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A newspaper of the University of South Australia



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Ecocentre - greenhouse for sustainable communities

by Geraldine Hinter

Mawson Lakes campus will soon have a new focal point for ecological research and teaching with construction underway next to the wetland ecosystem.

The first stage of the new EcoCentre will be a modern greenhouse and teaching areas planned for applied scientific research on bush food production and toxic contaminants affecting human health and natural ecosystems. The second stage will include walking trails, plant propagation rooms, and ultimately plans for an environmental interpretive centre with a theatre.

The centre will be a model for sustainability, focusing on environmental management, land care, and healthy lifestyle research and education, according to Director Joan Gibbs, lecturer in the School of Natural and Built Environments.



The EcoCentre aims to incorporate sustainable technologies such as solar energy, wind power generation, rainwater collection, passive energy use, and appropriate design considerations using principles of ecologically sustainable development.

"We want to do experiments in the greenhouse utilising recycled water and solar energy, and we want to bring together all of these examples of a sustainable society into a research and education facility for school and community groups to learn about sustainability, reconnect with the environment, and get a taste of bush food," Gibbs said.

Students from biodiversity courses at Mawson Lakes have been growing bush foods for an Aboriginal restaurant in the Coorong and Gibbs is planning similar projects at the EcoCentre, with organised tastings of bush cuisine like wattle seed coffee and wild strawberry dipped in white chocolate.

"We are also growing native grasses for biodiversity research, which involves burning to remove the thatch so that new growth can come up, releasing nutrients to keep the soil healthy," Gibbs said.

Senior Research Fellow Dr Albert Juhasz from the Centre for Environmental Risk Assessment and Remediation (CERAR) said the greenhouse would be a valuable research facility for investigating the use of plants for remediating contaminated land.

Toxins from contaminated soils will also be studied for their impact on plants, earthworms and other microbial processes, which are indicators of soil health. In addition, the possible transfer of contaminants from soils to plants, and then up through the food chain will be assessed for risk factors to human health.

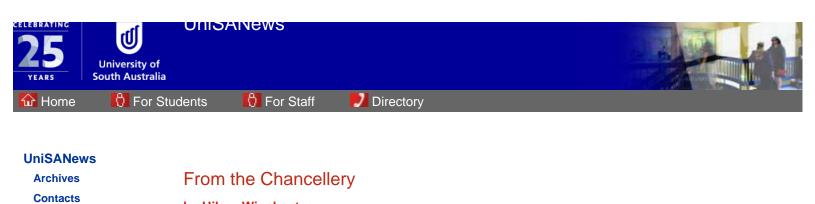
Researchers from UniSA's Sustainable Energy Centre (SEC) will install and then compare the efficiencies of two different types of solar panels to be used at the EcoCentre. Research Engineer Lachy Mudge said that in addition to supplying solar energy to the greenhouse, the panels would be used to generate power for the University's electric car, with excess solar energy channeled for use elsewhere on campus or returned to the electricity grid.

The EcoCentre's foundation committee partners include UniSA's Sustainable Environments Research Group, CERAR, the Institute for Sustainable Systems and Technologies, SEC and TAFE SA.

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by Hilary Winchester Pro Vice Chancellor: Organisational Strategy and Change

Any institution is the sum of the skills, energy and efforts of its people.

UniSA is served by people of great distinction, and, with almost 3000 staff, our strengths are many and varied.

The recent Australian Universities Quality Agency Audit commended the University for our attention to the training and development needs of staff and for the services we provide.

However, to help gauge our performance more accurately and to learn more about the needs of staff on an institution-wide scale, we regularly carry out a Staff Attitude Survey.

The first Survey was conducted in 1999; the most recent in 2002.



Both surveys provided extremely useful information about staff perceptions on where we are performing well and where improvements are needed.

In response, many positive changes have been implemented by the University, including increased learning and development opportunities for staff; significant improvements to internal communications; development of awards to acknowledge achievement; and initiatives to strengthen the UniSA culture (including quiz nights, family days, and revues).

This month, all University staff will be invited to complete the third Staff Attitude Survey.

The confidential online questionnaire seeks to discover how the University is travelling in relation to valuing, supporting and rewarding our staff.

As a large, complex, multi-campus, multi-location organisation, it also provides a secure avenue for uncovering any issues in the local workplace.

