

Please send me your news articles, photos, travel diaries, conference reports or funnys by 9am each Friday.

Email sharlene.wilson@canterbury.ac.nz

You can find previous issues here <https://www.canterbury.ac.nz/science/>

 Facebook(@PhysandChematUC)

 Twitter (@UCNZ_PhysChem)

 WeChat(Physical&ChemicalSciences)

Rudi's Report.

Kia ora koutou

Hope that the new terms has started well. First of all, I would like to thank everyone for all their hard work during the last term, and getting us through the exam period smoothly and without any major glitches. Also, please join me in formally welcoming the Matt Pannell, Justine Cotham, Sha Luo and Byron Engels to the School, Welcome on-board!

We have a busy, but yet exciting semester ahead with some of the largest student numbers that we have ever had in some of our lectures. I would particularly like to acknowledge our staff working in the labs, thanks to

their flexibility and dedication, we have managed to accommodate almost double the number of students that we would expect on a typical second semester! Thank you everyone. I would also like to acknowledge the support that our staff is providing to our colleagues currently stranded overseas, thank you Sarah!

On other fronts, the school has been very busy with outreach, kidsfest was a complete success. The kids loved it, the demonstrations were fantastic, the cake was superb and the singing was out of this world. Thanks to everyone who was involved in the event. It would be accurate to say that the crowd was speechless during the

SPCS staff's non-linear rendition of happy birthday for Lord Rutherford. We are planning a follow up event on the afternoon of the 29th of August. This event will be in collaboration with NZIC, NZIP and a couple of the CoREs.



Finally, I would like to acknowledge all the work that Vlad and Kseniia have been doing on the internationalisation front. Vlad and Kseniia have revamped our international webpages, and translated them into Chinese. They look awesome!

Sandford Science Fair - Judges needed. - Graeme Plank

The Timaru Science Fair coming up on 8 September. We are after two people to take part in the day judging and have organised fleet vehicles. If we can get one from Phys/Astro and one from Chem then there should be a good spread in expertise.



It will be a full day of activities with the day in Timaru starting at 8.30 and going to 3pm. Please email [Graeme Plank](mailto:Graeme.Plank) for details.

SPCS Te Kura Matū Seminar Series

Time/Date	Speaker	Talk Title	Location
Wed, 25th AUG 2021 12:00:00 NZST	Mark Waterland Associate Professor School of Fundamental Sciences Massey University	TBC	Room 465 Ernest Rutherford University of Canterbury
Fri, 27th AUG 2021 11:00:00 NZST	Melanie Kah Senior Lecturer School of Environment The University of Auckland	TBC	TBC



Health, Safety and Wellbeing- Sharlene Wilson (H&S Administrator) A-Z of Health and Safety at UC

2021 Training Calendar

To enrol in training log in to [UC People](#) and navigate to the Professional Development tile.



[Learning & Development Calendar 2021, including Health & Safety Training](#)

Vacuum Desiccator Imploded

There was recently a near miss (incident with no injury) when a vacuum desiccator imploded and had the potential to cause injury. Vacuum Desiccators should be wrapped with friction tape (i.e. vinyl electrical tape) to reduce the hazard from the shattered glass.

Please speak to your supervisor about this and please wrap the tape on the desiccators your research group uses.



Mentemia

UC have now launched the [Mentemia App](#) for staff and students.

Your mental wellbeing is important.

Mentemia helps you identify where you might be struggling, then gives you access to simple, safe and fun exercises to help you thrive. Feel happier, build stronger relationships, learn how to cope with stress, and improve your sleep. Mentemia gives you tools and techniques to actively work on and improve your mental wellbeing. Whether you want to learn to meditate, breathe properly, get more active or just take a break from intrusive thoughts, Mentemia helps you find activities that work for you. <https://www.canterbury.ac.nz/support/wellbeing-hub/mentemia/>



Lab Waste

Please make sure that you are putting contaminated, glass and metal waste in the appropriate containers. There was an injury recently caused by glass in the contaminated waste. The event highlights the hazard of not disposing of waste appropriately. If you have any questions please contact your supervisor.



