conference organising committee. Special thanks go to Mark Northam, Mary Byrnes and John Jiao from the University of Wyoming, and Zhou Lifa from SPEIRCE, who provided generous expert guidance in shaping the program and were able to draw on an amazing network to gather such a prominent and influential group of speakers from the USA and China. Thanks also to Chris Greig and colleagues from the University of Queensland who worked with me to secure such outstanding Australian speakers. Special thanks also to my colleague, Julia Townsend, who held everything together.

I am sure you will agree, we are extremely fortunate to have such a high calibre cadre of invited speakers and panellists for this conference. Thank you very much to all the speakers, chairpersons and participants for your engagement in this important event. We are very grateful for your generous contribution of your valuable time and expertise.

Enjoy the conference!

David Harris
Venue details

CSIRO Queensland Centre for Advanced Technologies (QCAT)

Street address: 1 Technology Court, Pullenvale, Brisbane QLD 4069.

On arrival at the QCAT site, please follow the signs to CSIRO reception.

QCAT is 32km from Brisbane airport (50 minutes by car) and 16km from the central business district of Brisbane (30 minutes by car).

Site contact: Julia Townsend: +61 7 3327 4069
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- Dr Peter Mayfield
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- Dr John Carras
- Dr David Harris
- Dr Ashleigh Cousins
- Professor Larry Baxter
- Zhou Lifa
- Matt Zedddler
- Dr Daniel Roberts
- Dr David Brockway
- Professor Joe da Costa
- Dr Simon Smart
- Dr Michael Dolan
- Mike Easley
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- Dr Louis Wibberley
- Dr David Bell
# Day 1 – POLICY & INDUSTRY INITIATIVES

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<td>9:00 – 9:15</td>
<td>Queensland Chief Scientist, Dr Geoff Garrett</td>
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<td>9:15 – 9:30</td>
<td>Governor Matt Mead, Governor of Wyoming</td>
<td>Governor Matt Mead, Governor of Wyoming</td>
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<td>9:30 – 9:45</td>
<td>Former Deputy Director He Jiuchang, Shaanxi Provincial Development</td>
<td>Former Deputy Director He Jiuchang, Shaanxi Provincial Development and Reform Commission</td>
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<td>9:45 – 10:05</td>
<td>Keynote speaker</td>
<td>Mr Charles Meintjes, Peabody Energy Australia</td>
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<td>12:00 – 1:00</td>
<td>International industry panel discussion: technology strategies</td>
<td>Mr Keith Orchison AM, Coolah Consulting</td>
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<td>1:00 – 2:00</td>
<td>LUNCH BREAK</td>
<td>Mr Eric Redman, Summit Power</td>
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<td>Dr Linying Dong, Shaanxi Yanchang Petroleum</td>
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<td>2:40 – 3:00</td>
<td>Professor Chris Greig, University of Queensland, ZeroGen, CarbonNet and SW Hub</td>
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<td>10:45 – 11:15</td>
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<td>Mr Keith Orchison AM, Coolah Consulting</td>
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<td>6.30 onwards</td>
<td>DINNER – The River Room</td>
<td>DINNER – The River Room</td>
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**National strategies & technology implementation**

*Insight into the strategic approach taken on a national and state level from China, the US and Australia*

*Chair*
Dr Mark Northam, University of Wyoming

**9:45 – 10:05**

**General Manager**
He Jiuchang, Shaanxi Yanchang Petroleum Group

**10:05 – 10:25**
Dr Scott Smouse, US Department of Energy NETL

**10:25 – 10:45**
Ms Tania Constable, Australian Government Department of Industry

**10:45 – 11:15**

**MORNING TEA BREAK**

**Industry perspective on influence of policy framework on business decisions**

*Chair*
Mr Keith Orchison AM, Coolah Consulting

**11:15 – 12:00**

**Keynote speaker**
Mr Charles Meintjes, Peabody Energy Australia

**12:00 – 1:00**

**International industry panel discussion: technology strategies and policy frameworks**

*Facilitator*
Mr Keith Orchison AM, Coolah Consulting

*Panel*
- Mr Charles Meintjes, Peabody Energy Australia
- Mr Simon Wensley, Rio Tinto Energy
- Mr Rob Hurless, University of Wyoming
- Mr Eric Redman, Summit Power
- General Manager He Jiuchang, Shaanxi Yanchang Petroleum Group

**2:00 – 2:20**

**Mr Eric Redman, Summit Power**

**2.20 – 2:40**

**Dr Linying Dong, Shaanxi Yanchang Petroleum**

**2:40 – 3:00**

**Professor Chris Greig, University of Queensland, ZeroGen, CarbonNet and SW Hub**

**3:00 – 3:20**

**AFTERNOON TEA BREAK**

**3:20 – 4:00**

**Keynote speaker**
Dr Greg Lewin AM, President, World Chemical Engineering Council

*‘Coal – Opportunities Beyond Power’*

**4:00 – 5:00**

**Panel discussion: the future of coal – adding value beyond power**

*Facilitator*
Mr Carl Bauer, Energy Resources Council, University of Wyoming

*Panel*
- Dr Greg Lewin, World Chemical Engineering Council
- Mr Allan Blood, La Trobe Fertilisers
- Dr Matthew Targett, LP Amina
- Dr Nick Drinnan, Ambre Fuels
- Dr Linying Dong, Shaanxi Yanchang Petroleum

**6.30 onwards**

**DINNER – The River Room**
Stamford Plaza Brisbane
Day 2 – TECHNOLOGY RESEARCH & DEVELOPMENT

8:30 – 8:35
Welcome to Day
Dr Peter Mayfield, CSIRO

8:35 – 10:15
Panel discussion: research and development – industry, government and research perspectives
Facilitator
Dr Alex Wonhas, CSIRO
Panel
– Professor Zheng Chuguang, China Advanced Coal Technology Consortium (ACTC), China-US Clean Energy Research Center (CERC)
– Dr Scott Smouse, US Department of Energy
– Mr Carl Bauer, Energy Resources Council
– Dr Noel Simento, Australian National Low Emissions Coal R&D
– Dr John Carras, CSIRO Fellow

10:15 – 10:35
MORNING TEA BREAK

10:35 – 11:35
CO2 reduction from conventional technologies
1. PCC, PCC membrane applications and advanced sorbets and solvents, Dr Ashleigh Cousins, CSIRO
2. Advanced CO2 Capture Technologies, Professor Larry Baxter, Brigham Young University
3. CCUS in the Ordos Basin, Dr Zhou Lifa, Shaanxi Provincial Institute of Energy Resources and Chemical Engineering