The process is independently managed by a Melbourne-based consulting firm and the results are benchmarked against previous results and those of similar surveys contained in the consulting firm's database.

This year's Survey will be similar to the previous one, but also with a focus on UniSA's priorities such as the online strategy, stronger performance management processes, and the values placed on research.

This approach ensures consistency but also enables the University to benchmark its results against the higher education sector and other relevant organisations.

Details about the 2005 UniSA Staff Attitude Survey will be distributed by email to all staff in the week commencing August 8.

This will be shortly followed by an email from the consulting firm containing a link and password to the survey. We encourage all staff to participate.

It is the quality of our staff – academic and general – and their willingness to commit themselves to give of their best which makes us successful.

To ensure their ongoing commitment, and to continue to attract outstanding people, the University is dedicated to the continuous improvement of our working environments and the services we provide to staff, students and the wider UniSA community.

The Staff Attitude Survey is just one of the ways in which we seek the thoughts, opinions and ideas and of our people, as we strive to maintain UniSA as an employer of choice in the marketplace.

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In Brief

Garth Boomer building honoured

UniSA's Garth Boomer building at Mawson Lakes has been commended at prestigious architecture awards night for new buildings. The building designed by Russell & Yelland Architects and Guida Moseley Brown Architects was honoured at the Roval Australian Institute of Architects SA Architecture Awards. The Mawson Centre also designed by Russell & Yelland Architects and Guida Moseley Brown Architects received the highest honour - the RAIA Award of Merit. The development was the result of an innovative partnership between the SA Department of Education & Children's Services UniSA, the City of Salisbury, Delfin Lend Lease and the Land Management Corporation. Awards Jury Director Ken Milne said the awards had been selectively given to projects of exceptional standard.



These projects are now be eligible to win RAIA National Architecture Awards on October 27.

Vice Chancellor to judge prestigious awards

UniSA's Vice Chancellor Professor Denise Bradley AO has been named as a member of the 2006 selection Committee of the world's premier prize for achievement on behalf of humanity and the environment, the Rolex Awards for Enterprise. Prof Bradley has been named as a member of the panel of distinguished international figures that will select the Laureates and Associate Laureates in the twelfth cycle of the awards. She is the third Australian to serve on the committee. Prof Bradley is Chair of IDP Education Australia and the Australian Technology Network; Treasurer of the International Association of University Presidents; a Director of Open Universities Australia; and is a Member of the Board of Directors of the Australian-American Fulbright Commission Board, the Higher Education Round Table and the



Australian Vice Chancellor's Committee. She is also extensively involved in national education policy. The Rolex Awards for Enterprise aim to encourage a spirit of enterprise in visionary individuals around the globe by providing the financial support and recognition they need to implement innovative working projects that advance human knowledge and wellbeing. The awards are presented every two years in five key areas of recognition: science and medicine, technology and innovation, exploration and discovery, the environment, and cultural heritage. In April next year, the then person judging panel will meet in Geneva under the chairmanship of Rolex CEO Patrick Heiniger to select individuals whose innovative, life-enhancing projects have made an impact on humanity as laureates. Five laureates will be honoured at a ceremony in Singapore in October 2006. Each will receive a gold Rolex chronometer and \$US100,000 to further their projects.



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Classifieds

For sale

Magna TN SE auto sedan, air con, elect mirrors, colour 'Auburn Mist', genuine 45,000 km, 1 owner (retiree), service history available, bridgestone B249 tyres, reg 8/05, exc. condition, \$4,000 ono. Contact Anna (08) 8302 2142

Double bunk, good quality tubular steel (fire-engine red) in excellent condition, \$100. Contact julie.read-packham@unisa.edu.au

Accommodation

Single professional male, (friend of Rick Sarre) looking for house sitting opportunities during August in Adelaide.

Contact Rick Sarre 0407 431 077.

Accommodation needed, Swedish family (two academics and two small children) will be in Adelaide at UniSA and Flinders from January until June 2006. They are looking to rent accommodation preferably somewhere between the two universities. Contact Rick Sarre 0407 431 077.

Got something to sell?

