



Foreword:

Innovative Futures

The future prosperity and productivity of a nation hinges on its capacity to innovate. Innovation drives the creation of new businesses and sectors and revitalises existing industries. Innovation is the melting pot in which great ideas are turned into reality, and where important issues facing Australia are addressed with scientific and engineering rigor.

The Government is committed to a major review of our national innovation system including the CRC Program. The forthcoming CRC review will assess the appropriateness, effectiveness and efficiency of the CRC Program, as well as restore public benefit as one of the principle objectives.

The CRC Review will involve close consultation with all stakeholders and I encourage all interested parties to contribute.

Since 1991, CRCs have worked as incubators of Australian innovation. CRCs have focussed their collaborative expertise and resources on building a better Australia across six national sectors: mining and energy, environment, medical science and technology, advanced manufacturing, agriculture and rural based manufacturing, and information and communication technologies.

Within these six sectors, CRCs have created innovative, new products and services, patents and intellectual property, encouraged businesses and industries to become involved in research commercialisation, and played a vital role in building talent and state-of-the-art industrial infrastructure for Australia's long-term economic growth.

Such innovation milestones include: advanced carbon composite manufacturing for jet aircraft such as Boeing's new 787, the utilisation of unique genes for drought tolerant wheat, 30-day contact lenses, the Cochlear 'bionic' ear, new radar sensors that improve mine productivity and safety, and numerous software

products that help manage Australia's inland rivers and catchments and assist in identifying mineral resources.

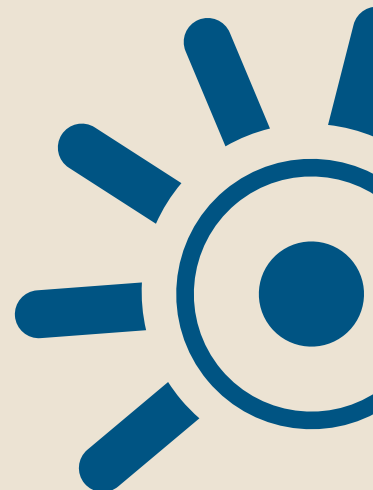
This summer edition of the CRC Program newsletter celebrates ongoing innovation in Australia's CRCs. The CRC for Coal in Sustainable Development, and partner CS Energy, have designed the world's first pulverised-coal, 'oxy-fuel' power station to be built at Callide, Queensland. Innovative technologies will be used to produce and capture a carbon dioxide gas stream for a cleaner, greener electrical power future. CAST CRC has developed unique light-weight, high-temperature magnesium alloys for use in engines and power-trains to make cars and trucks lighter, greener and more fuel efficient.

CRC for Wood Innovation has developed a process to seal preservative chemicals within timber products to prevent environmental leaching. Desert Knowledge CRC has developed telemetry and telecommunication products to assist farmers in the management of their remote water supplies and stock. Environmental Biotechnology CRC's nitric-oxide process has multi-million dollar implications for cleaning membranes and pipes in desalination and water recycling plants worldwide.

These innovations reflect a vibrant, dynamic CRC Program capitalising on the energy, creativity and productivity of Australia's diverse research, engineering and technical talent and resources.

It is my hope that CRCs will continue to act as centres of synergy and multi-disciplinary enterprise where ideas, people and resources meet for an innovative Australia.

Senator the Hon Kim Carr, Minister for Innovation, Industry, Science and Research



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NIS Review and impact on CRC Selection Round

On 22 January 2008, the Government announced a major review of Australia's National Innovation System (NIS) to be conducted by an expert panel chaired by Dr Terry Cutler. The panel will provide a 'Green Paper' to the Government detailing policy options by 31 July 2008. This will be followed by a White Paper response from Government later in the year.

The NIS Review is about building a strong, robust and truly national innovation system to bolster Australia's innovation performance and international competitiveness.

As part of the review process, the panel will consult nationally with a broad cross-section of the Australian community. It has held public consultation meetings in March and will conduct specialist workshops in April and May. Interested stakeholders can contribute to the review process by sending their views and ideas to the NIS website (see link below).

Evaluation of the CRC Program will be undertaken as part of the broader NIS Review.