11:35 – 12:35
Emerging high efficiency technologies
1. Efficiency improvements through emerging polygeneration technologies, Mr Matt Zedler, LP Amina
2. Impact of coal properties on gasification performance, Dr Daniel Roberts, CSIRO
3. Dewatering and drying of low rank coals for advanced technologies and advanced low rank coal processes, Dr David Brockway, Exergen (Australia)

12:35 – 1:15
LUNCH BREAK

1:15 – 2:55
Advanced syngas and conversion technologies
1. Advance syngas processing with ceramic membranes, Dr Simon Smart, University of Queensland
2. Catalytic membrane reactors, Dr Michael Dolan, CSIRO
3. Slipstream studies for technology development, Mr Michael Easley, Powder River Corp.
4. Advanced coal conversion processes, Professor Guangwen Xu, CAS Inst Proc Eng
5. Catalysis – The Key to Producing Advanced Chemicals and Fuels from Coal, Dr Maohang Fan, University of Wyoming

2:55 – 3:15
AFTERNOON TEA BREAK

3:15 – 4:15
Novel concepts and emerging high efficiency systems
1. Direct Carbon Fuel Cells, Professor John Zhu, University of Queensland
2. Direct Injection Carbon Engine (DICE), Dr Louis Wibberley, CSIRO
3. Hybrid systems, Dr David Bell, University of Wyoming

4:15 – 4:30
Concluding remarks
Dr Mark Northam, University of Wyoming

4:30 pm
FINISH
Conference dinner  
**WHERE:** The River Room, Stamford Plaza Brisbane  
**WHEN:** Tuesday 18 March 2014, 6.30pm onwards

After an intensive first day, relax with colleagues and take in the views of the Brisbane River from the Stamford Plaza’s River Room.

To enhance your experience, you will enjoy a traditional ‘Welcome to Country’ ceremony performed by descendants of the Nunukul, Yuggera, Yugimbir and Nugi Tribes. These talented indigenous dancers have travelled the world extensively, showcasing traditional Aboriginal culture through song & dance and other various forms of culture.

To stimulate the mind while also stimulating the tastebuds, your dinner speaker for the evening will be Mr Robert Pritchard from the Energy Policy Institute of Australia.

So relax and enjoy the mild March evening dinner overlooking the night time skyline from the Brisbane River.

Optional field trip  
**WHERE:** Newcastle, NSW  
**WHEN:** Thursday 20 March 2014

Information for delegates registered for Newcastle field trip.

**Accommodation**
Two nights bed and breakfast package (19 & 20 March 2014) at the Gateway Inn (26 William Streets, Mayfield NSW 2304).

**Itinerary**
Participants will enjoy a guided bus tour, taking in the coal port infrastructure of the Port Waratah Coal Terminal, the CSIRO Energy Centre and the Post Combustions Carbon Capture pilot plant at Vales Point power stations.

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<td>8.45am</td>
<td>Pick up from Gateway Inn</td>
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<tr>
<td>9am</td>
<td>Tour of Port Waratah (1.5 hours)</td>
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<tr>
<td>11am</td>
<td>Tour of Energy Centre + Lunch (2 hours)</td>
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<tr>
<td>2pm</td>
<td>Tour of Vales Point (1 hour)</td>
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<tr>
<td>4pm</td>
<td>Return to Gateway Inn</td>
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**Food**
Breakfast is included for 20 and 21 March, as well as lunch for field trip.

**Flights and onward travel**

**Arriving:** Flights from Brisbane to Newcastle for the field trip are to be arranged by the participant.

People arriving on Wednesday night (19 March) on the Jetstar flight JQ487, arriving into Newcastle at 9.05pm can take advantage of a shuttle bus to the Gateway Inn.

**Departure:** Newcastle is 160km north of Sydney. Overseas delegates may wish to travel to Sydney International Airport for their international connections. Options to travel to Sydney include train (approximately 3 hours) or self drive (approximately 2 hours).

Otherwise, Newcastle airport has daily flights to Brisbane.

Robert Pritchard

**Energy Policy Institute of Australia**

Robert Pritchard is Executive Director of the Energy Policy Institute of Australia.

The Energy Policy Institute is an independent, apolitical energy policy body whose membership comprises industry associations, energy companies and educational institutions.

Mr Pritchard is also Managing Director of ResourcesLaw International Associates in Sydney, an energy consultancy. He has 40 years’ experience as an adviser on a wide spectrum of energy, infrastructure projects and technology development covering the range of fossil and non-fossil energy forms fuels.

Mr Pritchard has carried out studies for the APEC Energy Working Group on energy security, cross-border power and cross-border natural gas trade in the Asia-Pacific region.

Mr Pritchard served for 9 years on the Finance Committee of the World Energy Council.
Dr Peter Mayfield  | CHIEF, CSIRO ENERGY TECHNOLOGY

Day 1 & 2: Welcome

Day 1: Chair – State and regional context for development and deployment of advanced coal technologies

Dr Peter Mayfield has worked in research and development in the resources industry for over 20 years. He has qualifications in Chemical Engineering, graduating from the University of Queensland, where he also undertook his PhD studies into Gas Separations using Adsorption Technology.

Dr Mayfield has worked at BHP Central Research Laboratories as a Research Engineer supporting the ironmaking Blast Furnace operations of the three BHP Steel works. Subsequent roles involved undertaking and leading laboratory, pilot scale and plant based research into new pyrometallurgical processing options for materials such as manganese, magnesium and ilmenite as well as addressing technical risk issues related to processing of iron ores in the Hot Briquetted Iron developments in Western Australia and Venezuela.

In 2001 he took on responsibility for the management of the BHP Billiton Newcastle Technology Centre; a role he in until June 2010 when BHP Billiton moved to a decentralised Technology model.

He has been Chief of CSIRO Energy Technology since September 2010 and is responsible for managing and developing the science capability relating to energy research in CSIRO. This spans from developing technologies for more greenhouse effective ways to use fossil fuels such as coal to the development and integration of renewable technologies such as solar and wind as well as finding more efficient ways to generate, distribute and use energy.
Dr Geoff Garrett | QUEENSLAND CHIEF SCIENTIST

Day 1: VIP Australian speaker – State and regional context for development and deployment of advanced coal technologies – Queensland perspective

Dr Geoff Garrett was appointed Chief Scientist to the State Government of Queensland in January 2011. In this role he is accountable for science policy, providing strategic guidance across a range of government departments, and has also been involved with or led a number of reviews and enquiries, covering inter alia, the science of floods, uranium mining, bat derived horse viruses, underground coal gasification and innovation in government.