Notices in the UniSANews classifieds are free to UniSA staff and students (space is allocated on a firstcome first-served basis). Email your notices(keeping them shorter than 30 words) to unisa.news@unisa.edu.au

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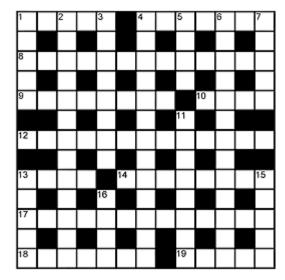
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Colgan's Cryptic Crossword



Across

- 1. Partisan has one out-positioned (5)
- 4. Reduced the rent and prospered (7)
- 8. Worker has land, part of WA (7,6)
- 9. Directions for entrée of fish and shellfish (8)
- 10. Book of Hansard? (4)
- 12. Where Israelis can study lots of grouper, not flathead (6,7)
- 13. Scarcely two-thirds of songbird is seen (4)
- 14. One in religious committee rejected American god (8)
- 17. High-flying fellow has several days leave before getting sporting accolade (4,2,3,4)
- 18. Placed lower, with disappointment (7)
- 19. Trojan leader appeals for Herculean efforts (5)

Down

- 1. Wash the baby's top half first! (5)
- 2. Stitch up imprisoned chief with complete authorization (6,7)
- 3. Everlasting, like a wallflower, perhaps (8)
- 4. Scared stiff, slips hand inside 10 (6,7)
- 5. An extreme of rampant dishonest practice (4)
- 6. Virginia is captivated by evil spirit (13)
- 7. Irritates squealers (5)
- 11. Article about local street is of least substance (8)
- 13. Fellow with a head-start upbringing (5)
- 15. Interests held in drinks (5)
- 16. Decision of emigrè from here? (4)

Wine to win

For your chance to win a bottle of fine wine, fax your completed crossword to (08) 8302 5785 by Friday August 19.

Solution



Explanations (C = cryptic part of clue + S = straight part of clue;

or S + S = clue holding answer twice with two different straight meanings; or POW = play on words.)

Note that joining words may or may not be an integral part of the clue. Punctuation and capital letters are irrelevant.

The art of the setter is to make it non-obvious how and where to split the clue, and to mislead the solver along an irrelevant path.

Across

- 1. C: partisan (biased) has one out (remove I)
- S: positioned = based
- 4. C: reduced the (th) rent (riven)
- S: prospered = thriven
- 8 C: land (tract) part of WA (Ord River)
- S: worker = tractor driver
- 9. C: directions (E,S) for entrée (before) fish (callop)
- S: shellfish = escallop
- 10. POW: Book (Acts, in Bible) of Hansard? (contains "acts")
- 12. C: lots of grouper (jewfish schools), not flathead (remove "f")
- S: where Israelis can study = Jewish schools
- 13. C: two-thirds of songbird (two-thirds of "canary")
- S: scarcely = nary

14. C: one in religious committee rejected ("I" in "synod", backwards) American (US) S: god = Dionysus

- 17. C: high-flying (aloft) fellow (he) several days (week) leave before (go, in front)
- S: sporting accolade = goal of the week
- 18. C: placed lower (let down)
- S: disappointment = letdown
- 19. C: Trojan leader (T) appeals (asks)
- S: Herculean efforts = tasks

Down

- 1. C: the (the) baby's top half first ("ba' in front)
- S: wash = bathe
- 2. C: stitch up (sew) imprisoned chief (surrounding "arch") complete (arrant)
- S: authorization = search warrant
- 3. S: everlasting = dateless
- S: like a wallflower, perhaps = dateless
- 4. C: slips (errors) hand (mitt) inside 10 (inside "ten")
- S: scared stiff = terror smitten
- 5. C: an extreme of rampant ("r" or "t")
- S: dishonest practice = rort
- 6. C: Virginia (VA) is captivated by evil (inside "viciousness")
- S: spirit = vivaciousness
- 7. S: irritates = narks

S: squealers = narks 11. C: article about local ("the" around "inn") street (st) S: of least substance = thinnest 13. C: head-start upbringing (leg-in, brought upwards) S: fellow = Nigel 15. S: interests = sakes S: drinks = sakes (Japanese) 16. C: decision of émigré (to go) S: from here? = Togo

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Happiness is a head in the clouds

by Rebecca Jenkins

For many land lovers just the thought of sitting at the controls of a plane thousands of feet above the ground is enough to bring on a cold sweat.

But for experienced pilot David Harris, soaring through the skies is nothing short of meditation.