The Collaboration and CRC Review Working Group will examine the overall strategic direction of the CRC program, evaluating a wide range of fundamental characteristics, including governance and program design matters, the level and length of funding needed to support the program's objectives, as well as its overall scope and effectiveness.

This element of the NIS Review highlights the Government's commitment to the advancement of science and innovation and to identify areas to further promote and encourage investment and collaboration between research, industry and government, as well as to restore public benefit as one of the primary objectives of the CRC program.

The Collaboration and CRC Review Working Group will be chaired by NIS Review panel member, Professor Mary O'Kane who has extensive experience in high technology, commercialisation, national research strategies and higher education policy.

Stakeholder participation in the review is central to its success and Professor O'Kane calls on all interested parties to contribute to the review process.

The next CRC selection round will be held once the Government has considered the recommendations of the NIS Review.

Senator Carr said, 'Our aim is to have the next selection process completed by the middle of 2009. I have asked my department to liaise with CRCs about the review and to put in place a process to manage the impacts of a delayed selection round.'

More information is available at www.innovation.gov.au/innovationreview and on the CRC Program website - www.crc.gov.au



Aerial shot of Walter and Eliza Hall Institute's Biotechnology Centre, La Trobe Research and Development Park, Bundoora, Victoria

Cancer Therapeutics CRC launched

The new CRC for Cancer Therapeutics was officially launched on the 3 December 2007. The CRC will create a world class cancer research organisation headquartered at Walter and Eliza Hall Institute's Biotechnology Centre at Bundoora, Victoria.

The CRC aims to bring together Australia's foremost expertise in cancer biology, oncology and drug discovery to establish one of the largest public/private research organisations dedicated to cancer research in the world.

The major aim of the CRC is to turn promising biological ideas into drug candidates for testing in clinical trials and will particularly focus on the discovery and development of small molecule drugs.

While based in north eastern Melbourne, the CRC has research nodes in Brisbane and Adelaide, and partner organisations as far flung as London and California.

Core partners include Bionomics Ltd, Bio21 Cluster, Peter MacCallum Cancer Centre, Griffith University, CSIRO, Monash University, St Vincent's Institute, The Cancer Council Victoria, Millipore Corporation and Cancer Research technology Ltd.

More information at www.cancercrc.com

Frost Tolerant Wheat



Molecular Plant Breeding (MPB) CRC researchers and Australian farming consortium, Green Blueprint International Ltd, hope to develop frost tolerant wheat from the genes of an Antarctic plant, in order to protect Australia's wheat crop from losses of over \$100m per year.

If successful, the research will enable growers to sow crops earlier in the season, to reduce the risk of frost damage and to avoid the effects of drought on maturing grains.

Antarctic Hairgrass is one of the few plants to successfully colonise the icy continent withstanding temperatures as low as minus 30 degrees Celsius. It possesses an antifreeze-like protein that binds to ice and inhibits the growth of ice crystals.

Although genes of the so-called Ice Recrystallisation Inhibition Proteins (IRIPs) are not unique to Hairgrass and are also

found in wheat and barley, researchers are hopeful that the novel characteristics of the Antarctic genes will lead to better ice crystal inhibition and improved frost protection.

Green Blueprint farmers include those from frost-prone areas of the West Australian Wheatbelt who want to invest directly in new technologies that make a significant difference to productivity.

GBI chose MPBCRC as a research and development partner to conduct the project after the CRC recently planted Australia's first drought-tolerant GM wheat trial.

MPBCRC CEO Dr Glenn Tong said 'the grain growers came to us with a serious problem and we are going to try to solve it for them using state-of-the-art biotechnology'.

More information at www.molecularplantbreeding.com

Wheat to receive frost-resistant Antarctic Hairgrass genes

Deep Sense Reveals Minerals

CRC for Landscape Environments and Mineral Exploration's (LEME) 13-year study of Australia's ancient, weathered, and sediment covered terrain (called the Regolith), has paid mineral wealth dividends, reflected in the recent upsurge in over 170 exploration licence applications (ELAs).

LEME applies world-class science, geophysics, and ground, airborne and remote sensing technologies to create new knowledge of Regolith structure and evolution, and to guide mineral explorers to new world-class ore bodies within and beneath the Regolith.