Formerly he was, for eight years, Chief Executive and member of the Board of Australia’s Commonwealth Scientific and Industrial Research Organisation (CSIRO). CSIRO is one of the world’s largest and most diverse national research organisations, with close to 6,500 staff across 55 sites in Australia and an annual turnover exceeding Aus$1 billion.

Prior to joining CSIRO, Geoff led South Africa’s national science agency, the CSIR, as President and Chief Executive from 1995, following five years as Executive Vice President: Operations. He was named South Africa’s ‘Boss of the Year’ in 1998, and ‘Engineer of the Year’ by the South African Society of Professional Engineers in 1999.

Educated in the United Kingdom, Geoff is a graduate of Cambridge University where he completed a doctorate in metallurgy. He was also a university boxing blue. He then took up a lecturing position at the University of Cape Town. Prior to joining the CSIR in 1986 to head up South Africa’s National Institute for Materials Research, he was Professor and Head of Department at the University of the Witwatersrand in Johannesburg. He held visiting positions at Brown University (RI, USA), and at Oxford and Sheffield Universities. His research interests centred around the fracture and fatigue behaviour of engineering materials.

Geoff is a Fellow of the Australian Academy of Technological Sciences and Engineering, the Royal Society of South Africa and the Australian Institute of Company Directors, and served on the Prime Minister’s Science, Engineering and Innovation Council in Australia for eight years. From 2002 he also served as a founder Principal and subsequently as an Executive Committee member of the Global Research Alliance, a group which brings together some of the world’s most significant R&D organisations, spanning five continents.

Dr Garrett is a recipient of the Centenary Medal for service to Australian society through science, and was named by the Australian Financial Review as one of Australia’s 2008 ‘True Leaders’. In June 2008 he was appointed as an Officer of the Order of Australia (AO) in the Queen’s Birthday Honours list.

During 2010, Geoff was a part-time Visiting Fellow in Innovation with the Australian National University (ANU) and was also engaged with an International Review for the US National Science Foundation of the major, 26 country Integrated Ocean Drilling Program, IODP; in September 2010 he was appointed Chairman of ANZIC, the Australia New Zealand IODP Consortium comprising 22 collaborating institutions. He is the co-author with Sir Graeme Davies, recently retired Vice-Chancellor of the University of London, of the highly regarded ‘Herding Cats – Being advice to aspiring academic and research leaders’ (Triarchy Press, UK), and its recently published sequel for leaders in the professions, ‘Herding Professional Cats’. He lectures in leadership and change management and provides coaching support in these areas to academics and to senior officers of the Australian Public Service.
Governor Matt Mead | GOVERNOR OF WYOMING, USA

Day 1: VIP US speaker – State and regional context for development and deployment of advanced coal technologies – Wyoming perspective

Governor Matt Mead was sworn in as Wyoming’s 32nd Governor on January 3, 2011. Born in Jackson, Wyoming, Governor Mead was raised on the family ranch in Teton County. He has a BA degree from Trinity University in San Antonio and a law degree from the University of Wyoming.

The Governor served as a county and federal prosecutor, practiced in a private firm, and served as United States Attorney from October 2001 to June 2007 – all in Wyoming. After he stepped down as U.S. Attorney, Matt and his wife Carol, the First Lady, returned full time to operating their farming and ranching business in southeast Wyoming.

Since taking office, the Governor has put a focus on economic growth, a state energy strategy, consolidation of government services, supporting local government, improving infrastructure, and creating additional access to high-speed broadband. He continues to support Wyoming’s coal industry and to advocate for adding value to this important resource.

Wyoming supplies the United States with 40 per cent of its coal, which is the largest source of electricity in the country.

General Manager He Jiuchang | FORMER DEPUTY DIRECTOR, SHAANXI PROVINCIAL DEVELOPMENT AND REFORM COMMISSION; GENERAL MANAGER, SHAANXI YANCHANG PETROLEUM GROUP

Day 1: VIP China speaker – State and regional context for development and deployment of advanced coal technologies – Shaanxi perspective
Day 1: Panel member – Industry perspectives: technology strategies and policy frameworks
Day 1: Chinese Government representative – National strategies and technology implementation
Dr Mark Northam | DIRECTOR, UNIVERSITY OF WYOMING, SCHOOL OF ENERGY RESOURCES

Day 1: Chair – National strategies and technology implementation

Dr Mark A. Northam is the founding Director of the School of Energy Resources at the University of Wyoming. He came to the university after a year and a half with Saudi Aramco in Dhahran, Saudi Arabia where he worked as a Research Science Consultant in the areas of Carbon Management and Technical Intelligence at the Research and Development Center. Prior to joining Saudi Aramco, Dr Northam worked for over twenty years at Mobil and ExxonMobil, holding a variety of research, operations, and management positions in the US and Europe.

Mark earned a Ph.D. degree in Organic Geochemistry from the University of Texas at Austin and a Bachelor of Science degree in Chemistry from Wake Forest University. He is originally from Virginia.

Dr Scott Smouse | TECHNOLOGY MANAGER, ADVANCED COMBUSTION SYSTEMS, NATIONAL ENERGY TECHNOLOGY LABORATORY (NETL), US DEPARTMENT OF ENERGY

Day 1: US Government representative – National strategies and technology implementation

Day 1: Chair – Learning from industrial and demonstration programs

Day 2: Panel member – Research and development: industry, government and research perspectives

Tania Constable | HEAD OF DIVISION, AUSTRALIAN GOVERNMENT DEPARTMENT OF INDUSTRY (RESOURCES)

Day 1: Australian Government representative – National Strategies and Technology Implementation

Tania Constable is the Head of Resources Division in the Department of Industry, Canberra, Australia.

The Resources Division provides policy advice to the Australian Government on resources legislation and administration related to the petroleum, coal, minerals and uranium industries.

Ms Constable holds Statutory positions as the Timor Sea Treaty Joint Commissioner and International Unification Agreement Sunrise Commissioner. Ms Constable is also the Chair of the Upstream Petroleum and Gas Committee for the Standing Committee on Energy and Resources and is serving on the CSIRO Advisory Committee for the Minerals Sector and Energy and Transport Sector.

Ms Constable has worked across the Resources and Energy portfolio having held various Senior Executive Service positions over the last 11 years. From 2008 to March 2010 she held the position of Principal Adviser, Resources and Energy Policy, working on the Government’s Energy White Paper. Prior to this she held General Manager positions in Energy Policy, Resources Development and Downstream Petroleum.
Keith Orchison AM | PRINCIPAL, COOLIBAH CONSULTING PTY. LTD.

Day 1: Chair and facilitator for panel discussion—Industry perspectives: technology strategies and policy frameworks

Keith Orchison has been involved in Australian resources and industry policy issues management and communications for 34 years. He has been a communicator for 55 years, starting as a journalist in South Africa in 1959 and emigrating to Australia in 1970.

