

# UC



# SPCS Newsletter

## School of Physical and Chemical Sciences/Te Kura Matū

1st May 2020

Welcome to our SPCS newsletter for 2020. Please send me your news articles, photos, travel diaries, conference reports or funnys by 9am each Friday. Email [sharlene.wilson@canterbury.ac.nz](mailto:sharlene.wilson@canterbury.ac.nz) You can find previous issues here <https://www.canterbury.ac.nz/science/>

 Facebook(@PhysandChematUC)  
 Twitter (@UCNZ\_PhysChem)  
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### Rudi's Weekly Report.

Kia ora koutou

Hope you are keeping well, and that you and your loved ones are safe and sound.

Despite level 3 lockdown, there is still a flurry of activity in the School.

First of all, please join me in congratulating Mai (Siriluck Tesana) and Nick Lowther for successfully defending their PhD theses. Congratulations are also in order for Dr. Dan Foley who was successful in getting funding from the Maurice and Phyllis Paykel Trust! Well done!

Remote working has also resulted in some very creative activities for home learning, Dr. Laura Revell (with the help of a very brave astronaut) recreated and explained how clouds form (in and out of bottles). Please take a look at Laura's cool

presentation.

Keeping in touch with the community, Dr. Sarah Masters was on UC Science Radio, it is a great interview.

You might also have noticed that Dr. Deb. Crittenden's lecture notes on reaction enthalpies made it to prime time television! Talk about impact!

And last but definitely not least, don't forget that the art of science competition is in full swing! The

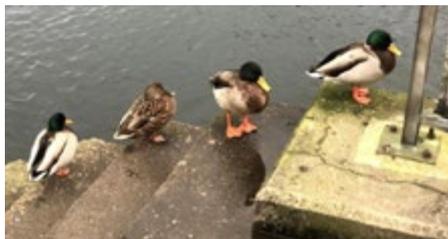
competition, open to New Zealand schoolchildren from Year 5 to 13, closes on the 8th May.

The students have been working very hard and have come up with some very creative entries!

Please stay safe, keep the appropriate distance and we can hopefully catch up in person soon!



Nga mihi nui  
Rudi



Social distancing in the wild... we don't want to fall fowl of the rules.

### Deb's lecture notes on prime-time national TV- Greg Russell

So there I was watching TV1 news on Sunday night. Bryce and I had already seen our former cricketing colleague Dave Miller in the lead item. And then lo and behold a double whammy in another leading item:

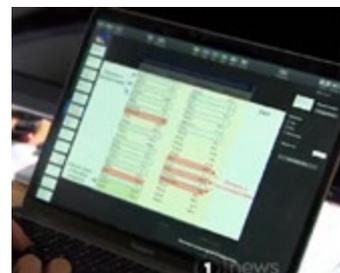
<https://www.tvnz.co.nz/one-news/new-zealand/calls-more-consistency-across-nz-universities-over-student-accommodation>

I know Deb's lecture notes when I see them, and there they were - twice! - on prime-time national TV ...

Well done Deb, taking reaction enthalpies to the nation in a time of crisis, LOL.

Bryce commented "I saw that too. In fact one of the slides (the one that

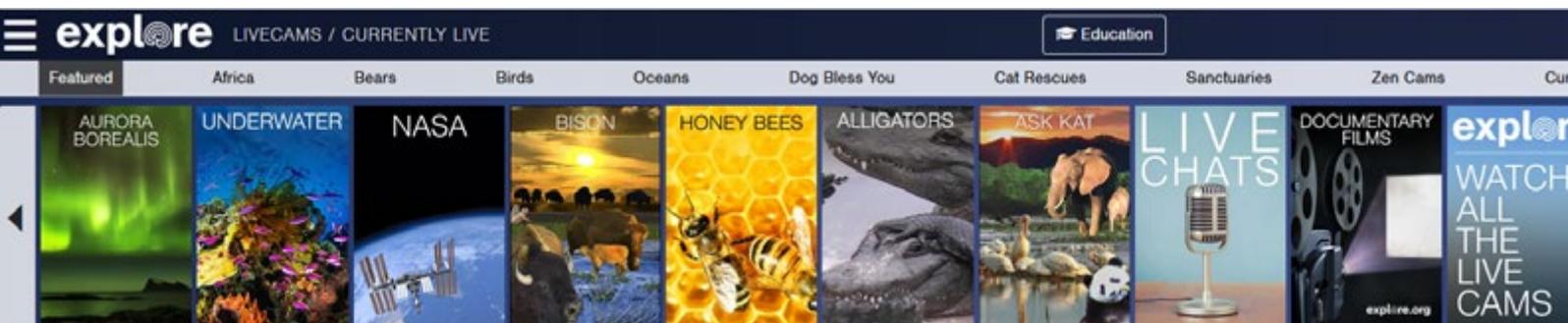
drew my attention) was a diagram (or a modification of a diagram) I put together several years ago showing enthalpies of formation of various substances and highlighting things like elements in their standard states, elements and molecules in different phases etc. I guess it's one of these diagrams that has been around for a long time and become part of the collective tools that members of the teaching team have found useful... I was quite chuffed and made Wendy watch it several times! I guessed that the slides were probably Deb's".