Replacing Used First Aid Equipment

All SPCS first aid kits have seals on them that need to be cut to open. When you open a first aid kit you must notify Lue-Ellen that you have done so she can replace items and reseal.



Manually Close Solvent Cupboards

The solvent cabinets do not automatically close and they need to be closed manually. Please remember to manually close the solvent cupboards and to do a check at the end of the day.



A Big thanks to Shirley Peter Celestine

Shirley received a special mention at a recent Health and Safety meeting for being observant and conscientious.

Shirley noted a carpeted area near an electrical plate on one of the carpeted walls in ER was getting darker over time and reported it. The electricians were inspected and luckily were in good order. The dark colouring near the electrical plate was possibly from the cleaners with dirty hands using the socket.

Although in this case it wasn't an electrical malfunction it could have been and serves as a reminder to please report anything you notice.



Congratulations to ...



Shirley Celestine successfully defended her PhD thesis (1st March) Shirley's thesis was titled, 'New Ion Exchange Materials from Collagens'. The viva voce exam took place over Zoom and Shirley was examined by Prof. Lyall Hanton. Dr Chris Richardson (University of Wollongong) was the international examiner. My fellow supervisors (Jan Wikaira and Jolon Dyer) and I thank the examiners for being so willing and thorough. Well done Shirley!
Richard Hartshorn



Congratulations to **Carline Kleinjan** (Kruger group) who successfully defended her PhD thesis (23rd April). The oral examiner, A/Prof Kellie Tuck from Monash University, was very impressed with Carline's thesis and oral performance.
Kia pai tō koutou rā,
Alison Downard



Manoj Wijesooriya defended his PhD (25th May) on Improving Spectral Resolution of the MARS Camera. Manoj's supervisors were Phil Butler, Robert Doesburg, and Ali Atharifar. Hugo Bouchard had many lively and penetrating questions from his location in Canada, and I was impressed by how well Manoj answered them.
Congratulations, Manoj!
Mike Reid



Neryda Duncan's defended her PhD (29th May) on MARS Imaging for Geology. Neryda's supervisors were Phil Butler and Ben Kennedy. Samantha Holdsworth (Auckland) had many penetrating questions. I was impressed by how well Neryda answered them.
Congratulations, Neryda!
Chris Gordon



Ben Howard successfully defended his PhD thesis (28th July) Ben's thesis was titled, 'Multi-Functional Ligands for Metallosupramolecular Assemblies: Towards Novel Metal-Organic Frameworks', and he was supervised by Paul Kruger. The viva voce exam took place over Zoom and Ben was examined by Prof. Lyall Hanton (Otago). Well done Ben!
Ngā mihi,
Chris Fitchett

UC Science Radio Season 2: Episode 10

Rosemary Dorsey: Inspiring the astro-curious

As a Year-13 student, [Rosemary Dorsey](#)'s interest in our solar system was ignited by an outreach event she attended at UC. Now studying towards a PhD in astronomy, she's returning the favour.

Rosemary's research focuses on solar system science and characterizing small body populations. She also engages in science outreach to inspire other students to study physics. Hear about her fascinating field and how she's fostering a new generation of astrophysicists in [this episode of UC Science Radio](#).



2021 Ferrier Lecturer Prof. Antony Fairbanks

The 2021 Ferrier Lecture, was given on 14 April by Professor Antony Fairbanks, University of Canterbury, Te Whare Wānanga o Waitaha, Christchurch, New Zealand.

His lecture, Sugars and viruses: the roles that carbohydrates can play in both viral infection and immune evasion, was extremely topical and looked at the role sugars play in influenza and SARS-CoV-2 and how anti-virals and RNA vaccines have and are being developed to combat these diseases.

About the Ferrier Lecture

It was Robin Ferrier's particular belief that young chemists could benefit greatly from mixing with leaders in their field. Therefore, invited Ferrier Lecturers, who are recognised internationally in chemistry or a related field, are brought to New Zealand to engage with postgraduate students as well as lecture.

<https://www.wgtn.ac.nz/ferrier/about/ferrier-lecture>



2021 Ferrier Lecturer Prof. Antony Fairbanks

Professor becomes first woman to win Dan Walls Medal.