The senior research fellow with the Systems Engineering and Evaluation Centre at Mawson Lakes learned to fly in Tiger Moths at the age of 16, before he even had his driver's licence.

"I used to ride my pushbike to the airfield, and then get in the plane and fly," he said.

"It's the amazing feeling of being able to get away from everything. It's a feeling almost like meditation."



Aviation remained a large part of Harris's early career from flying jets when he was completing his national service, to working as a test pilot for a light aircraft firm in England.

These days, the Sport Aircraft Club of SA president keeps his feet on the ground during his day job, but loves taking to the skies in his spare time.

Earlier this year he used his skills to help fulfill an ambition of Lea Trowbridge, a friend battling cancer, who always wanted to fly around the Kimberlies.

Harris, Lea and Tom Trowbridge planned a three-week flight up the centre of Australia, to the Kimberlies and along the coast of Western Australia before tracking back to Parafield Airport.

"We three friends have all had 'The Big Fright' – a diagnosis of cancer. It is not a pleasant thing to happen, but it does have the positive effect of focusing life onto what matters," Harris said.

Throughout May, they flew over and dropped into some of the most dramatic and remote spots in Australia.

Having to hand-start one of the plane's engines, deal with never ending attention attracted by their unusual plane – an Aero-145, and negotiate clouds of bull dust at the airfield at the Bungle Bungles were among the highlights of the adventure.

The air strips they used were often basic – but welcoming. At Dalhousie Springs, for example, there was the nice touch of a luggage trolley on the air strip to take the luggage 200m to the camping area.

But when it came to move onto the next stop, the crew was always pleased to be spared a bumpy ride across the scorched desert roads.

"When everyone got into their cars to drive over the corrugated roads, we simply climbed in the aeroplane and flew on to the next stop," he said. "Though sometimes we had a bumpy ride through the scorched desert air."

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Our People

Denise Wood

My connections with UniSA extend back to the 1980s when I completed my first degree in Social Work at UniSA's antecedent institution, the SA Institute of Technology. While I only worked as a practicing social worker for a few months before launching into a new career path in multimedia and education, the communication and counselling skills gained from that first degree have proved invaluable in my role as Program Director of the Bachelor of Arts (Multimedia Studies) program in the School of Communication, Information and New Media at UniSA.

My career in multimedia and education evolved from my research work at the Regency Park Centre for the Young Disabled during the 1980s. As Director of Research and Development, I was involved in a range of research activities funded by what was then known as the Channel 10 Medical Research Foundation. But



what really attracted my interest and energy, was the potential that computer technology and multimedia offered young adults with disabilities. This led me to undertake a Post Graduate Diploma in the Instructional Uses of Computers offered by yet another UniSA antecedent institution, the SA College of Advanced Education, followed by completion of a PhD in Education at Flinders University focusing on the use of multimedia in education.

In 1994 I established a small multimedia company providing contract opportunities for young adults with physical disabilities who had completed studies in multimedia and were keen to work in this industry. This educational background, together with industry experience in the field of multimedia, led me to apply for the position of Senior Multimedia Producer at the Flexible Learning Centre in 1998. In 2000 I was appointed to the role of Professional Developer focusing in online teaching and learning, and then in 2002, I was appointed to my current role as Senior Lecturer and Program Director in the School of Communication, Information and New Media. Since that time I have pursued further studies to value add to my role as teacher and Program Director, completing a Post Graduate Diploma in Flexible Learning, and a Master of Educational Technology at the University of Southern Queensland.

Little did I know that my diverse background in social work, research, education and multimedia would eventually lead me to a role demanding precisely that mix of skill and experience. While the role of Program Director is challenging, and at times extremely demanding, I would not have it any other way. I enjoy the mix of academic counselling, teaching and leadership that goes with the role of Program Director, and I am fortunate to work with a team of talented academics who have both vision and enthusiasm for the program. This year has been an exciting one, as for the first time, we have offered a program Director, and I look forward to the opportunities that lie ahead for our rapidly evolving program.

Denise Wood is Program Director, School of Communication, Information and New Media.

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Academic board

June 2005 by Peter Cardwell

Credit transfer arrangements with TAFE

New credit transfer arrangements with TAFE were approved. A minimum amount of block credit was approved for all undergraduate programs at the University for completed TAFE awards at each level from Certificate IV onwards.

Completed TAFE awards may be used fro both entry and credit, and block credit beyond the minimum may also be given in related and unrelated awards.

