

1 DECEMBER 2017  
CURTIN UNIVERSITY  
8AM TO 4.30PM

 **STAWA**

# FUTURE SCIENCE CONFERENCE 2017

Future Science 2017 will showcase enthusiastic experts from science, technology, engineering and maths while exploring cutting-edge science.

Based in the new Curtin Education facilities and surrounds you'll hear from passionate presenters, experience hands-on workshops and meet with skilled educators.

Concurrent sessions mean you can select what's best for you and explore the trade expo to discover a range of classroom resources and specialist equipment.

Future Science is designed to stretch your mind with the latest science while connecting you with activities you can take back to your classroom.

Ignite your passion and excite your inner scientist.

**Calling all primary and secondary teachers, student teachers, science educators and lab technicians!**

## CONFERENCE FEES

|                                       |       |
|---------------------------------------|-------|
| STAWA MEMBERS                         | \$205 |
| NON-MEMBERS                           | \$285 |
| SPECIAL LAB TECHNICIAN & STUDENT RATE | \$120 |

Fees include refreshments, morning tea, lunch, sundowner and materials.



Curtin University

Co-hosts - Curtin Science Outreach



#FutSci2017

**PLACES ARE LIMITED, REGISTER TODAY: [WWW.STAWA.NET](http://WWW.STAWA.NET)**

| PROGRAM  |  |  |  | TIME          |
|--|--|--|--|---------------|
| Registration   |  |  |  | 8:00 - 8:20   |
| Welcome and STAWA Teacher Awards   |  |  |  | 8:20 - 8:30   |
| <b>KEYNOTE: What lies below – Using 3D imaging technologies to tell the story of two WWII shipwrecks - Dr.Andrew Woods</b>               |  |  |  | 8:35 - 9:20   |
| Session A: Principal Speakers (45 minutes)   |  |  |  | 9:30 - 10:15  |
| <b>A1: Prof. Kingsley Dixon</b><br>Biologist and Professor at Curtin University<br>“Being a scientist in a global biodiversity hotspot.” | <b>A2: Nicole Neville</b><br>Geology PhD student at Curtin University<br>“My Journey Through The Stars.” | <b>A3: Dr. Sarah Marley</b><br>PhD in Applied Physics with the Centre for Marine Science and Technology (CMST) at Curtin University<br>“Commotion in the Ocean.” | <b>A4: Allen Gerber</b><br>Manager, Energy Solutions at Synergy<br>“Energy Solutions:A STEM team approach” |               |
| Morning Tea  |  |  |  | 10:15 - 10:45 |
| Session B (60 Minutes)   |  | Session BC (120 Minutes)   |  | 10:45 - 11:45 |
| Session C (60 Minutes)   |  | 10:45 - 12:45  |  | 11:55 - 12:55 |
| Lunch  |  |  |  | 12:45 - 1:45  |
| Session D (60 Minutes)   |  | Session DE (120 Minutes)   |  | 1:45 - 2:45   |
| Session E (60 Minutes)   |  | 1:45 - 3:45  |  | 2:55 - 3:55   |
| Plenary and Sundowner  |  |  |  | 4:00 - 5:00   |



**Keynote:  
Andrew Woods**

Dr Andrew Woods is Manager of the Curtin HIVE Visualisation Facility and a Research Engineer at the Centre for Marine Science & Technology at Curtin University. He specialises in visualisation, stereoscopic 3D imaging, 3D reconstruction, 3D cameras and displays, video electronics, underwater vehicles (ROVs), and engineering software development, with applications in offshore oil and gas, and maritime archaeology. He was the technology lead on the Sydney-Kormoran Project which surveyed the wrecks of HMAS Sydney (II) and HSK Kormoran in 2015, and was recently recognised as one of Australia's Most Innovative Engineers by Engineers Australia.



**Kingsley Dixon**

Biologist and Professor at Curtin University and holds professorial positions at UWA and Kings Park where he specialises in the conservation and restoration of plants and ecosystems in the southwest Australian biodiversity hotspot, coastal ecosystems and dryland regions of the world. He is an avid community volunteer on weekends and a keen orchidologist. He was the 2016 WA Scientist of the Year.



**Sarah Marley**

Originally from Scotland, has over a decade of experience working in ecology, bioacoustics, and marine mammal science in both Europe and Australia. She recently completed her PhD in Applied Physics with the Centre for Marine Science and Technology (CMST) at Curtin University. Sarah's doctoral work focused on the behavioural and acoustical responses of coastal dolphins to noisy environments. She has worked extensively in science communication and is a keen supporter of citizen science.