Detecting tiny particles that are “messengers from space” using a giant detector buried under Antarctic ice has helped a University of Canterbury (UC) professor become the first woman to win a prestigious physics award. UC Physics Professor Jenni Adams was presented with the 2021 Dan Walls Medal, the top award of the New Zealand Institute of Physics (NZIP), at a ceremony in Wellington on the 13th July.

The medal is presented to a Kiwi physicist who is judged to have made the greatest impact, both nationally and internationally, in their field of research.

Professor Adams, who has lectured in physics and astronomy at UC since 1998, says it's an honour to receive the award.

“I'm definitely really proud as a woman to receive this recognition. There have traditionally been fewer females working in the physics field, but I've been feeling really encouraged seeing the growing number of women attending the NZIP conference this week.”

She is the lead New Zealand scientist in the international IceCube collaboration, which 10 years ago built a huge 1 km-long telescope under Antarctic ice at the Amundsen-Scott South Pole Station. The observatory, which continuously collects data, has made several world-first discoveries relating to neutrinos – tiny, lightweight particles that offer a unique way to find out more about the universe.

Professor Adams describes neutrinos as “messengers from space”. In 2013 the IceCube team detected the highest energy neutrinos ever documented, a discovery that won the Physics World Breakthrough of the Year.

“It is an exciting project to work on, making discoveries at the high-energy research frontier,” Professor Adams says. Read more here on [UC News](#)



New Zealand Institute of Physics Dr Natalie Plank presents University of Canterbury Physics Professor Jenni Adams (left) with the 2021 Dan Walls medal at a ceremony in Wellington.

Jenni talks to [Jesse Mulligan on RNZ](#) about the work she's done that's earned her this top award.

Five Decades of Colour Slides Down the Gurgler. John Campbell.

There comes a time when one doesn't want to leave a mountain of colour slides for family to worry about so over the past year I have been having the last of my slides converted to .jpg files. (Covid lockdown is a great time for such activities.)

As an undergraduate (1961-64) in the town site I can still remember the academic staff using Epidi-ascopes to project the illustration of a book onto a screen in the large lecture classes. Lantern slides (B/W positives from negatives, sometimes hand painted to give colour and protected by glass plates) and slide projectors for these large slides had existed since the 1820s and lasted into WW2. They were superseded by modern slide projectors. Hence from about 1965 most of my photos were 35mm colour slides so they could be readily incorporated into lectures and talks. From the late 1990s most talks and lectures were converted to .ppt. I have been converting my thousands of un-scanned slides into .jpg so the slides can be tossed out.

Sometimes, it is hard to let go. Blast improvements in technology. They were a nice artifact.



Publications

A. J. Fairbanks, Applications of Shoda's reagent (DMC) and analogues for activation of the anomeric centre of unprotected carbohydrates, *Carbohydr. Res.* 2021, 499, 108197.

<https://doi.org/10.1016/j.carres.2020.108197>

Emergent synthetic methods for the modular advancement of sp³-rich fragments
Caplin, M. J.; **Foley, D. J.*** *Chemical Science*, 2021, accepted (10.1039/D1SC00161B).

Atmosphere-ocean feedback from wind-driven sea spray aerosol production by **L. Revell**, N. Wotherspoon, O. Jones, Y. Bhatti, J. Williams, S. Mackie and J. Mulcahy, *Geophysical Research Letters*, accepted 12/03/21. (Includes contributions from past PHYS381/391 students Ngaire Wotherspoon and Ollie Jones, and current physics PhD student Yusuf Bhatti – plus collaborators at NIWA, the UK Met Office and Otago uni)

Comparison of deposition sampling methods to collect airborne microplastics in Christchurch, New Zealand, E. Knobloch, H. Ruffell, A. Aves, O. Pantos, S. Gaw and **L. Revell**, *Water, Air & Soil Pollution*, accepted 11/03/21. (Contributions from past CHEM329 student Ella Knobloch (co-supervised by myself and Sally Gaw), current SPCS postgrad students Helena Ruffell and Alex Aves, and our collaborator Olga Pantos at ESR)

WRF4PALM: A mesoscale dynamical driver for the microscale PALM model system 6.0, D. Lin, B. Khan, M. Katurji, L. Bird, R. Faria and **L. Revell**, *Geoscientific Model Development*, accepted 15/03/21. Led by atmospheric physics PhD student Dongqi Lin, co-supervised by myself and Marwan Katurji in SEE. Dongqi is already getting enquiries from interested parties overseas on using her modelling framework, and this paper represents a massive achievement on her behalf.