He served for four years in the 1970s as public affairs manager of Associated Pulp & Paper Mills Limited and for three years as head of public relations at La Trobe University, Melbourne.

He was chief executive of what is now APPEA for 11 years and of the Electricity Supply Association of Australia for 12 years.

From 2003 to 2007 he chaired the energy committee of the Critical Infrastructure Advisory Council for the Howard government.

He has also been chairman of the Australian Industry Greenhouse Network and of the CSIRO Energy Technology Advisory Committee.

Today he runs his own energy advisory business as Coolibah Pty Ltd and is publisher of the blog ‘This is Power’ and of the Coolibah monthly newsletter.

He is also the editor of the ‘OnPower’ website and yearbook and he contributes a commentary on energy issues regularly to Business Spectator. He was editor of the ‘Powering Australia’ yearbook from 2007 to 2012.

Mr Orchison is also engaged in the organisation and chairing of a series of energy outlook conferences.

He was made a Member of the Order of Australia in 2004 and in 2012 was recipient of AusIMM’s Sir Willis Connolly Memorial Medal for outstanding communication about the mining and resources sectors.

Charles Meintjes | PRESIDENT, PEABODY ENERGY AUSTRALIA

Day 1: Keynote speaker – National strategies and technology implementation
Day 1: Panel member – Industry perspectives: technology strategies and policy frameworks

Charles Meintjes is President of the Australian arm of Peabody Energy.

He has executive responsibility for the company’s Australia operating platform, which includes overseeing the areas of health and safety, operations, sales and marketing, product delivery and support functions.

Mr Meintjes has extensive senior operational, strategy, continuous improvement and information technology experience with mining companies on three continents. He also has led financial and technical functions, large re-engineering programs, information technology system implementations and large industrial construction projects.

Mr Meintjes joined Peabody in 2007, and most recently served as Acting President – Americas for Peabody Energy. Other past positions with the company include Group Executive of Midwest and Colorado Operations, Senior Vice President of Operations Improvement and Senior Vice President Engineering and Continuous Improvement. Prior to joining Peabody, he served as a consultant to Exxaro Resources Limited in South Africa, and is a former Executive Director and Board Member for Kumba Resources Limited in South Africa. He also served on the boards of two public companies, AST Gijima in South Africa and Ticor Limited in Australia and has senior management experience in the steel and the aluminum industry with Iscor and Alusaf in South Africa.

Mr Meintjes holds dual Bachelor of Commerce degrees in accounting from Rand Afrikaans University and the University of South Africa. He is a Chartered Accountant in South Africa, and completed the advanced management program at the University of Pennsylvania’s Wharton School of Business.
Simon Wensley  | RIO TINTO

Day 1: Panel member – Industry perspectives: technology strategies and policy frameworks

Rob Hurless  | DEPUTY DIRECTOR, UNIVERSITY OF WYOMING
SCHOOL OF ENERGY AND RESOURCES

Day 1: Panel member – Industry perspectives: technology strategies and policy frameworks

Rob Hurless is currently a Deputy Director at the School of Energy Resources at the University of Wyoming. He is also ‘on loan’ to Governor Mead and works on Energy Strategy.

Prior to this position he served as Energy and Telecommunications Advisor to Wyoming Governor Dave Freudenthal. He came to that position from a tour as Chairman of the Wyoming Public Service Commission.

For the bulk of his career Mr Hurless was Publisher of the Casper Star-Tribune in Casper, Wyoming. He served as an officer aboard the USS Quapaw, ATF 110, Pearl Harbor, Hawaii. He has a BS in Chemistry and BA in History from Montana State University, an MBA from Harvard Business School and Masters in Applied Economics from Stanford University.

Eric Redman  | PRESIDENT & CEO, SUMMIT POWER

Day 1: Panel member – Industry perspectives: technology strategies and policy frameworks

Day 1: US case study– Learning from industrial and demonstration programs

In addition to his duties as President and CEO of Summit Power Group, Mr Eric Redman heads Summit’s development of carbon capture projects. He is a frequent speaker and author on coal gasification, carbon capture and carbon management, enhanced oil recovery, and climate matters.

Mr. Redman’s seminal book on Congress, ‘The Dance of Legislation’ was a bestseller; he has also written for many newspapers, anthologies, and magazines.

He holds a BA and JD from Harvard and an MA from Oxford, where he was a Rhodes Scholar. Mr. Redman is a member of the Executive Committee of the Board of Directors of the Gasification Technologies Council and has served on numerous non-profit boards.

Dr Linying Dong  | DEPUTY CHIEF ENGINEER, SHAANXI YANCHANG PETROLEUM

Day 1: China case study – Learning from industrial and demonstration programs

Day 1: Panel member – The future of coal: adding value beyond power
**Professor Chris Greig** | DIRECTOR, UNIVERSITY OF QUEENSLAND ENERGY INITIATIVE

Day 1: Australia case study – Learning from industrial and demonstration programs  
Day 2: Chair – Advanced coal technologies: technical papers (session III)

Chris Greig is Professor of Energy Strategy at University of Queensland and Director of the UQ Energy Initiative. This is a university wide initiative providing strategic leadership for energy research across all faculties and institutes. The initiative covers energy production and utilisation, electricity generation and distribution and transportation fuels for both fossil fuels and renewable resources. The scope of research activities ranges from engineering, material sciences and mining research, to social policy, economics and environment, reflecting the specific challenges facing Australia with its abundant and cost competitive coal and gas resources and an economy that is heavily reliant on fossil fuels.

Prior to joining the University, Professor Greig had 25 years of project and executive experience in the industrial, mining and energy sectors, both within Australia and abroad, including Project Director for ZeroGen Pty Ltd which undertook a comprehensive study of the feasibility of a large scale IGCC plant integrated with CCS in Queensland. That project also completed one of the largest onshore CO₂ storage exploration and appraisal programs undertaken globally.

Professor Greig has a Bachelor of Chemical Engineering, Master of Engineering Science and PhD, all from the University of Queensland.

**Carl Bauer** | FOUNDER & PRESIDENT, C.O. BAUER CONSULTING INC.  
| ENERGY RESOURCES COUNCIL, UNIVERSITY OF WYOMING

Day 1: Panel member – Industry Perspectives: Technology strategies and policy frameworks  
Day 1: Chair – New initiatives and opportunities  
Day 1: Chair and panel facilitator – The future of coal: adding value beyond power  
Day 2: Panel member – Research and development: industry, government and research perspectives

Carl Bauer has over 40 years of industry and public service in energy technology development, energy systems and policy analysis and executive management.

