



The Royal Society OF VICTORIA

Promoting science since 1854

PATRON: The Hon Linda Dessau AC
Governor of Victoria

PRESIDENT: Mr David Zerman

April Events:

~~2nd April: *Volcanoes: From Fuming Vents to Extinction Events* — Professor Tamsin Mather ****Cancelled****~~

~~9th April: *Ockham's Razor at the RSV* ****Cancelled****~~

~~16th April: *Breaking the Barrier with Antimicrobial Peptides* — Professor Frances Separevic AO **ONLINE EVENT** ****Postponed****~~

~~29th April: *Media and Communication Training for Scientists* — Science in Public ****Cancelled****~~

~~30th April: *STEMM Fundraising Success is not Accidental* — David Zerman ****Cancelled****~~

30th April: *From Wolfe Creek to Tunguska: Meteorites in Cultural Traditions* – Duane Hamacher – **ONLINE EVENT**

Advance Notice:

14th May: *RSV Annual General Meeting (for 2019)*

April 2020 Newsletter

Print Post Approved 100009741

The Royal Society of Victoria Inc.
8 La Trobe Street,
Melbourne, Victoria 3000
Tel. (03) 9663 5259
rsv.org.au

From Wolfe Creek to Tunguska: Meteorites in Cultural Traditions

Online Meeting - Thursday, 30th April at 7:00pm



The “falling stars” hold a significant place in the traditions of Indigenous cultures around the world, including Australia. From meteors, fireballs, and airbursts to meteorites, tektites, and impact craters, these objects and events are described in story, song, dance, and material culture. From the famous Tunguska explosion of 1908 to the ancient impact that formed the Henbury craters, many events were witnessed by Indigenous people and incorporated into their oral traditions – some leading scientists to previously unknown impact sites and meteorite finds.

Join cultural astronomer A/Prof Duane Hamacher on a journey to impact sites and meteorite finds across the globe. Get a chance to see never-before shown video of traditional cultural dances relating to fireballs (as permitted by traditional elders).



About the speaker:

Associate Professor Duane Hamacher leads the Cultural Astronomy program in the School of Physics at the University of Melbourne and is a member of the ASTRO-3D Centre of Excellence. Duane has researched meteoritic phenomena in a scientific and cultural context extensively for 15 years.



RSV Members can register to join this **online Zoom meeting**. Please follow the instructions provided in the invitation sent to all members from the CEO. The meeting will also be live-streamed on the **Society’s Facebook page** at <https://www.facebook.com/royalsocietyvictoria> for all interested.

Notice of Annual General Meeting



Full RSV members (ie. with voting rights) are asked to register to attend the 2019 AGM (not an error – held in 2020!), **noting a quorum of 50 will be required**. If you cannot attend, please nominate your proxy on the form provided by the RSV, either [online](#) or using the form at the rear of this newsletter.

Under the conditions imposed by the COVID-19 pandemic, this meeting will be



conducted online as a Zoom conference (including voting on motions via live Zoom poll). Those using Skype for Business should also have access, but please test your software's compatibility ahead of proceedings – we recommend installing the Zoom application and registering with a free account.

Voting RSV members only at the AGM please (please note that student members, as associates, are ineligible to vote in RSV Council elections or at the AGM). The CEO has sent emails to all voting members seeking registration and will continue to seek your participation – please keep an eye on your inbox, and contact Mike Flattley at ceo@rsv.org.au if you require further assistance.



RSV Members can register to join this **online Zoom meeting**. Please follow the instructions provided in the invitation sent to all members from the CEO via email.

Nominations for RSV Membership

Nominations for membership of the Society have been received on behalf of:

Dr Alistair **CARR**, Retired

Ms Sruthi **KURIAKOSE**, PhD Candidate,
RMIT University

Dr Gregory **STAIB**, Consumer Forecasting &
Analytics, Australian Energy Market Operator
Mr James **CHESTERFIELD**, Advisory Project
Manager, Arup

Dr Nathan **ROBINSON**, Research Fellow,
Federation University

Mr Samuel **WINES**, CEO, Phoenix School
Program

Unless Members request a ballot, these will be considered by Council and if elected, will be announced at the Ordinary Meeting of the Royal Society of Victoria to be held in May 2020, which will be conducted online.