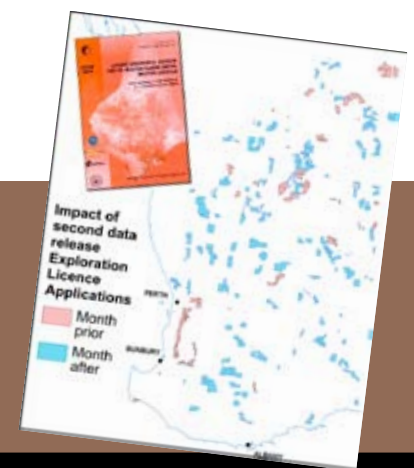
Over 100 ELAs were lodged in Western Australia's mineral rich Regolith region (the Yilgarn) following the publication in June 2007 of the *Laterite Geochemical Atlas and Database for the Western Yilgarn Craton*. This publication was the culmination of a collaborative project between CRC Leme, Geological Survey WA, CSIRO Exploration &

Mining, and the Minerals & Energy Research Institute WA.

The Yilgarn covers the bulk of the Western Australian landmass including the Goldfields and Wheatbelt regions. The atlas collates some 3,150 geochemical field samples to provide a picture of the State's regional geochemistry trends and major rock type differences.

Some of the significant trends identified include increased gold abundances in the north-east of the Yilgarn sampling area, and the potential for gold and base metals mineralisation in the western Yilgarn area.

The publication of a second mineral map covering South Australia has created a surge of over 75 ELAs. The new *Paleodrainage and Tertiary Coastal Barriers Map of South Australia* (May 2007), involved both the CRC and partner Primary Industries and Resources South Australia (PIRSA).



Impact of CRC LEME's data release in June 2007: Map of Western Australia and Exploration Licence Applications (ELAs in blue: ELAs in pink - the month prior to LEME data release)

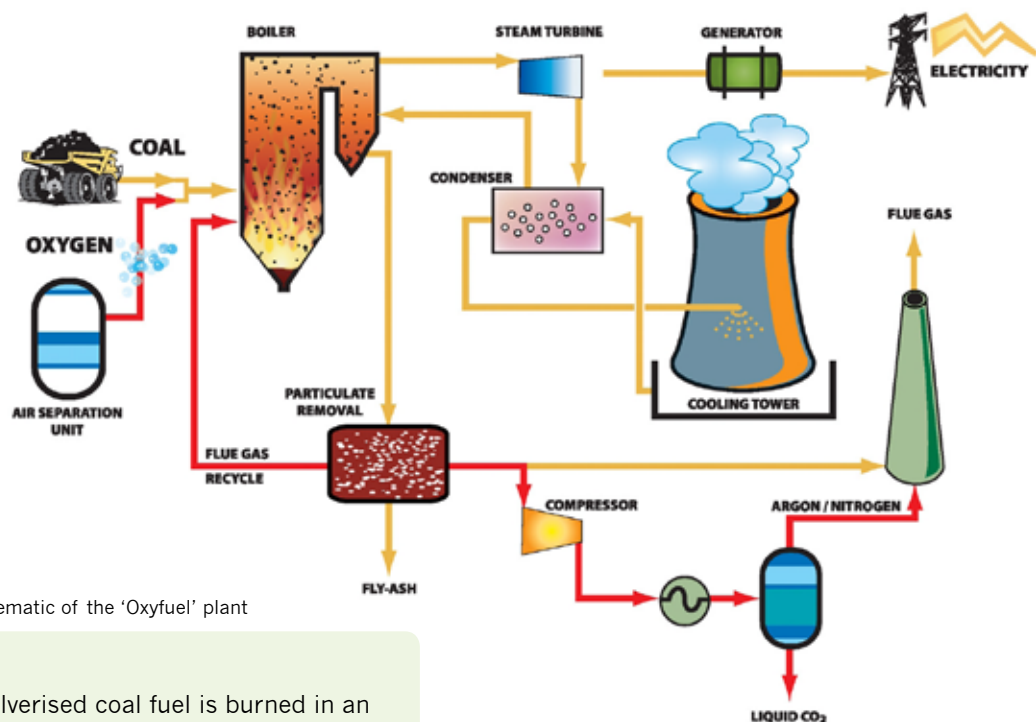
The South Australian ELAs have been lodged over ancient river channels and coastal sand and sediment barriers, called paleo-channels, identified from satellite sensing, drill core sampling and topological studies.