**Nicole Neville**

Nicole is the 2016 recipient of the VSSEC-NASA Space Prize for the top planetary science honours in Australia in the geology category. She was also selected, one of 14 internationally, for a 10 week internship at NASA's Johnson Space Centre in Houston Texas from June to August this year. A passionate geologist, Nicole is completing her PhD at Curtin University studying the early evolution of our solar system through meteorites. She is a current member of the Desert Fireball Network, predominately working on sample analysis.



**Allen Gerber**

Manager, Energy Solutions at Synergy. He is responsible for driving new energy products and solutions to meet customers rapidly changing energy needs. Allen has over 20 years of domestic and international energy markets experience and has held leadership roles in marketing, wholesale finance, project management, sales and service management functions.

| Time          | Session               | Presenter              | Title   | Session |
|---------------|-----------------------|------------------------|---|---------|
| 8:35 - 9:20   | Keynote               | Dr Andrew Woods        | What lies below - Using 3D imaging technologies to tell the story of two WWII shipwrecks      | KN      |
| 9:30 - 10:15  | A1                    | Prof. Kingsley Dixon   | A1: Being a scientist in a global biodiversity hotspot  | A1      |
|               | A2                    | Nicole Neville         | A2: My Journey Through The Stars  | A2      |
|               | A3                    | Dr. Sarah Marley       | A3: Commotion in the Ocean  | A3      |
|               | A4                    | Allen Gerber           | A4: Energy Solutions: A STEM team approach  | A4      |
|               | A5                    |                        | A5: LABNETWEST AGM  |         |
| 10:15 - 10:45 | Morning Tea           |                        | Morning Tea   |         |
| 10:45 - 11:45 | B1                    | Anna Pryor             | B1: Determination of sex in skeletal remains: an investigation of sexual dimorphism in humans | B1      |
|               | B2                    | Geoffrey Kaye          | B2: Zero Emission Persons - a project based learning activity                                 | B2      |
|               | B3                    | Igor Bray              | B3: Physics of Life   | B3      |
|               | B4                    | Allen Gerber           | B4: Energy Solutions: A real-world STEM challenges, energy supply                             | B4      |
|               | B5                    | Karina Price           | B5: The Virtual Plant Cell: immersion in cell science using virtual reality?                  | B5      |
|               | B6                    | Ewald Swinny           | B6: The world of Emergency Response   | B6      |
|               | B7                    | Mark Hackett           | B7: Is it a Bird? Is it a Plane? No, it's your Brain!   | B7      |
| 10:45 - 12:45 | BC1                   | Kim Flintoff           | BC1: Using serious games and SPOCs as multidisciplinary education for sustainability          | BC1     |
|               | BC2                   | Alexandra Yeung        | BC2: Advancing Science and Engineering Learning in the Laboratory (ASELL)                     | BC2     |
|               | BC3                   | Lee Coumbe             | BC3: The psychology of a gamified classroom   | BC3     |
|               | BC4                   | Brad Howard            | BC4: STEM Success – Turning Kids from Consumers to Creators                                   | BC4     |
| 11:55 - 12:55 | C1                    | Michael Caldwell       | C1: STE(A)MPUNK Microchemistry  | C1      |
|               | C2                    | Michael Considine      | C2: Breeding healthier fruit: a win-win for industry and population health                    | C2      |
|               | C3                    | Dr. Shastri Nimmagadda | C3: On Textual Data Mining for Contextual Interpretation of Digital Document Ecosystems       | C3      |
|               | C4                    | Siew Yap               | C4: Critical Thinking Skills in the Science Classroom   | C4      |
|               | C5                    | Vanessa Rauland        | C5: Climate Clever Schools  | C5      |
|               | C6                    | Igor Bray              | C6: Quantum Collision Theory  | C6      |
|               | C7                    | Brad Young             | C7: The Synergy Solar Car Challenge - How to get more from the experience?                    | C7      |
| 12:45 - 1:45  | Lunch                 |                        | Lunch   |         |
| 1:45 - 2:45   | D1                    | Allan Morrison         | D1: Light and Colour – investigations using modern technologies                               | D1      |
|               | D2                    | Andrew Woods           | D2: The Curtin HIVE Visualisation Facility  | D2      |
|               | D3                    | Dr. Shastri Nimmagadda | D3: On Digital Human Ecosystems in a Big Data Scale and the Knowledge Management              | D3      |
|               | D4                    | Geoffrey Kaye          | D4: Integrating STEAM through Project-Based Challenges  | D4      |
|               | D5                    | Kristy Blyth           | D5: Curtin Chemistry Lab management   | D5      |
|               | D6                    | Dr. Shastri Nimmagadda | D6: Total Environment Framework in Big Data Scale - Data Science Approach                     | D6      |
|               | D7                    | Mihye Won              | D7: How to encourage students' creative thinking skills through drawing in science            | D7      |
|               | D8                    | Mari Pitts             | D8: Forensic Science  |         |
| 1:45 - 3:45   | DE1                   | Lance Boston           | DE1: Heart Dissection – An Experience You Aorta Try!  | DE1     |
|               | DE2                   | Graeme Thompson        | DE2: Metals and Minerals relevant to WA   | DE2     |
|               | DE3                   | Alex Foppoli           | DE3: The Einstein-First Project   | DE3     |
|               | DE4                   | Lu-Marie Sobey         | DE4: Making the strange familiar: Creative thinking for teaching science                      | DE4     |
| 2:55 - 3:55   | E1                    | Nick Bell              | E1: Education Perfect - Empowering and promoting self-regulated learning                      | E1      |
|               | E2                    | Rachel Sheffield       | E2: Michael's Marvellous Molecules  | E2      |
|               | E3                    | Kok-Sing Tang          | E3: Supporting Students in Generating Scientific Explanation                                  | E3      |
|               | E4                    | Simon Tilley           | E4: STEM developments and projects across Australia and how to implement them                 | E4      |
|               | E5                    | Doug Bail              | E5: Putting the S back into STEM  | E5      |
|               | E6                    | Magdalena Wajrak       | E6: Chemistry Teacher and Lab Technician Professional Development                             | E6      |
|               | E7                    | Mark O'Brien           | E7: The STEM Learning Project   |         |
| 4:00 - 5:00   | Plenary and Sundowner |                        | Plenary and Evauation; Prizes; Sundowner drinks and finger food                               | Plenary |