From the President

I hope you, your family, friends and colleagues are in good health. We live in such a fast-changing world due to COVID-19 that I really can't anticipate what the news will be as you read this.

At the RSV we are working to continue our regular series of presentations – but, as I'm sure you will understand, that does not always come to fruition due to circumstances beyond our control. We recently held our first Science Watch Party with three video presentations from some of last year's presenters. Besides the videos we also had an interactive discussion.

We are planning our next **Science Watch Party** on Thursday 16th April at 7pm when there will be three short video presentations on:

- The Future of Electronics
- Mind over Faecal Matter – Gut Biome and Mental Health
- The Marvels of Medicinal Plants

- followed by a Q and A discussion for participants. To participate please register via the forthcoming email to be sent to all current members by Mike.

I'm looking forward to our live streamed event on Thursday 30th April at 7pm when Associate

Professor Duane Hamacher will give a presentation on Meteorites in Cultural Traditions. Full details earlier in the newsletter.

Don't forget to book in for our AGM on Thursday 14th May, which will be held via a Zoom video conference and where you will have the opportunity to raise any issues with your Executive office bearers before voting on each motion using the online polling tools.

Yes, we do live in interesting times... but the RSV's staff (thanks especially to Mike, James, Rena and Malourie) are working to run activities and deliver our programs under difficult circumstances.

If you have any questions please feel free to call me on 0418 346 999 or email me at president@rsv.org.au.

Community Science Engagement During the Pandemic

With the sensible and necessary constraints placed on public gatherings to manage the spread of COVID-19 in Victoria, it's fair to say the global public events sector has gone to ground entirely. However, humans are social animals, and it's hard for us not to come together to learn, play, plan or celebrate during these remarkable times. Where in some cases there is little to be done, there is still plenty to be getting on with in delivering a science engagement program to Victorian communities, including National Science Week, by turning to the many tools provided by online forums and media.

The RSV team has been hard at work to refashion our community development and science engagement activities around online delivery of content under the **Inspiring Victoria** banner. While we are yet to receive the Commonwealth's definitive position, we are confident we can develop and deliver an outstanding experience for audiences online, including participatory programs.

In the meantime, however, we regret to advise we have placed our various event-focussed grants on hold until the pandemic has run its course. We hope to offer an open grant round later in 2020. We will keep you informed as we make decisions based on emerging conditions.

Light Conversations: Sustainable Solar Energy

by **Catriona Nguyen-Robertson MRSV**
Science Engagement Officer



Australian Research Council Centre of Excellence in



This article follows a presentation on 12 March, 2020 titled "[Sustainable](#)

*[Solar Energy Through Exciton Control](#)" by organic chemist **Dr Wallace Wong**, a Chief Investigator from the [ARC Centre of Excellence in Exciton Science](#) to the Royal Society of Victoria. The lecture was presented as a part of the Centre's "Light Conversations" lecture series.*

In Victoria, most of our electricity comes from the burning of brown coal mined in the Latrobe Valley. But the origins of that energy are from the Sun. Most of the energy on Earth originates from the Sun. Dr Wallace Wong harvests this energy directly to produce clean energy without reliance on fossil fuels.

Heat is generated at the 15-million-degree core of the Sun and it travels outwards to the surface, then radiates to our planet and throughout the Solar System. The energy we obtain from burning coal today comes from the energy that prehistoric vegetation absorbed from the Sun millions of years ago. But it instead only takes microseconds to convert sunlight directly into electricity.