## Explore Livecams. <https://explore.org/livecams>

Watch dozens of livecams located all over the world from a pipeline surfing cam in Oahu, Hawaii to Gorillas DRC including

- Aurora Borealis from Manitoba, Canada
- NASA Space cam
- Big Cat Rescue (yes the one from Netflix series [Tiger King](#))
- Watering Hole in Kenya!



## Cloud in a bottle-

**Laura Revell**

Make a cloud in a plastic bottle with our very own atmospheric scientist Dr Laura Revell and her lovely astronaut assistant!

<https://www.canterbury.ac.nz/science/outreach/learning-resources/learn-from-home/>



## Congratulations Mai!

It is my great please to advise you all that Siriluck (Mai) Tesana (supervised by Vladimir Golovko and Alex Yip (CAPE)) performed very well in the oral defence of her PhD this afternoon, only a few minor corrections. Hopefully she'll be able to give a seminar to the School in the near future...

Best regards, Owen Curnow  
(Exam coordinator)



## UC Science Radio: Eps 2



Structural chemist Associate Professor Sarah Masters talks about her work as a molecular detective: she investigates how molecules behave, what they do, and how we can use them to create everything from new technologies and materials to life-saving vaccines. Listen [here](#)

## Congratulations to Nick!

Nick performed extremely well in his PhD oral examination yesterday evening. The oral examiner from the UK was very impressed with Nick's thesis and his command of the subject. The oral examination included around an hour of questions and discussion, after Nick's presentation of his research, in which it was obvious the examiner was very interested in Nick's research, procedures and results. Neither examiner required any amendments to the thesis. Well done, Nick!

Nick Lowther is based at Wellington Blood and Cancer Centre at Wellington Hospital and was supervised by Steve Marsh and Rob Loue (clinical supervisor at Wellington Hospital).  
Jenni Adams



## Publications

The latest paper from the Masters group by Aliyu Ja'o is now available Online Early in the Australian Journal of Chemistry

Utilizing the Combined Power of Theory and Experiment to Understand Molecular Structure – Solid-State and Gas-Phase Investigation of Morpholine Borane

Aliyu M. Ja'o, Derek A. Wann, Conor D. Rankine, Matthew I. J. Polson and Sarah L. Masters, *Aus. J. Chem.*, 2020,

[www.publish.csiro.au/ch#OnlineEarly](http://www.publish.csiro.au/ch#OnlineEarly)

## 2020 Flu shots

Flu shots will be available for students and staff from the UC Health Centre from Wednesday 29 April.

### Staff Flu shots

The University are providing FREE Flu shots for all UC staff. Staff wanting a Flu shot must call the clinic to book an appointment, clinic staff will confirm your time, date and instructions as to the process during the call.



### Student Flu shots

Flu shots are free for all UC students enrolled at the UC Health Centre. Students not enrolled, including international students, can contact the UCSA to receive a 'virtual voucher' which will discount their Flu shot. UCHC will supplement the discount to ensure students pay only \$5.

Contact the [UC Health Centre](#)

## Pandemic Puppy- Sarah Masters

On 29 April we welcomed Bryn to the family, weighing in at a healthy 5kg!