The Space shuttle's radar, and NOAA's satellite night-time thermal imager, were employed in the South Australian study, revealing where mineralisation is expected to have accumulated from 1000s of years of water and weathering processes.

More information at www.crcleme.org.au

Cleaner, Greener Coal-Power from Oxyfuel

Successful completion of CRC for Coal in Sustainable Development's (CCSD) engineering feasibility and design study on Callide-A boiler near Biloela, in central Queensland, has led to the green light being given by the Queensland Government to build a \$200m, world-first, oxyfuel power generation demonstration plant.



Schematic of the 'Oxyfuel' plant

Oxyfuel means that pulverised coal fuel is burned in an oxygen-fired stream with flue gases recycled to remove fly-ash and carbon dioxide for near zero-emissions electricity generation. Oxygen firing has the added advantage that it also halves nitrous oxide pollution.

The benefit of the new cleaner-coal technology is its potential for retro-fitting to Australia's existing coal-fired power stations which represent an electrical generation investment of over \$40 billion.

CRC partner CS Energy is now fitting a 30 Megawatt demonstration unit at Callide-A with additional technologies to enable the capture of the carbon dioxide stream for compression, liquefaction, and later geo-sequestration.

Electricity is expected to be generated from the new process early in 2009, with transport and storage of the carbon-dioxide planned from 2010 in deep geological formations - at a site yet to be selected.

The CRC for Greenhouse Gas Technologies is assisting CS Energy in the geo-sequestration tasks, while CCSD continues to work on a novel technique to provide oxygen to the combustion chamber and on more energy-efficient

oxygen production and chemical looping. CCSD is also continuing its engineering studies on sequestration ready power plants and new-build applications applicable to Australian and overseas markets.

CCSD CEO Mr Van Schagen says 'this demonstration plant will show that it is possible to capture almost all of the carbon dioxide emitted when coal is burnt to make electricity. It really puts Australia, and Queensland, on the global energy map.'

International collaboration has been a hallmark of the project with a consortium led by the Japan Coal Energy Centre (JCOAL), and technology provider Ishikawajima-Harima Heavy Industries, involved in this world-first, commercial demonstration plant. It has been recognised as a project of significance with the Asia Pacific Partnership on Clean Development and Climate and is funded under the Commonwealth Government's Low Emissions Technology Demonstration Fund (LETDF).

More information at www.ccsd.biz



Timber preservation facility improves efficiency and costs

Preserving Wood for a Cleaner Environment

CRC for Wood Innovations has developed preservative technology that impregnates wood in less than a minute to create a plant process which allows greater efficiency in chemical treatment as well as substantial savings in capital costs.

Australasian company TimTech Chemicals, the exclusive licensor of the technology, has built one treatment operation in Australia and another in New Zealand, with future ambition of plant sales to other regions as its advantages are demonstrated locally.

The CRC technology ensures all central sapwood is penetrated in a dip-free, touch dry, production process.

The technology is the brainchild of CRC researcher Professor Peter Vinden of the University of Melbourne and based on the scientific study of the microstructure of timber.

Professor Vinden said the technique is very environmentally friendly with the preservative chemicals able to be fixed inside the timber through a high temperature process, preventing leaching out onto the surface or surrounding soil where people or crops could come in contact with them.

CRC CEO Professor Tom Spurling said 'Input from TimTech staff has been vital to bringing the technology to market'.

More information at www.crcwood.unimelb.edu.au

WOW, SAND and Telemetry Tackle Outback Tasks

The CRC for Desert Knowledge was busy in 2007 with trials of innovative new Remote Animal Management Systems for pastoralists and outback station managers. 'Walk-Over-Weighing' (WOW) is an automatic weighing system developed by the CRC for Sheep Industry Innovation and adopted for cattle use by Desert Knowledge CRC and CAWD Engineering.

WOW is typically placed on the animal walking track to water troughs with data transmitted back to office computer. The system scans the ear tags of cattle and their weight-gain over time. The system dramatically reduces mustering costs, and improves the capacity of managers to respond to small changes in animal condition.