**Where does Earth's energy come from?
Essentially: the Sun.**

Global electricity consumption continues to accelerate with economic growth and industrial demand. Around 23 trillion kilowatt hours of energy were consumed in the single year of 2018 - the equivalent power needed to turn on 1,800 billion LED bulbs for an hour. To provide our growing population with the level of energy the developed world is used to, we would need to generate 60 trillion kilowatts worldwide. Power plants as we know them cannot satisfy these demands; however, the sunlight energy striking the Earth's surface in an area the size of Texas alone could provide up to 300 times the total power output of all the power plants in the world. "Solar energy has the greatest potential to fill this energy gap," says Dr Wong.

There are multiple ways to harvest solar energy: solar thermal technology, solar fuels, and photovoltaic cells. Solar thermal technology is efficient at heating water for use in pools and houses. Solar fuel will ideally become a new renewable source of fuel through the production of liquid hydrogen. Photovoltaic systems are the solar cells we are most familiar with that can convert photons from light energy into electricity.

ACEx
Photovoltaics (Solar Cells)

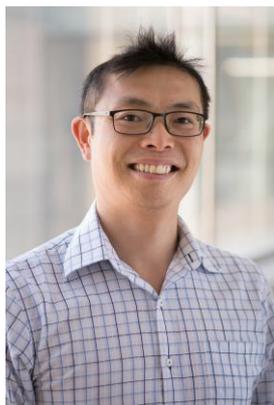
- Silicon (crystalline)
- GaAs, multijunction
- Silicon (amorphous), CdTe, CIGS
- Organic/Polymer
- Hybrid/Perovskite
- Quantum Dot





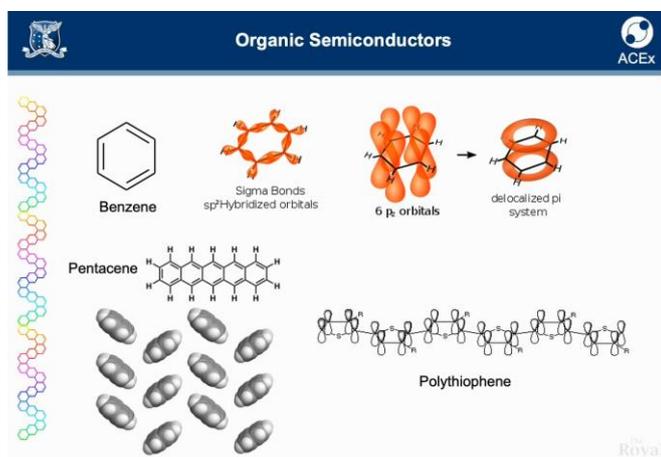
Most commercial solar cells that are currently used for solar farms and residential rooftops are silicon-based. Silicon dioxide (sand) is purified into pure silicon and then the solar module is encased in glass. Silicon is a common element – there is no shortage of sand – however, the purification process is not cheap. With the current cost of electricity at around \$1/Watt, it would take around 6 years to break even with the cost of solar panel installation by feeding electricity back into the grid. In addition, the amount of time it would

take to harvest the same amount of solar energy as the energy cost of production would be a minimum of two years in a sunny location.



As an organic chemist, Dr Wong (pictured left) is developing printed solar cells, composed of organic polymers – strings of repeating molecules, such as benzene. Benzene rings contain π bonds between

carbon atoms, which allow electrons to flow freely through the molecule. By stringing benzene rings together in a large crystal, electrons can hop between individual molecules and this provides the material with semi-conductive properties. Rolling onto flexible, organic photovoltaic cells, the energy payback takes 1-3 years. Wong researches ways to improve the production and manufacturing of these printed solar cells, and with improved production, their energy payback can be as short as a single day.



To make solar cells even more efficient, we need to break the Shockley-Queisser (SQ) limit.

When solar energy is converted to electricity, some energy is lost as heat, and some light is reflected back or passes through the solar cell without being captured. The best modern production silicon cell efficiency commercially available is 24%. But we can do better.

