

MEDIA RELEASE

8 August 2017

Celebrate National Science Week in Wollongong!

Make better humans: from bionic bras to 3D implants

Director of the [ARC Centre of Excellence for Electromaterials Science](#) (ACES), Professor Gordon Wallace will be speaking at the Australian Academy of Science Plastic Fantastic National Speaker Series 2017, '[Making better humans](#)'. The Wollongong event will be held from 6pm – 7:30pm on 17 August 2017 at Innovation Campus, University of Wollongong.

The event will feature talks from three leading scientists who use futuristic polymer materials, such as plastics, to treat disease, heal and even replace parts of the body.

Professor Gordon Wallace will focus on '3D Bioprinting: Printing Parts for Bodies', with advances in 3D printing changing the way we think about making things as well as the materials and components we use. Not so long ago it would have been unthinkable that humans could print three-dimensional biopolymer structures using living stem cells.

A major focus on this will be innovative 3D devices such as 'the Biopen' a handheld 3D printing device that is loaded with ink containing a patient's own cells and is designed to repair knee cartilage damaged by osteoarthritis. The researchers hope the technology could one soon help them fix muscles, bones and tendon in humans.

Advances in polymer science and 3D printing have enabled us to assemble structures or scaffolds containing multiple components, including polymers and living cells. This allows us to address clinical challenges in areas such as controlled drug delivery for cancer treatment, corneal regeneration for the treatment of corneal ulceration, cartilage regeneration as a treatment for osteoarthritis and islet cell transplantation for the treatment of diabetes.

"This is a rare opportunity for the people of Wollongong to hear from leaders in the field who are pioneering the use of polymers to tackle some big medical challenges," said Professor Gordon Wallace.

Scientists are in a race against time to find new ways of administering treatments that target infection, leaving bacteria less time and opportunity for resistance. CSIRO research scientist, Dr Katherine Locock will be tackling antibiotic resistance using safe antimicrobial polymers. UNSW Chemistry Professor, Martina Stenzel, is revolutionising the way we target and treat cancer and other diseases by developing 'smart' nanoparticles to deliver powerful anti-cancer drugs.

The ACES sponsored series of events will be held in Wollongong, Brisbane and Adelaide. Ticket and additional information are available: <https://www.eventbrite.com.au/e/making-better-humans-tickets-32709382644>

Media opportunity:

Please contact ACES Communication and Media Officer Sian Wright on 02 4221 5960 or sianw@uow.edu.au to arrange an interview with ACES Director, Professor Gordon Wallace.

ARC Centre of Excellence for Electromaterials Science
electromaterials.edu.au

ABOUT THE SPEAKERS

Professor Gordon Wallace:

The advent of 3D printing has changed the way we think about making things as well as the materials and components we use. Not so long ago it would have been unthinkable that humans could print three-dimensional biopolymer structures using living stem cells.

Academy Fellow Professor Gordon Wallace from the ARC Centre of Excellence for Electromaterials Science and his collaborators are working on innovative devices such as a 3D printer pen.

The 'Biopen' is loaded with ink containing a patient's own cells and is designed to be used in surgery to repair damaged cartilage. Developed with a view to preventing osteoarthritis, this technology will have a significant impact on those suffering from the debilitating and painful condition.

Dr Katherine Locock: As bacteria become more resistant to commonly used antibiotics, it is becoming harder to treat a range of infectious diseases using existing antibacterial drugs. Scientists are in a race against time to find new ways of administering treatments that target infection, leaving bacteria less time and opportunity for resistance.

CSIRO research scientist, Dr Katherine Locock, is developing safe antimicrobial polymers that can kill a wide range of bacteria and fungi, including antibiotic resistant strains.

In a world first Dr Locock and her colleagues have demonstrated that CSIRO's patented RAFT technology can eradicate single and mixed microbial biofilm infection, which has been identified as the likeliest cause of delayed healing in chronic, open wounds.

Professor Martina Stenzel: Cancer patients often suffer from the side effects of conventional treatments such as chemotherapy. Enter polymer scientist Martina Stenzel. By developing 'smart' nanoparticles to deliver powerful anti-cancer drugs, the ARC Future Fellow and UNSW Chemistry *Professor* is revolutionising the way we target and treat cancer and other diseases.

Professor Stenzel is researching how to package anti-cancer drugs into a 'magic bullet' containing polymer (plastic) nanoparticles with diameters more than 1,000 times smaller than the point of a needle.

The nanoparticles are loaded with drugs and biological molecules that help find and destroy the cancer. They act a 'nano-trojan horse' helping to accumulate drugs where they are needed - in the tumour.

The ARC Centre of Excellence for Electromaterials Science (ACES):

Headquartered at the University of Wollongong's Innovation Campus, ACES is a multidisciplinary research group with a focus on developing functional devices for applications including batteries, solar cells and systems that interact with living tissue.

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