Before establishing CO Bauer Inc. he was Managing Director of the Department of Energy’s National Energy Technology Laboratory (NETL) and was responsible for directing and overseeing the implementation of major science and technology development programs at the Lab as well as a billion dollar jointly funded RD&D with the Energy Industry.

Recently Mr Bauer has lead or provided consultant and advisory services to the Interim Director, University of Wyoming School of Energy Resources Carbon Management Institute, Fluor Energy Government Services Initiatives, SaskPower Boundary Dam #3 CCS Commercial Scale Project Consultant, University of Wyoming School of Energy Resources Energy Resource Council and the Australian Global Carbon Capture Storage Institute (GCCSI) Technical Advisory Board.
Dr Greg Lewin AM | PRESIDENT, WORLD CHEMICAL ENGINEERING COUNCIL

Day 1: Keynote speaker – Coal: opportunities beyond power

Dr Greg Lewin AM is President of the World Chemical Engineering Council, an International Fellow of the Royal Academy of Engineering, a Fellow of The Institution of Chemical Engineers and a Fellow of Engineers Australia.

Dr Lewin is a Non-Executive Director of Alinta Energy and CO2CRC, Chairman of the Australian Wildlife Arts Foundation and an Executive Director of Sapphire Global.

He worked in Shell Australia’s Retail and Manufacturing businesses, prior to being posted to London in 1990. A distinguished international business career, founded on Chemical Engineering, followed.

Dr Lewin was Manufacturing Director for Norske Shell, based in Stavanger, Norway. Later, he became Vice President Manufacturing, Supply and Distribution for Shell Europe, and Executive Vice President Strategy and Portfolio for Royal Dutch Shell’s Oil Products Business.

He was appointed an Executive Vice President of Shell Downstream and President of Shell Global Solutions in 2003, a business, which provided business consultancy, technical and project services, and research and development expertise to the energy industry worldwide.

In 2009, Dr Lewin founded Sapphire Global which currently advises Reliance Industries in India on Leadership Excellence and provides consulting to Oaktree Capital.

Dr Lewin has served as a Sasol Non-Executive Director, Chairman of Molopo Energy, Chairman of the Industry Advisory Group: Faculty of Chemical and BioMolecular Engineering, Melbourne University and President of The Institute of Chemical Engineers.

In 2012, Dr Lewin was awarded the Order of Australia for his service to the profession of Chemical Engineering through senior roles in the petroleum industry, to business and commerce, and to professional organisations and the CHEMECA medal in 2013.

Dr Lewin obtained BE (Chem) and MBA degrees from the University of Melbourne. He also holds FIChemE, CEng and CSci qualifications.

Allan Blood | EXECUTIVE CHAIRMAN, LA TROBE FERTILISERS

Day 1: Panel member – The future of coal: adding value beyond power

Allan Blood was General Manager then subsequently Managing Director of Value Engineering Australia for many years.

After the sale of Value Engineering, Mr Blood was Executive Chairman of the Bulgarian-Australian Manganese Company and Executive Chairman of Schefferville Iron & Minerals Inc. in Canada.

He then founded and became Chairman of Australian Power & Energy Limited (APEL), now Monash Energy Limited, and a subsidiary of Anglo American Group plc. APEL was formed in 1998 to develop the Victorian Power & Liquids Project, a A$5 billion coal to gas to liquids and power project.

Following the takeover by Anglo in 2004, Mr Blood formed Australian Energy Company Limited and Latrobe Fertilisers Limited and is currently working on an Ammonia/Urea project based on coal gasification with low to zero emission initiatives.

Dr Matthew Targett | VICE PRESIDENT, RESEARCH AND DEVELOPMENT, LP AMINA

Day 1: Panel member – The future of coal: adding value beyond power

Dr Matthew Target currently leads the global research and development for LP Amina, a multinational environmental engineering company providing solutions and services to the power generation field.

Previous to joining LP Amina, Dr Targett was the head of Innovation Management for Bayer Technology Services in Asia. Additionally, he has held a number of R&D and manufacturing technology leadership positions with DuPont in the USA, Singapore and China. He is widely regarded as a forerunner of Asia’s clean tech scientific advancement, consistently demonstrating a commitment to pioneering science for a sustainable future.

Dr. Targett previously served four terms as Governor on the American Chamber of Commerce Board in Shanghai, and former Chair of the Science and Technology Committee. He has collaborated with fellow experts to design high tech symposia on subjects including China’s National Innovation Policy, intellectual property risk assessments and development of next generation China technology talent.

A champion of the Chamber’s innovation, energy and the environment position papers, he is also a key member of numerous industry associations including the Industrial Research Institute and the China Greentech Initiative.

Dr Targett holds M.S. and Ph.D. degrees in chemical engineering from the University of Pennsylvania and a B.S. degree in chemical engineering from the Pennsylvania State University.

Dr Nick Drinnan | MANAGER RESEARCH AND DEVELOPMENT, AMBRE FUELS

Day 1: Panel member – The future of coal: adding value beyond power

Since 2007, Dr Nick Drinnan has been responsible for managing Ambre Energy’s test work including retorting, gasification and other coal upgrading techniques, providing design basis data for Ambre Energy’s engineering team. He is the primary liaison point for Ambre Energy’s catalyst and reactor research and development at the University of Utah and DME engine testing program at the University of Queensland.

Dr Drinnan completed his undergraduate education majoring in chemistry and philosophy. He has completed postgraduate studies in organic chemistry, philosophy and intellectual property, and is a qualified patent and trademark attorney.

He spent almost seven years at Alchemia Ltd working as a synthetic organic chemist. In addition to his scientific duties, he was also responsible for intellectual property management.

In 2004, Dr Drinnan joined patent attorney firm Davies Collison Cave, which he subsequently left to join Ambre Energy.
Dr Alex Wonhas | DIRECTOR, CSIRO ENERGY FLAGSHIP

Day 2: Chair and panel facilitator – Research and development: industry, government and research perspectives

Dr Alex Wonhas has been the Director of the CSIRO’s Energy Flagship since 2009. The Energy Flagship brings together about 800 researchers across CSIRO in the areas of oil and gas exploration, coal mining, alternative fuels, low emissions technologies including CCS and renewable energy, electricity grid operations and energy efficiency. The Flagship’s $120m p.a. project portfolio aims to enhance the value Australia derives from its vast energy resources while enabling the transition to a lower emissions energy future.

In his capacity as the Energy Flagship Director, Dr Wonhas has been instrumental in shaping the future direction of its research program. He has also been the driving force behind the establishment of nationally relevant projects, such as the Future Grid Forum, which brings together key stakeholders from industry and government across the whole energy value chain with the aim of increasing the productivity of our energy system.