Laura and her team and collaborators got three papers accepted in the space of three business days!

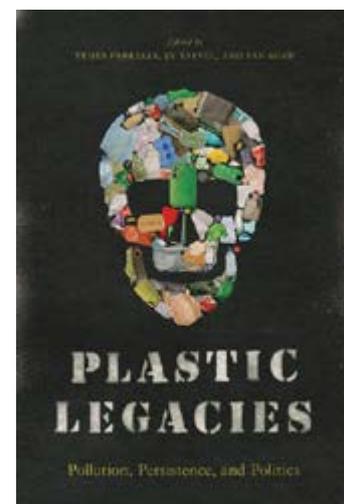
Plastic Legacies Pollution, Persistence, and Politics

Edited by Trisia Farrelly, Sy Taffel, and Ian Shaw

There is virtually nowhere on Earth today that remains untouched by plastic and ecosystems are evolving to adapt to this new context. While plastics have revolutionized our modern world, new and often unforeseen effects of plastic and its production are continually being discovered. Plastics are entangled in multiple ecological and social crises, from the plasticization of the oceans to the embeddedness of plastics in political hierarchies.

The complexities surrounding the global plastic crisis require an interdisciplinary approach and the materialities of plastic demand new temporalities of thought and action. *Plastic Legacies* brings together scholars from the fields of marine biology, psychology, anthropology, environmental studies, Indigenous studies, and media studies to investigate and address the urgent socio-ecological challenges brought about by plastics. Contributors consider the unpredictable nature of plastics and weigh actionable solutions and mitigation processes against the ever-changing situation.

<https://www.aupress.ca/books/120302-plastic-legacies/>



KidsFest - Rudi Marquez.

Please join me in thanking everyone who took part in today's Kids Fest at the central library – Sarah Masters, Jan Wikaira, Chris Fitchett, Kylie Smith, Lana Schiefer, Rachael Hocking, Sarah Lilley, Ting Wu, Sagar Mothkuri, Nathan Alexander, Marie Squire, Benjamin Lowe, Anthony Turner, Rosemary Dorsey, Graeme Plank, Nicole Soriano, Rhia Hewett, Dona Banerjee, Daniel Craik, Alex McNeill, Rodrigo Martinez, and Ro Reilly.



Sarah Masters entertaining the crowd during Kidsfest 2021.



We had lots of very enthusiastic young aspiring scientists and their parents. The shows were fantastic, and the kids were very enthusiastic participants.

We also had a surprise visit by the SPCS Wiggles, who sang a very non-uniform rendition of Happy Birthday to Lord Ernest Rutherford (a wee bit early, but I am sure he would not have minded).

One of two cakes to celebrate the 150th anniversary of the birth of Ernest Rutherford (30 August 1871). The cakes were presented at Kidsfest 2021

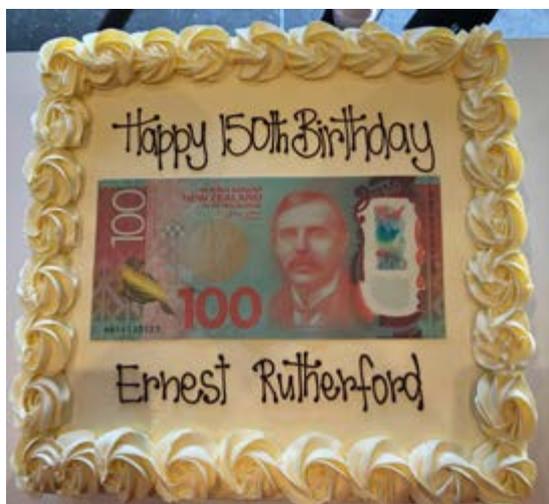
Our Vice-Chancellor also stopped by for a short visit, had a chat with a few of our presenters, and was very pleased with our community involvement.