Credit may be both horizontal, where credit is given for individual courses at introductory levels, or vertical, where credit is given for sequences throughout the award.

Maximum credit must not exceed the provisions of the University's Recognition of Prior Learning for Credit, Exemption and Studies in Lieu (A13), which means that a minimum of one year's full-time study must be undertaken at the University in order to gain a University of South Australia undergraduate award.

Block credit decisions will be managed at program level, reported to the Division, and entered in a credit transfer database, setting a precedent for block credit for future applications. Where there are significant deviations from the University's guidelines, the Division-based processes for endorsing credit arrangements will interrogate the justification for other arrangements and report the reasons to Academic Policy and Program Review Committee.

Guidelines for teaching and learning resources

Academic Board noted that there had been long discussions at the University Teaching and Learning Committee (TALC) into practices within the University such as the extent of student print quotas to ensure that costs are not unreasonably shifted to students with increases in online forms of delivery, identification of 'textbooks', the use of course specific readers, and the need for a set of teaching and learning guidelines.

On the recommendation of TALC, the Board approved an amended set of guidelines which require the following:

- The required printing for 4.5 unit courses, that is, printing necessary both to prepare and to submit assignments, including the printing of readings which cannot be accessed by the student in any other way, should not exceed 1/8 of a full year's print quota.
- Where readings are provided to students these should be drawn from a wide range of sources to reflect the literature of the field, provided to students at cost recovery and photocopied rather than commercially published.
- Readings may be provided in either electronic form or hard copy.
- Where hard copy is provided, the quality of the copy should be at an acceptable standard and in a font size not less than Times Roman 10.
- A textbook should only be nominated where it is used in a substantial part of the course.
- A book referred to on a regular basis should be identified as textbook.
- Resources required for a course should be stated in the Course Information Booklet and the costs associated with the acquisition of these resources should be part of the program approval process.

Academic Integrity

The Board approved the appointment of Academic Integrity Officers in Schools in the belief that academic integrity is a critical area for quality assurance and risk management for the University.

The role of Academic Integrity Officers will be acknowledged in workload allocation. While the network of Academic Integrity Officers will be coordinated by a staff member from the Flexible Learning Centre.

A central register of cases and penalties will be established University-wide and maintained by School Academic Integrity Officers and other authorised staff.

At the end of 2006, the effectiveness of Academic Integrity Officers and the amount of time required to fulfil their role will undergo review.

Program Development

The following program development proposals were approved:

Division of Business

- Category B Amendment Bachelor of Sport and Recreation Management
- Category B Amendment Bachelor of Business Administration Transnational Delivery in Malaysia

Division of Education, Arts and Social Sciences

New Program – Foundation Studies

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Intellimeet - making meetings work

by Emma Masters

Meetings are an integral part of business life and when run properly they help make organisations work more effectively.

Information technology (IT) researchers at the University of South Australia are looking at how IT can help support meetings and they've developed an intelligent meeting room to explore the possibilities.

Dubbed IntelliMeet, the meeting room is a system of integrated technologies that records meetings through video cameras and individual microphone headsets. It then provides a written transcript and analysis of the key issues discussed.

IntelliMeet will be available for both research and commercial purposes.

Computer and information science researcher and



IntelliMeet project leader, Professor Paul Swatman, said the system offers local businesses many services as well as the option to contribute to further research work the UniSA team is conducting.

"We have developed IntelliMeet to assist the business community in more ways than one," Prof Swatman said.

"People can finish a meeting and walk away with a complete video and audio recording on DVD and a full transcript, which is in itself useful. By running the transcript through text mining software, Leximancer, we get a conceptual map that represents the main ideas and how they are related.

"The combination of a visual record and an analysis of the most significant issues covered during the meeting means that whether businesses are conducting a focus group, a strategy meeting or a brainstorming session, they will be able to make use of their meeting outputs in completely new ways.

"More broadly, the rich research data we can mine from the system will help us understand more about how teams operate, order tasks, share roles and make decisions in non-routine situations."

Prof Swatman said IntelliMeet is also mobile so groups can have the system set up on their own premises.

"To research ways to make meetings more effective, we want to explore real meetings in real settings, so we can take the meeting room to them," he said.