In addition to a strong academic R&D background, Dr Wonhas also possesses a deep understanding of the private sector, especially in resources and energy. In his former position as a consultant at McKinsey & Company, Dr Wonhas spent several years advising national and international energy and resources companies on questions of strategy and operations. He was also one of the co-authors of McKinsey’s carbon abatement cost curve for Australia.

Dr Wonhas also serves on a range of energy-related advisory committees and boards including the Australian National Low emissions Coal Council, The Australian Solar Institute, the Energy and Minerals Institute of the University of Western Australia, and the Federal Government’s Energy White Paper Reference Group.

Professor Zheng Chuguang | DIRECTOR, CHINA ADVANCED COAL TECHNOLOGY CONSORTIUM (ACTC), CHINA-US CLEAN ENERGY RESEARCH CENTER (CERC)

Day 2: Panel member – Research and development: industry, government and research perspectives

Professor Chuguang Zheng is the Professor of State Key Laboratory of Coal Combustion at the Huazhong University of Science & Technology (HUST).

He is currently the deputy director of the Academic Committee of HUST, the director of Advanced Coal Technology Consortium of China-US Clean Energy Research Center (ACTC-CERC), and also the deputy director of the National Energy Research and Development Center of Clean Coal Technology and Low-Carbon Power Generation.

Professor Zheng was engaged in the theory research and technology development of coal combustion and pollution prevention for many years. He was employed as the chief scientist of National Key Basic Research Development Program (973 Program) project twice. He also served on expert panel of energy field of High Technology Research and Development Program (863 Program), and the Committee of State Council Academic Degrees.
Dr Noel Simento | MANAGING DIRECTOR AUSTRALIAN NATIONAL LOW EMISSIONS COAL R&D

Day 2: Panel member – Research and development: industry, government and research perspectives

Dr Noel Simento is Managing Director of the Australian National Low Emissions Coal R&D (ANLEC R&D). ANLEC R&D has commenced a 150 million dollar research initiative over 6 years to accelerate and de-risk investment in demonstrating low emissions coal technologies in Australian conditions.

Dr Simento has significant industry experience having held technical development roles in minerals processing and metal production operations. His research management experience includes technology transfer and corporate communication responsibilities for two black coal CRCs. He is passionate about research that is defined around clear paths to application.

Dr Simento is a member of the ANLEC R&D Science Leadership Group, BCIA’s Research Advisory Committee and CO2CRC’s Operations and Program Advisory Committees.


Dr John Carras | CSIRO FELLOW

Day 2: Panel member – Research and development: industry, government and research perspectives

Dr John Carras is a CSIRO Honorary Research Fellow having retired in early 2013 from his previous role as Director of CSIRO Advanced Coal Technology.

Dr Carras holds a PhD degree in physics and has worked in energy related research for many years. His research expertise is in the area of gaseous and particulate emissions to the atmosphere with his research, in recent years, focussing on greenhouse gas emissions from coal mining. He has authored or co-authored over 150 publications.

Dr David Harris | DEPUTY CHIEF, CSIRO ENERGY TECHNOLOGY

Day 2: Chair – Advanced coal technologies: technical papers (session I)

Dr David Harris joined CSIRO in 1987 and is the Deputy Chief of CSIRO Energy Technology and a member of the leadership team. He has extensive research experience in fundamental and applied aspects of coal combustion and gasification systems.

Dr Harris established the high-pressure coal gasification research facilities at the Queensland Centre for Advanced Technologies (QCAT), which provides unique capabilities for advanced gasification, syngas processing and gas separation research and development. His research group has developed collaborative links with the major coal and power research and technology institutions within Australia as well as extensive research links with international research and technology development groups in Japan, China, Korea, Europe, USA and South Africa.

Dr Harris has published over 150 research reports and papers on a wide range of coal and energy technologies, with particular emphasis on coal and coke reactivity, high temperature & high-pressure reactions, coal combustion and gasification and their applications in metallurgical and low emissions power generation technologies.

He has a BSc and PhD qualifications in Industrial Chemistry from the University of NSW.
Dr Ashleigh Cousins | RESEARCHER ENGINEER, CSIRO ENERGY TECHNOLOGY

Day 2: CO₂ reduction from conventional technologies (technical paper)
– PCC, PCC membrane applications and advanced sorbents and solvents

Dr Ashleigh Cousins is a research engineer working in the area of CO₂ capture for CSIRO Energy Technology. Her research interests include coal gasification, post combustion capture of CO₂, process modelling and optimisation, and pilot scale evaluation.

She is a chemical engineer (University of Canterbury, NZ) and obtained a PhD from the Department of Chemical Engineering, Imperial College London (UK).

Professor Larry Baxter | BRIGHAM YOUNG UNIVERSITY

Day 2: CO₂ reduction from conventional technologies (technical paper)
– Advanced CO₂ Capture Technologies

Professor Larry Baxter joined the Brigham Young University faculty in 2000 after working for 14 years at Sandia National Laboratories’ Combustion Research Facility. His current research involves experimental and theoretical sustainable energy research, including carbon capture and storage, biomass, black liquor, and coal combustion and gasification, diagnostic development, and model development.

(Information source: http://chemicalengineering.byu.edu/Faculty.php)

Zhou Lifa | DIRECTOR, SHAANXII PROVINCIAL INSTITUTE OF ENERGY RESOURCES AND CHEMICAL ENGINEERING

Day 2: CO₂ reduction from conventional technologies (technical paper)
– CCUS in the Ordos Basin

Matt Zeddler | PRODUCT DEVELOPMENT DIRECTOR, LP AMINA

Day 2: Emerging high efficiency technologies (technical paper)
– Gasification and IGCC

Matt Zeddler is Product Development Director for LP Amina, an energy and environmental company developing innovative solutions for fossil-fired power and processing facilities. Based in Beijing, China, Mr Zedler and his team are responsible for the design of the company’s NOx reduction technologies (low NOx burners, SNCR, SCR) as well as for developing pilot-scale technologies based on LP Amina’s coal-to-chemicals and efficiency improvement R&D.

Additionally, Mr Zedler helps manage LP Amina’s involvement with the US-China Clean Energy Research Center’s (CERC’s) Advanced Coal Technology Consortium (ACTC). Before joining LP Amina, Mr Zedler worked for IHS-CERA, GE Energy, and Calpine Corporation. He is a registered professional engineer in his home state of Virginia and has enjoyed living and travelling in China for the past three years.