## STAWA Publications

### Year 11 and 12 ATAR Resources:

The STAWA Exploring Chemistry, Physics and Human Biology series support the Western Australian Curriculum ATAR Courses.

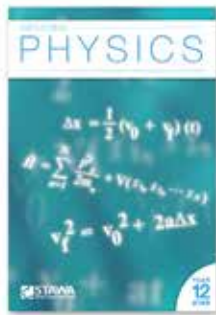
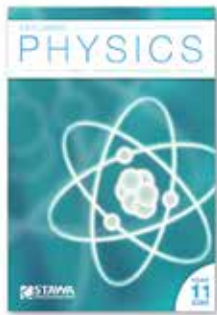
The Year 12 publications Exploring Human Biology Stage 3 and Revising Physics: A Study Guide with Investigations are also available.

### Human Biology General Course Resources:

The STAWA Exploring Human Biology Stage 1 and Stage 2 resources are available and together cover both the Year 11 and the Year 12 General Course.

Answers and Worked Solutions: <http://stawa.net/stawa-textbook-solutions/>

Member Discount: Members receive a 10% discount on all purchases through STAWA.



### Pre-Future Science Free Public Events Institute of Advanced Studies, UWA

Two public talks are being held in conjunction with an extraordinary meeting of Physicists held in the week of Future Science. Future Science supports these events and encourages teachers planning to attend Future Science to consider these public lectures. Lectures organised by the Institute of Advanced Studies, UWA.

Direct questions to: [ias@uwa.edu.au](mailto:ias@uwa.edu.au), or phone (08) 64881340

**Professor Tsvi Piran**, Racah Institute of Physics, Israel: his research area is Gamma ray bursts from paired neutron stars – the Golden Universe.

Public lecture on Tuesday 28<sup>th</sup> November @ 6.45pm, Gravity Discovery Centre 1098 Military Rd, Yeal WA 6503

The webpage/registration for the lecture by Prof Tsvi Piran can be viewed here: [http://www.ias.uwa.edu.au/lectures/tsvi-pindan/\\_nocache](http://www.ias.uwa.edu.au/lectures/tsvi-pindan/_nocache)

**Professor George Smoot**, Nobel Prize in Physics, 2006, University of California, Berkley: his research area is Cosmic Background Explorer that led to the discovery of the black body form and anisotropy of the cosmic microwave background radiation.

Public lecture on Thursday, 30 November @ 3.30 pm, UWA Club, University of Western Australia.

The webpage/registration for the talk by Professors Smoot and Chun can be viewed here: <http://www.ias.uwa.edu.au/lectures/General-Relativity-Gravitation>