"It's a facility that will aid any organisation or group that holds meetings. We are very excited about the launch and look forward to developing relationships and partnerships across Adelaide."

Prof Swatman will be launching Intellimeet at this months UniSA International Business Week, which includes seminars and workshops covering some of the more critical issues exporters face when venturing overseas.

Intellimeet will be launched on Monday August 15, from 11am - 1 pm at the Imperial Room, Quality Hotel Rockford, Adelaide.

For more information visit the International Business Week website www.unisaibw.kazgroup.com/events.asp or contact Prof Swatman at UniSA's School of Computer and Information Science.

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Major grant for commision at UniSA

by Rebecca Jenkins

A stunning public artwork by one of Australia's most successful artists will be a symbolic centrepiece of UniSA's new Chancellery building.

Fiona Hall has been commissioned by the University to create a thought-provoking piece for the entrance of the new building, which will also house the University's new Art Museum.

Hall, who lectured at the University's School of Art for 14 years and continues to live and work in South Australia, already has renowned public artworks in Sydney and at the National Gallery of Australia, Canberra, but this will be the first in her home state.

The work, entitled *Different Forms of Intelligence*, is made up of several sculptural elements, each modelled into geometric shapes which differently



portray the human brain. The finished work will be prominently displayed in a specially crafted glass 'vitrine', incorporated as an architectural feature of the new building, designed by WARDLE + HASSELL Architects in Association.

"In the world we inhabit today we are all too aware that intelligence, and creativity can take many forms, and that the fostering of multifarious ways of thinking and tackling problems and theories is of utmost importance in our schools and universities," Hall has said of her inspiration for the commission.

Different Forms of Intelligence has attracted a \$100,000 State Government grant, provided through Arts SA.Premier Mike Rann, who announced the grant last month, said he was delighted that Hall's first major SA commission will be for a flagship Adelaide building.

"This new contemporary work will make a welcome addition to the western end of North Terrace and become a new focal point along this magnificent cultural boulevard," he said.

UniSA Vice Chancellor Professor Denise Bradley said the Governments generous contribution was greatly appreciated.

"The Fiona Hall commision promises to be a memorable artwork of great artistic substance, by a South Australian artist at the peak of her powers," she said.

The work is based on the five regular polyhedra known as the Platonic solids. The tetrahedron, octahedron, cube, icosahedron and dodecahedron. Hall will use a range of materials including bronze, steel, stone, wood and glass. There will also be an anatomically correct brain made from glass.

UniSA Art Museum Director Erica Green said it was fantastic and timely that the University is undertaking such an artistically significant project with Hall, given its strong links with the artist.

"Fiona Hall is one of the most successful and important contemporary artists currently working in Australia and it is remarkable, really, that she has not until now been awarded a major public project of this kind, in this State." Green said.

"As with all her works of art, *Different Forms of Intelligence* operates on many levels, but it has strong themes of education and intellectual endeavour, which fit perfectly with the philosophy of our university and will appeal to many people."

The new building, on the corner of Fenn Place and North Tce is due to be opened in 2007.

A major survey exhibition of Hall's work, *The Art of Fiona Hall 1988-2005*, developed by the Queensland Art Gallery and curated by Julie Ewington, is on view in Adelaide at the Art Gallery of South Australia, until September 11.

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Solar energy for wastewater treatment

by Geraldine Hinter

Australia's dwindling water resources means that improving the quality of treated wastewater from sewage treatment plants for re-use has become more important than ever.

Researchers at UniSA are developing a unique treatment for wastewater that guarantees improved water quality over existing treatments without relying on expensive chemicals.

The poor quality of treated wastewater has limited its use for agriculture and aquaculture, according to Dr Bo Jin, Director of UniSA's Water Environment Biotechnology Laboratory.

"The last stage of any water treatment is to remove micro-organisms. Currently we use chlorine as the disinfectant but, even after treatment, the water still



contains organic compounds. Chlorine removes the micro-organisms but reacts to the organic pollutants, producing disinfection by-products that are biologically undegradable and toxic and can't be removed from the water. When transferred to the eco system, they can cause serious health consequences if used in agriculture and other industries. This growing problem is of particular concern to the United Nations, where close attention is being paid internationally to organic pollutants, which cannot be removed economically – but a solution is on the way," he said.

UniSA researchers are developing a single stage treatment that can remove biological and chemical contaminants in the treated wastewater from sewage treatment plants.