The second innovative technology named SAND is a telecommunications innovation of University of Wollongong CRC researchers in association with desert Knowledge CRC. SAND (or Sparse Ad-hoc Networks for Deserts) is a next-generation broadband-width communications technology utilising the UHF radio network for the real-time video monitoring of remote water supplies, bores and yards in the bush.

The equipment is inexpensive and requires no ongoing communication subscription fees and can be linked to satellite web service or landline for transmission to local towns or anywhere in Australia.

The technology has been in trial for more than six months at the well-known central Australian cattle station, Napperby, 190kms north-west of Alice Springs. Napperby held a field day for cattle producers in October 2007 to reveal how the technologies can be integrated into pastoral operations.

Other remote management technologies demonstrated included Observant Pty Ltd's remote switching on-and-off of water pumps at bores and monitoring water flows to stock, which reportedly saves at least 10 hours per week of manual checking of water infrastructure.

Ultimately it means producers will have tools for decision making and automated processes to monitor and control their herds with great precision.

Run by Desert Knowledge CRC, the projects and field day involved the CRC for Sheep Industry Innovation, the Northern Territory Department of Primary Industries, Fisheries and Mines, NSW Department of Agriculture, CAWD Engineering and Observant.

More information at www.desertknowledgecrc.com.au

Technology comes to the cattle yards





o.d.t.Engineering team, Dandenong, Victoria

CASTing for a Lighter Future

CAST CRC and its commercial partners are creating a cleaner, greener future for Australia through research and development into light metals and light metal technologies.

Alloys that contain aluminium, magnesium and titanium – the so-called light metals – are much lighter than those made from other metals. Their weight is particularly important in the aerospace and automotive industries, where lighter vehicles mean reduced use of non-renewable fuels and less problematic emissions.

CRC researchers in light alloys at Monash University, CSIRO and Deakin University, for instance, are developing magnesium alloys for use in power trains and structural components that could reduce the weight of an average car by up to 20 per cent, delivering greater fuel efficiency and lowering greenhouse gas emissions.

CAST CRC researchers have also developed a new high-temperature magnesium alloy (AM-SC1) suitable for engine blocks.

AM-SC1 is currently one of two alloys under evaluation in the US FreedomCar evaluation program to create a lighter greener car in the USA. This high temperature-resistant, high-strength alloy is also applicable to larger, heavily loaded vehicles.

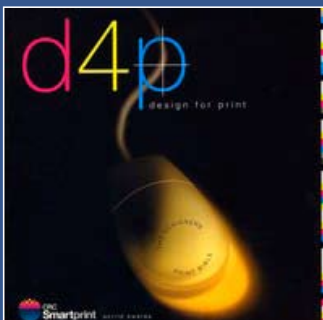
Another light metal success story is that of o.d.t Engineering which has licensed CRC intellectual property to create an export industry of new casting and manufacturing machines.

The Melbourne based company has developed a new direct chill casting technology for the high quality production of aluminium and magnesium products. It has also licensed CASTfill and CASTmould technologies in order to create state-of-the-art, high-speed, high-quality casting machines.

These technologies, which have led to new products for export by Australian manufacturers, are the result of years of scientific and technology collaboration between CAST and industry.

More information at www.cast.org.au

The Designers Print Bible



The CRC for Functional Communication Surfaces (CRC Smartprint for short) has launched a new booklet, *d4p: Design for Print*, to assist the Australian print industry with advanced graphics.

Due to the rise in functionality and sophistication of design software, graphic designers and desktop publishers are expected to perform complex prepress functions from the desktop. Many, however, have limited understanding of the technical issues facing printers attempting to bring their designs to fruition.

d4p: Design for Print is the result of in-depth discussions with printers and designers to work out why some jobs turn out to be production nightmares, and how they can be prevented. It focuses on clarifying the production issues that crop up between the initial design and the final printed piece, whatever technology is used.

More information at www.crc-fcs.com

Slime Busters

Environmental Biotechnology CRC (EBCRC) is applying new discoveries in microbiology to reverse osmosis (RO) membrane technology in order to increase energy efficiency in desalination and water recycling plants around the world.

As climate change and urbanisation puts a strain on global fresh water resources, water utilities are being forced to exploit desalination and poorer quality water sources including recycled water.

‘Such water changes are posing many challenges as not only are these sources more energy intensive, they are also more expensive to treat,’ said EBCRC Executive Director Dr David Garman.