Bryn is a 2 mth old border collie x heading dog because I'm not busy enough and need something in my life that needs lots of walks and exercise... He's settling well into the family, has found out where to eat and sleep, and is generally a very inquisitive wee soul.

Ollie is in complete denial and practis-

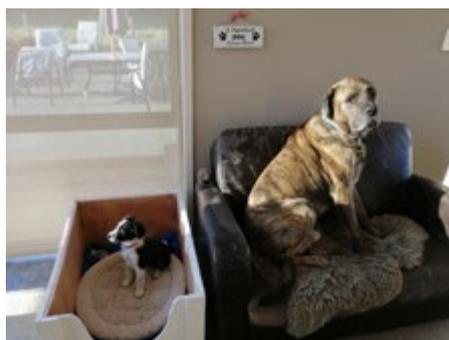
ing both social and physical distancing despite Bryn's best efforts to get to know his new (very) big bro.

The cats are aloof as usual and Bryn is scared of them, so no change there then... He also seems a bit scared of the sheep but I'm hoping he'll grow out of that given his heritage!

Bryn means hill or mound in Welsh, and given that we have the views of both the Port Hills and the Southern

Alps from the house I wanted him to have a name that was associated with the hills and mountains.

Bryn successfully taught his first 400L class on Thursday via Zoom, and met some of their pets as well. I hope that once this madness is over you'll all be able to meet him and become as smitten with him as I am.



New puppy Bryn and Ollie practising physical distancing.

## Meaningful May- Intercom

With a new month ahead of us, now is a great time to think about what you would like this month to mean for you? Check out this calendar from Action for Happiness for an action each day that encourages us to look after ourselves and others this month.

**ACTION CALENDAR: MEANINGFUL MAY 2020**

MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY SATURDAY SUNDAY

"Start Where You Are. Use What You Have. Do What You Can" ~ Arthur Ashe

4 Focus on what you can do rather than what you can't do	5 Send friends a photo of a time you all enjoyed together	6 Take a step towards one of your life goals, however small	7 Let someone you love know how much they mean to you	1 Take a minute to remember what really matters to you and why	2 Do something meaningful for someone you really care about	3 Reconnect with nature today, even if you're stuck indoors
11 What are your most important values? Use them today	12 Be grateful for the little things, even in difficult times	13 Today do something to care for the natural world	14 Show your gratitude to people who are helping to make things better	8 Set yourself a kindness mission. Give your time to help others	9 Look out for positive news and reasons to be cheerful today	10 Tell someone about why your favourite music means a lot to you
18 Hand-write a note to someone you love and send them a photo of it	19 Find a way to craft what you are doing to give it more meaning	20 Reflect on what makes you feel really valued and appreciated	21 Share photos of 3 things you find meaningful or memorable	15 Find out about the values and traditions of another culture	16 Look around you and notice five things you find meaningful	17 Take a positive action to help in your local community
25 Give your time to help a project or charity you care about	26 Recall three things you've done that you are really proud of	27 Today link your decisions and choices to your purpose in life	28 Tell someone about an event in your life that was really meaningful	22 Ask a loved one or colleague what matters most to them and why	23 Share an inspiring quote with others to give them a boost	24 Do something special today and revisit it in your memory tonight
				29 Think about how your actions make a difference for others	30 Find three good reasons to be hopeful about the future	31 Look up at the sky. Remember we are all part of something bigger

**ACTION FOR HAPPINESS**

www.actionforhappiness.org

31 actions to look after ourselves and each other as we face this global crisis together

Keep Calm · Stay Wise · Be Kind

## The Art of Science Competition

UC Science and UC Arts are proud to present the Art of Science Competition 2020.

Show us your love for science through your art, and win exciting prizes!

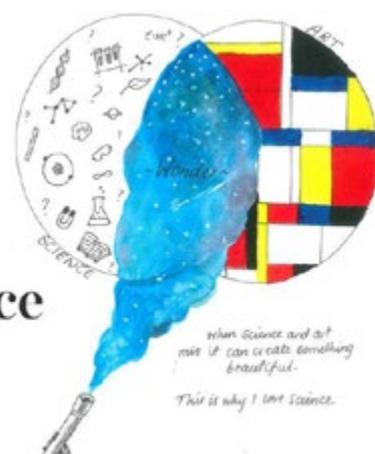
Applications open 17 April and close 8 May. Winners will be announced 22 May.