The new solar nano-photocatalytic wastewater treatment process can replace a chlorination disinfection step as a tertiary treatment process to disinfect the micro-organisms and at the same time remove the organic compounds, making the wastewater suitable as a water resource.

"Normally micro-organisms are used to break down large organic compounds but, because these compounds are biologically undegradable, we have to use another form of energy to break them down. Our energy comes from UV sunlight in association with photocatalysts. Energy generated from the photocatalyst cell reaction can kill micro-organisms and break down the undegradable compounds, resulting in clean water that can be used for an extended range of agriculture and aquatic uses – and it won't damage the eco system," Dr Jin said.

"The other good news is that this treatment process will be very cost effective because the solar photocatalysts can be recovered and reused. They use cheap energy from the sun."

Dr Jin recently won a Federal Government Australian Research Council Linkage Grant of \$285,000, with additional financial commitment from industry partner Australian Water Quality Centre, to further develop this novel process, looking at water quality objectives of technical reliability and economic and environmental sustainability.

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Feeling tired all the time?

by Geraldine Hinter

Do you do battle with your pillow and the alarm clock in an effort to wake up in time for work or class? Struggle to stay awake during daylight hours? Always feel tired even after an early night? Geraldine Hinter asked researcher Dr Jill Dorrian at UniSA's Centre for Sleep Research for expert advice on fighting tiredness.

While work is often seen as a major contributor to tiredness, with long hours, shift work at irregular times and highly stressful work environments, Dr Dorrian says many things can be done to maximise our sleep quality and keep us alert for work or study.

"To stay awake, drink lots of water. It stops the brain drain. When dehydrated, the brain is deprived of oxygen and nutrients that are essential for us to function fully." Dr Dorrian said.



"Like parched earth, without water the brain shrinks, we lose concentration and start to feel sleepy,"

"Drinking water is especially important for people in air-conditioned and heated environments, where dehydration rates are greater than in rooms without heat or air-conditioning.

"Naps are also very good, particularly power naps of 20 minutes or less, because people don't end up with sleep inertia (grogginess when they wake up). After longer naps they are likely to go into deep sleep and feel worse when they wake.

"One strategy to ease tiredness is to combine caffeine and a nap. If you have a cup of coffee and then sleep for 20 minutes, the caffeine will have kicked in by the time you wake up and you should feel energised. Caffeine also tends to reduce the effects of inertia," Dr Dorrian said.

While caffeine can be helpful when really tired, Dr Dorrian warns that coffee should always be used strategically.

"People who develop a high tolerance for caffeine will not get the same degree of buzz that drinkers of one or two cups a day might experience," she said.

Dr Dorrian generally doesn't recommend caffeine and certainly not in high doses or before going to bed.

"Too much caffeine makes it harder for people to sleep. Some studies show that it can take up to 24 hours before the effects of caffeine disappear fully, depending on how much is consumed," Dr Dorrian said.

To make the most of your sleep at home, Dr Dorrian



recommends relaxation techniques like meditation to reduce stress, having a set bedtime routine to help your body prepare itself for sleep, and keeping the bedroom reserved for sleep and romance only.

This means no TV, and don't read or take work to bed.

"If you have trouble getting to sleep, and start to feel stressed, get up and do something that's calming like meditation, reading or another quiet activity.

"Go back to bed when tired and you are more likely to sleep. That way you don't lose the association between the bedroom and sleep," Dr Dorrian said.

Some people use a nightcap to help them sleep but Dr Dorrian warns that alcohol seriously affects sleep if more than two glasses are consumed. These people will fall asleep quickly, but tend to wake constantly and sleep will be fragmented.

For busy people, especially students who juggle work, sometimes at night, as well as study, Dr Dorrian recommends that when going to bed, make sure the room is darkened, insulated from noise as much as possible and keep the temperature at around 18 degrees.

"If trying to sleep during the day, 'white noise' often helps such as a fan or air-conditioner that creates a low hum to block out or reduce street noise," she said.

"Exercise is really important because it'll make you sleep better. And to help stay alert at work or in class, skip carbohydrate-rich food because it will make you sleepy.

"When you're sleepy, you also typically crave sweet foods but the sugar rush drops off fast, so you'll feel worse afterwards. For lasting energy, opt instead for small meals or snacks that are high in protein and low in fat."

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