Reverse osmosis membrane technologies are the central components of water processing plants and they can become fouled by slimy biofilms, created and spread by water-borne bacteria and microorganisms. This biofouling contributes to higher energy usage and costs in desalination and water recycling processes.

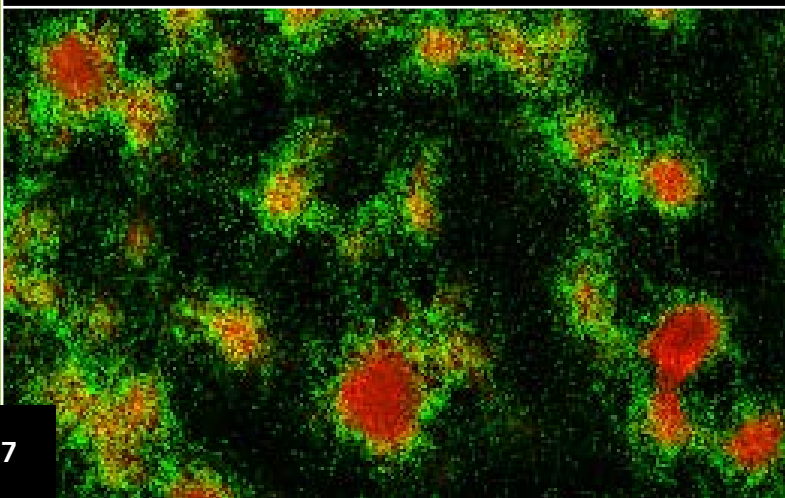
EBCRC researchers based at the University of New South Wales have discovered an effective natural cell signalling system that initiates dispersal in established biofilms and prevents the formation of new biofilms.

EBCRC’s Biofilm Control research program is now focused on applying this discovery to develop a range of control methods and formulations that are more effective and less costly than current removal technologies employing toxic biocides and chemicals.

Biofilm control formulations that stimulate natural bacterial dispersal events will have technology applications across many pipe and membrane industries, as well as in fresh produce washing and meat processing, for infection control and use in medical implant coatings.

More information at www.ebcrc.com.au

Red areas show death in biofilms



Bushfire on the Snowy Plains, ACT, March 2007

Megafires in a Hotter, Drier Australia

The most comprehensive and up-to-date assessment of the impact of climate change on bushfire weather in Australia was recently completed by the Bushfire CRC, the Australian Bureau of Meteorology and CSIRO Marine and Atmospheric Research. *Bushfire Weather in South East Australia: Recent Trends and Projected Climate Change Impacts* reports on new fire danger ratings such as the ‘catastrophic’ - experienced in the Canberra fires of 18 January 2003. In high-greenhouse gas-warming scenarios for Australia’s future, catastrophic fires are expected to double in frequency by 2020. By 2050, they are expected to become common occurrences across south and eastern Australia. The report, commissioned by the Sydney-based Climate Institute, is a resource to assist fire management agencies in planning for the impacts of climate change as well as encouraging debate on the urgency of greenhouse gas reduction policies.

More information at www.climateinstitute.org.au

Sea Ice Physics and Ecosystem Experiment

Sea ice plays an essential role in regulating global climate.

With concerns that Antarctic sea ice may be thinning, a team of international researchers, led by the Antarctic Climate and Ecosystems Cooperative Research Centre (ACE CRC), conducted a six-week winter expedition - Australia's first in 10 years to the Southern Ocean, locked in sea ice.

The earlier than usual foray into far southern waters was designed to gather sea ice measurements over the long, cold, dark winter before the summer thaw.

ACE CRC researchers completed ground-breaking tests of airborne and satellite methods, to determine whether sea ice in the Southern Ocean is changing in response to climate change.

The voyage was a major field component of the Sea Ice Physics and Ecosystem Experiment (SIPEX) - a multidisciplinary research project jointly organised by the Antarctic Climate & Ecosystems CRC and the Australian Antarctic Division. SIPEX is one of Australia's major project contributions to the International Polar Year (IPY).



SIPEX - Setting up an ice-monitoring station.

As part of this signature project, two Tasmanian teachers - Caroline Lapworth and Jane Dobson - joined the expedition to communicate their sea and ice experiences around the world. The teachers' web site featured daily reports from the cruise, blogs from the field scientists and a detailed description of the science program.