Read the full details on the [Science Outreach website](#)

UCARTS & UCSCIENCE  
*To Riangai Tai Timotea* & *To Riangai Pitohau*

present

## The Art of Science Competition 2020



## The Evening Sky in May 2020 - Alan Gilmore

Brilliant **Venus** is the 'evening star'. It sets in the northwest 90 minutes after the Sun at the beginning of the month (so not on the chart.) In a telescope it is a tall thin crescent as most of its sunlit side is turned away from us. It is 50 million km away mid-month, nearly as close as it gets. Venus sinks lower in the twilight as it passes between us and the Sun, disappearing before the end of the month. It reappears in the dawn sky in June. Mercury begins an evening appearance in mid-May, moving up below and left of Venus. It passes Venus on the 22nd and is setting 80 minutes after the Sun at the end of the month.

As the sky darkens **Sirius** appears midway down the western sky. It is the brightest of all the stars but fainter than Jupiter (see below.) It twinkles with all colours when setting in the southwest around midnight. Sirius, 'the Dog Star', marks the head of Canis Major the big dog, now head down, tail up. Canopus, second brightest star, is southwest of overhead.

Below Sirius are bluish Rigel and reddish Betelgeuse, the brightest stars in **Orion**. Between them is a line of three stars, Orion's belt. To southern hemisphere star watchers, the line of three makes the bottom of 'The Pot', now tipped on its side.

Crux, the Southern Cross, is southeast of the zenith, to the right of 'The Pointers'. Alpha Centauri, the brighter Pointer, is the closest naked-eye star, 4.3 light years\* away. Beta Centauri, like most of the stars in

**Crux**, is a blue-giant star hundreds of light years away. Canopus is also very luminous and distant: 13 000 times brighter than the sun and 300 light years away.

Following the Milky Way down into the southeast finds **Scorpius**. Orange Antares marks the Scorpion's body. Its upside-down tail curves to the right of Antares. Antares is a red-giant star like Betelgeuse: around 12 times the mass of the sun but wider than Earth's orbit. It is 600 light years away and 19 000 times brighter than the sun.

Orange **Arcturus** is the brightest star in the northern sky. It often twinkles red and green when low in the sky. Arcturus is the brightest red star in the sky but, at 37 light years, is much closer than Antares. It is about 120 times brighter than the sun.

Golden **Jupiter** appears in the southeast later in the evening (so not on the chart.) It rises around 10:30 at the beginning of the month; around 8 pm at the end. It is the brightest 'star' in the night sky, and shines with a steady light. Saturn is just below and right of Jupiter. It is cream-coloured and fainter than Jupiter but still a bright 'star'. By dawn the two planets are not far from overhead. The Moon will be near Jupiter and Saturn on the night of the 12th-13th.

**Mars** rises between midnight and 1 a.m. all of May. It has an orange-red colour and a similar brightness to Saturn. It is 170 million km away mid-month and shows a small disc in a telescope.

The **Milky Way** is brightest in the southeast toward Scorpius and Sagittarius. In a dark sky it can be traced up past the Pointers and Crux and fading toward Sirius. The Milky Way is our edgewise view of the galaxy, the pancake of billions of stars of which the sun is just one. The thick hub of the galaxy, 30 000 light years away, is in Sagittarius. The nearby outer edge is by Orion where the Milky Way is faintest. A scan along the Milky Way with binoculars shows many clusters of stars and some glowing gas clouds, particularly in Carina and Scorpius.

The **Clouds of Magellan**, LMC and SMC, are midway down the southern sky, easily seen by eye on a dark moonless night. They are small galaxies. The Large Magellanic Cloud is 160 000 light years away and is about 5% the mass of our Milky Way galaxy. The Small Cloud is around 200 000 light years away and 3% the mass of our galaxy. That's still many billions of stars in each.

\*A light year (l.y.) is the distance that light travels in one year: nearly 10 million million km or 10<sup>13</sup> km. Sunlight takes eight minutes to get here; moonlight about one second. Sunlight reaches Neptune, the outermost major planet, in four hours. It takes four years to reach the nearest star, Alpha Centauri.