Mr Zedler holds a SB in mechanical engineering from MIT and a MS in the same field from Georgia Tech.
Dr Daniel Roberts | PRINCIPAL RESEARCH SCIENTIST, CSIRO ENERGY TECHNOLOGY

Day 2: Emerging high efficiency technologies (technical paper) – Impact of coal properties on gasification performance

Dr Daniel Roberts is a Principal Research Scientist with CSIRO Energy Technology.

Dr Roberts leads CSIRO’s Gasification and Combustion Research Group, and manages the Gasification and Syngas Technologies research stream in CSIRO’s Energy Flagship, where his research is finding the best ways of using our coal resources and managing our waste streams through their conversion to valuable products. His work has focused on understanding the fundamentals of gasification and how it can be applied to industrial scale systems.

He has published over 85 journal articles and conference papers and authored over 40 reports to industry.

He graduated from Macquarie University in 1996 and obtained his PhD from the Department of Chemical Engineering at the University of Newcastle in 2000. He was a visiting researcher for 6 months with CRIEPI in Japan, and started with CSIRO as a postdoctoral scientist in 2001.

Dr David Brockway | COMPANY DIRECTOR, EXERGEN – AUSTRALIA

Day 2: Emerging high efficiency technologies (technical paper) – Dewatering and drying low rank coals for advanced low rank coal processes

Dr David Brockway has been involved in energy R&D for over three decades. He is currently an independent company director on the Board of Exergen Pty Ltd.

Dr Brockway was formerly Chief of CSIRO Energy Technology. In this role he had responsibility for a Division with four laboratories engaged in R&D on fossil fuels, renewables, energy storage, intelligent energy management, distributed generation, environmental emissions from energy production and energy scenario modelling.

For the previous decade, Dr Brockway was the Chief Executive Officer of the Cooperative Research Centre (CRC) for Clean Power from Lignite. In this role he worked closely with industry, governments, universities and CSIRO to develop new low emissions power generation technologies for low-rank coal.

Before joining the CRC, Dr Brockway spent 13 years in the Research and Development Department of the State Electricity Commission of Victoria where he was variously Manager Scientific Investigations, Principal Materials Scientist and Head of Coal Science.

David is a Fellow of the Australian Academy of Technological Sciences and Engineering, a Fellow of the Australian Institute of Energy and a Fellow of the Australian Institute of Company Directors.
Professor Joe da Costa | PROFESSOR, UNIVERSITY OF QUEENSLAND
SCHOOL OF CHEMICAL ENGINEERING

Day 2: Chair – Advanced coal technologies: technical papers (session II)

Professor Joe da Costa is a Professor at the School of Chemical Engineering at the University of Queensland, Brisbane Australia. He is also the Leader of the FIMLab – Films and Inorganic Membrane Laboratory, and has over 20 years working experience in industrial, consultancy and academic roles in Brazil, England and Australia. Currently, he leads several research projects in the area of H₂, CO₂, O₂, mineral brine processing, desalination and ethanol separation using inorganic membranes and membrane reactors, in addition to adsorbents and environmental catalysis.

Professor de Costa has over 200 international publications including 7 book chapters for membranes and membrane reactors.

He is a Chartered Professional Engineer in the Colleges of Mechanical Engineering and Chemical Engineering of the Institution of Engineers Australia.

Dr Simon Smart | LECTURER, UNIVERSITY OF QUEENSLAND SCHOOL OF CHEMICAL ENGINEERING | DEPUTY DIRECTOR, FILMS AND INORGANIC MEMBRANE LABORATORY (FIMLAB)

Day 2: Advanced syngas and conversion technologies (technical paper) – Advanced syngas processing and ceramic membranes

Dr Simon Smart is a lecturer in the School of Chemical Engineering at The University of Queensland (UQ), where he leads research into membrane and membrane reactor technologies for clean energy and water applications.

Prior to becoming a lecturer, Dr Dmart worked for four years as a Postdoctoral Research Fellow within the Films and Inorganic Membrane Laboratory (FIMLab) at UQ. Now the deputy-director of FIMLab, the major focus of his research has been on developing enabling separation technologies to increase the efficiency and decrease the cost of hydrogen production, CO₂ capture and treatment of waste waters from the mining and coal seam gas industries. Successful outcomes from this research lead to Dr Smart being awarded a prestigious Early Career Researcher Fellowship in 2012 from the Queensland Government to investigate silica based membranes for desalination applications in the coal seam gas industry.

Dr Smart has 27 publications, including 3 book chapters and 24 international journal articles, one of which has been cited over 300 times and was awarded ‘Most Citations 2006-2010’ by the journal CARBON.

Dr Smart is also the current Secretary for the Membrane Society of Australasia, where he has served on the board of directors since 2010.

(Information source: http://researchers.uq.edu.au/researcher/1201)
Dr Michael Dolan | RESEARCH TEAM LEADER, CSIRO ENERGY TECHNOLOGY

Day 2: Advanced syngas and conversion technologies (technical paper)
– Catalytic membrane reactors

Dr Michael Dolan is a Research Team Leader with CSIRO and leads a multi-disciplinary team focused on the development of syngas technologies.

His research concerns the effective use of CSIRO’s fossil fuel resources, and is aimed at increasing efficiency, capturing CO₂, and converting fossil fuels to cleaner alternatives, including hydrogen and synthetic fuels. This research involves three aspects: the development of new catalyst and membrane materials for fuel conversion and separation; the development of reactors which increase the efficiency and decrease the cost of fuel conversion; and integration of this new technology with solar-thermal energy.

He holds a Bachelor of Applied Science (Honours) in Chemistry and a PhD in Metallurgy, both from La Trobe University, and he undertook post-doctoral research at the New York State College of Ceramics.

Mike Easley | CEO, POWDER RIVER CORP

Day 2: Advanced syngas and conversion technologies (technical paper)
– Slipstream studies for technology development

As the CEO of Powder River Energy Corporation, Mike Easley is responsible for the day-to-day operations of the electric cooperative. He answers directly to a member-elected board of directors, which is made up of ten Powder River Energy members.

Mr. Easley has over 30 years of experience working for electric cooperatives. His first job at an electric cooperative was as a transmission design engineer with Western Farmers Electric Cooperative in Anadarko, Oklahoma. He then worked at Copper Valley Electric Association in Valdez, Alaska for 10 years where he was the Chief Operating Officer.

Before coming to Powder River Energy in October of 2000 he was employed by Wolverine Power Supply Generation and Transmission Cooperative in Cadillac, Michigan, as Vice President of System Operations.

Mr. Easley also currently serves on the Wyoming Infrastructure Authority (WIA), serving as its chairman since 2004. The WIA is a state instrumentality charged with the responsibility of diversifying the state’s economy through the development of transmission and advanced coal to electricity projects.