While the scientists are only just beginning to analyse the mountain of data gathered on the trip, the comprehensive SIPEX website continues to provide a lively forum, from primary schools to research institutions, for discussing the latest science on sea ice and its response to climate change.

More information: www.acecrc.org.au

CRC Association's 2008 May Conference



The CRC Association's 2008 Annual Conference will be held in Sydney at the Australian Technology Park, 21-23 May 2008. The Conference theme is 'Cooperative Research: The Engine of Innovation'.

More information at www.crca.asn.au

Awards to CRCs and partners

- CRC for Spatial Information (CRCSI) partner, Scanalyse won the 2007 Western Australia Inventor of Year for its laser scanning technology MillMapper.
- CRCSI partner, PSMA Australia Ltd has won the prestigious international Urban and Regional Information Systems Association's (URISA) award for its national spatial data management system LYNX. The award was presented in Washington DC.
- Dr Bruce Hinton of the CRC for Integrated Engineering Asset Management (CIEAM) received the 2007 Defence Minister's award for Achievement in Defence Science. The national science award recognises Dr Hinton's expertise in aircraft corrosion prevention which has saved the Australian defence force millions of dollars in the ongoing maintenance, repair and safety of aircraft.
- The CRC for Cotton Catchment Communities (Cotton CRC) and the CRC for Australian Weed Management (Weed CRC) both received 2007 Business/Higher Education Round Table Awards (BHERTs). 'Best collaboration with a regional focus' went to the Cotton CRC and partner, the University of New England, for their Summer Scholarships program. 'Best collaboration involving a CRC' went to the Weed CRC for their new weed management manual which draws on 20 years of weed research on herbicide resistant plants.



CRC for Spatial Information's partner, PSMA Australia Ltd, wins award for LYNX (from L-R, Martin Holmes, Director PSMA Australia; Ed Wells, GISP, 2007 URISA President; Kevin Sato, 2007 ESIG Awards Committee Chair)

- CRC for Irrigation Futures Program Leader, Professor Shabaz Khan, has won the Modelling and Simulation Society of Australia and New Zealand (MSSANZ) Biennial Medal, for his world-leading river catchment research.
- ACE CRC scientists have won 'micro-nobels', alongside Nobel primary winners Al Gore and the United Nations Inter-governmental Panel on Climate Change (IPCC). They include lead author Dr Ian Allison, contributing lead author Professor Nathan Bindoff, reviewer and contributor Dr John Church, and eight other ACE scientists.

ADVANCE ALERT!

2008 Prime Minister's Prizes for Science

We are seeking nominations to the 2008 Prime Minister's Prizes for Science, Australia's most prestigious science and science teaching awards. The Prizes are awarded to those who have made outstanding contributions to science and science teaching and who are currently active in research or teaching.

- The \$300,000 Prime Minister's Prize for Science
- The \$50,000 Science Minister's Prize for Life Scientist of the Year
- The \$50,000 Malcolm McIntosh Prize for Physical Scientist of the Year
- The \$50,000 Prime Minister's Prize for Excellence in Science Teaching in Primary Schools
- The \$50,000 Prime Minister's Prize for Excellence in Science Teaching in Secondary Schools



Closing date:
Friday 9 May 2008, 5.00 pm AEST

Nomination Guidelines and the online nomination process are available on the Science Prizes website at www.dest.gov.au/scienceprize

Secretariat contact:
Tel: (02) 6240 5066,
Fax (02) 6123 6168
email: pmprize@dest.gov.au

Hotting up for National Science Week 2008

Senator Kim Carr, Minister for Innovation, Industry, Science and Research, has announced \$500,000 in funding to support 40 innovative projects for National Science Week 2008.

“As Australia competes globally in areas such as innovation, engineering, science and research, it is important for the whole country to be aware of our achievements and to be encouraging future growth in science,” Senator Carr said.