I would also like to thank NZIC, NZIP, ChemSoc, and PhysSoc for their support!

This was a very successful day that was only possible due to the work and dedication of our colleagues, please join me in thanking them once again for all their hard work.



Nathan Alexander and Sarah Lilley inspiring minds during the SPCS Chemistry demonstrations at Tūranga for Kidsfest 2021.



One of two cakes to celebrate the 150th anniversary of the birth of Ernest Rutherford (30 August 1871). The cakes were presented at Kidsfest 2021.



Graeme Plank showcasing Physics during the SPCS demonstrations at Tūranga for Kidsfest 2021.

Library News-John Arnold

Please try out the new SciFindern and give us your feedback.

You can find the link to the database, user guides and the survey for feedback at <https://bit.ly/31C33G8> (Biochemistry Subject Guide) or <https://bit.ly/2AuJ7Kg> (Chemistry Subject Guide)

New books and ebooks:

- * Astronomy <http://bit.ly/xntPcH>
- * Chemistry <http://bit.ly/2GYps4U>
- * Physics <http://bit.ly/wafgjA>
- * Adaptable new-titles-list generator <http://bit.ly/1brTI3E>

SciFinder-n Webinars

(recorded and upcoming; CAS)
<https://bit.ly/3kKo88m>

Rutherford's 150th Anniversary
[events late August–early September]
(The Arts Centre)
<https://bit.ly/3yg9U5v>

More Scientists Could Partner With
Māori Communities (Scimex)
<https://bit.ly/2Pkbd1D>

Māori Researchers Call for a Tiri-
ti-led Science-Policy Approach
(Scimex)
<https://bit.ly/3fEt3WS>

New Peer-review Elearning Hub
[Press release]
(IOP Publishing)
<http://bit.ly/3c0nFFT>

The Fight Against Fake-Paper Fac-
tories That Churn Out Sham Science
(Nature.com)
<https://bit.ly/3sWda3v>

A New Replication Crisis: Research
that is Less Likely to be True is Cited
More
(UC San Diego News Center)
<https://bit.ly/355aXZ7>

Texas A&M Study Finds No Link
Between Gender and Physics Course
Performance
(Texas A&M Today)
<http://bit.ly/38jndY9>

Why Do So Many Astronomy Dis-
coveries Fail to Live Up to the Hype?
(Undark)
<http://bit.ly/3tO9ZeQ>

Science Is Truth Until It Isn't
(3 Quarks Daily)
<http://bit.ly/3s1G69f>

How English Became the Language of
Physics
(Symmetry)
<http://bit.ly/2OlnHG4>

Molecule of the Week
(American Chemical Society)
<https://bit.ly/3423Cch>

Teaching in Higher Ed Podcast
(Internet Scout)
<https://bit.ly/3x1D0DG>

A Scientist's Guide to Social Media
(Internet Scout; ACS)
<https://bit.ly/2StAd8C>

Obit. Ei-ichi Negishi
(In the Pipeline)
<https://bit.ly/3daOmPo>

Obit. Steven Weinberg
(1933–2021; The Curious Wavefunc-
tion)
<https://bit.ly/3rFLWhH>

Lighter

Francis Bacon Invents Science
(Existential Comics)
<https://bit.ly/3xaeSiR>

“Warp speed,” “Prime Directive”
Predate Star Trek, per New Reference
Tool
(Ars Technica)
<http://bit.ly/3rlvGeF>

Dear Labby: Life Advice from Physics
(Symmetry Magazine)
<http://bit.ly/3qamBLc>

Library Liaison Officer for
Chemistry
Assoc. Prof. Greg Russell
<http://bit.ly/2SvmiJd>



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Physics and Astronomy
Dr Konstantin Pavlov
<http://bit.ly/31z5tCP>



John Arnold
Subject Librarian for Physi-
cal and Chemical Sciences
<http://bit.ly/johnarnold-uc>