Mr. Easley is a native of Stillwater, Oklahoma, and a graduate of Oklahoma State University where he earned a Bachelor of Science degree in Electrical Engineering in 1983. He graduated from the Ken Blanchard School of Business at Grand Canyon University in Phoenix, Arizona with the Ken Blanchard Executive MBA in July of 2008.
**Professor Guangwen Xu** | RESEARCH TEAM LEADER, CHINESE ACADEMY OF SCIENCES (CAS) INSTITUTE OF PROCESS ENGINEERING

Day 2: Advanced syngas and conversion technologies (technical paper) – Advanced coal conversion processes

Professor Guangwen Xu holds a Research Team Leader at the Chinese Academy of Sciences (CAS) Institute of Process Engineering. His current research interests cover the coal pyrolysis and gasification for liquid and fuel gas, utilization of industrial biomass wastes (process residue) for energy and biocarbon, flue gas cleaning catalysts and innovative gas-solid reaction analysis instruments. He is also member of the Expert Team of National High Technology Development Program and Chair Scientist of the National Basic Research Program. He is an editorial member of the Journal of Chemical Industry and Engineering China (CIESC) and the Chinese Journal of Process Engineering.

Professor Xu is also a member of China Particuology Society Council, Deputy Director of the Board Council and member of the Expert Committee of China Technology Innovation Alliance for Municipal Biomass Gas as well as a member of the Board Council of China Flue Gas Denitration Technology Innovation Alliance.

Professor Xu has worked in Japan and Germany. In Japan he was a visiting scholar to Gunma University and a New Energy and Industrial Technology Development Organisation (NEDO) industrial technology researcher at National Institute of Industrial Science and Technology (AIST). In Germany he was an Alexander von Humboldt (AvH) research fellow at the Technical University Hamburg-Harburg (TUHH) and a senior research scientist at IHI Corporation Ltd.

In 2006, through the ‘hundred-talent program’, he became professor and leader of a research group at the CAS Institute of Process Engineering. Between 2008 and 2011, he was the Technology Director of the Shanghai Bike Clean Energy Corporation (CECC); a joint venture between BP and CAS. He has published more than 150 academic papers, applied for more than 60 patents and delivered more than 30 invited keynote or plenary lectures in various academic conferences.

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**Dr Maohang Fan** | ASSOCIATE PROFESSOR, UNIVERSITY OF WYOMING

Day 2: Advanced syngas and conversion technologies (technical paper) – Catalysis: the key to producing advanced chemicals and fuels from coal

Dr Maohang Fan is an Associate Professor of Chemical Engineering in the Department of Chemical and Petroleum Engineering at the University of Wyoming.

He has led and worked on many projects in the areas of chemical production, clean energy production and environmental protection supported by various domestic and international funding agencies such as NSF, DOE, EPA, USGS and USDA in the United States, the New Energy and Industrial Technology Development Organization (NEDO) in Japan, the United Nations Development Programme (UNDP), and industrial companies such as Siemens and Caterpillar.

He has published over 150 refereed books, book chapters, and papers in different chemical and environmental engineering, energy, and chemistry journals.

*Information source: www.uwyo.edu/ser/faculty/fan.html*
**Professor John Zhu** | **PROFESSOR, UNIVERSITY OF QUEENSLAND**  
**SCHOOL OF CHEMICAL ENGINEERING**

Day 2: Novel concepts and emerging high efficiency systems  
(technical paper) – Direct carbon fuel cells

Professor John Zhu is currently a Professor in the School of Chemical Engineering at the University of Queensland (UQ) and is also the inaugural Director of Carbon Energy Research Centre.  

His research interests and expertise exist in advanced catalysis, gas adsorption and separation, direct carbon fuel cells and solid oxide fuel cells with strong application focus on clean energy and environment.  

His current projects include research into scale up of direct carbon fuel cells, next generation solid oxide fuel cells, hierarchically-structured bulk materials for gas storage and catalytic reaction, carbon nanotubes/MOFs composite membranes, advanced plasma-assisted catalytic processes for clean energy production and air pollution control.

Professor Zhu is recipient of a number of awards and fellowships, including the Freehills Award IChemE 2011, runner up for Innovator of the Year Award International IChemE 2011, the University of Queensland Foundation Research Excellence Award 2007, an ARC Future Fellowship from 2013 to 2016, an ARC Queen Elizabeth II Fellowship from 2008 to 2012, an ARC Postdoctoral Fellowship from 2003 – 2005.  

In May 2012, Professor Zhu’s long term collaborative research with Eden Energy was recognised by Thomson Reuters Innovation Award for Innovative Collaboration between UQ and Eden Energy.  

(Information source: www.chemeng.uq.edu.au/zhu)

**Dr Louis Wibberley** | **PRINCIPAL TECHNOLOGIST & PROJECT LEADER, CSIRO ENERGY TECHNOLOGY**

Day 2: Novel concepts and emerging high efficiency systems (technical paper) – Direct injection carbon engine

Dr Louis Wibberley is the Project Leader of the Advanced Carbon Power Program in CSIRO Energy Technology.  

He has over 30 years industrial research experience in combustion, environmental control, metallurgical processing, and power generation.  

Dr Wibberley is currently responsible for the rapidly expanding advanced carbon power area of research, including the development of an R&D program for the direct carbon fuel cell. His recent projects involve industry and government partners such as Yancoal, Exergen, Newcrest, Xstrata, the Victorian Government and MAN.  

He was earlier responsible for establishing and developing post combustion capture into a major research program for CSIRO.  

Prior to CSIRO, Dr Wibberley spent 18 years in industrial research with BHP Billiton, specialising in new iron and steelmaking technologies, process improvement and marketing using life cycle analysis, and the development of new energy and environmental technologies. The latter led to the introduction of a sustainable development levy on coal extraction for additional research, which, in 2004 led to the COAL21 Action Plan - the principal technology development and implementation response of the Australian coal industry to the CO2 challenge. During this time, his leadership of projects in the Cooperative Research Centre (CRC) for Coal in Sustainable Development provided the technical basis for a range of prospective low emissions coal technologies. Outcomes from this work have led to several pilot and demonstration projects currently underway in Australia.  

Dr Wibberley holds Bachelor of Metallurgy and Doctorate of Philosophy.
Day 2: Novel concepts and emerging high efficiency systems (technical paper)
– Hybrid systems

Dr. David Bell is Associate Professor of Chemical and Petroleum Engineering at the University of Wyoming. He contributed to several process and economic studies of energy conversion systems.

He is currently studying gasification kinetics.

Dr. Bell is the lead author of the book, ‘Coal Gasification and its Applications’.