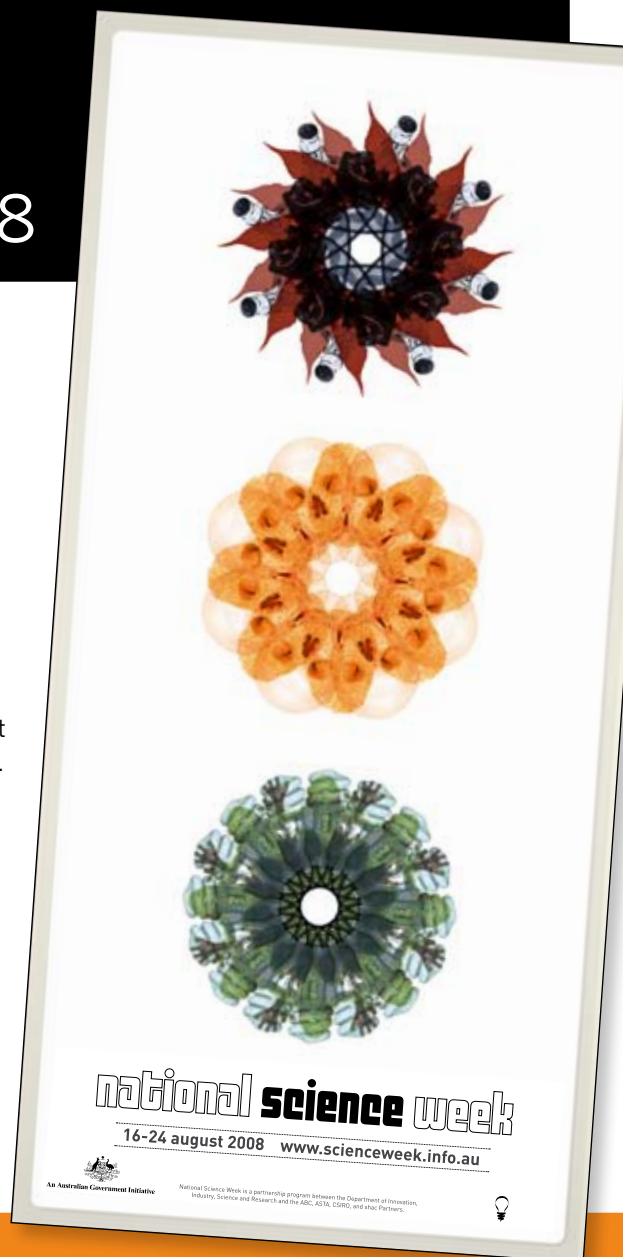
National Science Week 2008, taking place between 16-24 August, demonstrates the extraordinary diversity of science applications. The Week will feature art exhibitions, film competitions, drama productions, rock concerts, parties, panels, forums and science experiments. Events are not limited to capital cities. Broome, Goondiwindi, Portland, Lake Macquarie, Mt Isa and Dubbo are just some of the places where events will be taking place.

The Australian Government will also fund a speaking tour by two international speakers and additional National Science Week projects in schools.

The many volunteers who help make Science Week a huge success will develop over 600 public events Australia-wide.

“I encourage all Australians to help us pat our scientists and researchers on the back by participating in National Science Week 2008 and celebrating Australian innovation, creativity and know-how,” Senator Carr said.

More Information at www.dest.gov.au/scienceweek



About this newsletter

CRCs Success Through Innovation aims to keep you informed about news and events that may be of interest to you. Contributions are always welcome.

More information on the CRC program is available from:

Cooperative Research Centres Program
 Department of Innovation, Industry, Science and Research
 GPO Box 9839, Canberra ACT 2601
 Phone: (02) 6240 5011
 Email: crc.program@innovation.gov.au
 Website: www.crc.gov.au

About the Program



The CRC Program commenced in 1991 and is an Australian Government funded initiative that is actively boosting collaboration and innovation-focussed science research and development. Since the Program's inception, the Australian Government has shown its commitment through funding of almost \$3 billion.

The close interaction between academic researchers and business people fostered by the CRC Program is turning Australia's scientific breakthroughs into successful new products, services and technologies – many of which are entering international markets.

The Program's success was further ratified by Insight Economics' *Economic Impact Study of the CRC Program* that showed CRCs generated economic benefit well in excess of the investment made by the Australian Government. Insight Economics found that for every \$1 invested by the Australian Government CRCs generated \$2.16.

Currently there are 58 CRCs operating across six sectors: manufacturing technology, information and communication technology, mining and energy, agriculture and rural based manufacturing, environment and medical science and technology.