The SQ limit calculates that a solar cell's energy maximum conversion efficiency is 33%. The original calculation was 30% for a silicon solar cell, but current solar cell

production efficiencies vary by the wavelengths of light the semiconductor material can absorb.

Sunlight provides electromagnetic radiation covering the entire light spectrum from infrared, to visible, to ultraviolet light. Solar cells are designed to absorb light at specific wavelengths and don't capture the entire spectrum. 42% of solar energy is in the visible range (light that we can see), 5% in the UV range, and 52% is near-infrared. One way to make the most of all light photons is to "up-convert" the low-energy "waste photons" into high-energy photons. This is achieved by exciting the low-energy photon to an intermediate state for it to be excited again, thereby jumping up even further in energy. By combining techniques to up-convert photons and reduce thermal energy loss, Dr Wong can boost the efficiency of silicon solar cells from 26.7% to 32.5%.



Luminescent Solar Concentrators

Dr Wong is also developing Luminescent Solar Concentrators (LSC), which capture and trap sunlight. Originally becoming a scientist because he liked "the beauty of art, objects and molecules", this is the perfect opportunity for Dr Wong to combine art and science. The concentrators contain a fluorescent dye dispersed in a plastic matrix – the dye absorbs light, which is trapped in the plastic. If connected to a solar cell, the emission trapped inside can be converted into a current. Wong

and his colleagues are creating materials that could transform windows and walls into solar cells and are ideal for capturing light indoors. He has designed a coloured plastic wall feature for his own house to one day be connected to LSCs to power mobile phones, power banks, and more.

Ultimately, a combination of solar cell technologies and solar fuel will be crucial to creating our energy-efficient future. “We need to think about all renewable energies,” says Dr Wong. He believes that we will no longer need to rely on fossil fuels. We will be living on sunshine.



From left: RSV Vice-President Nicola Williams, Dr Wallace Wong, RSV Councillor A/Professor Robert Day (vote of thanks), RSV Science Program Chair Dr Kevin Orrman-Rossiter

Our thanks to Wallace and our colleagues at the Centre for Exciton Science for a great talk! If you missed it, you can catch up on highlights or the full presentation from our YouTube channel – the brief digest is available to view now at <https://youtu.be/Z1wDUloQVvk>.



Seeing the Smoke

by Catriona Nguyen-Robertson MRSV
Science Engagement Officer

This article follows a presentation on 26 March, 2020 titled “[AQFx – An Australian Smoke Forecasting System](#)” by organic chemist **Dr Martin Cope**, Principal Research

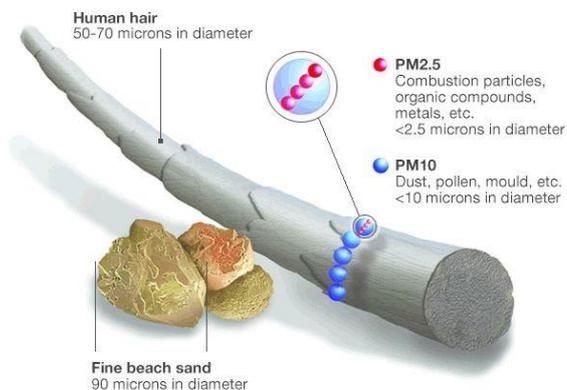
Scientist with the [CSIRO’s Climate Science Centre](#), to an ordinary meeting of the Royal Society of Victoria via Zoom.

“Smoke never has just a minimal impact,” says Dr Martin Cope, Principal Research Scientist at the CSIRO Climate Science Centre (pictured below).



We spent long periods shrouded in smoke due to the 2019-2020 bushfires that burned upwards of 12 million hectares. In addition to the tragic loss of life and devastation to ecosystems and infrastructure, there were significant levels of smoke exposure across Australia. The lives lost as a direct result are likely to number in the hundreds.

Approximately 10 million people experienced elevated concentrations of fine particles on account of the recent fires. As smoke particles were carried across cities by wind, people were exposed to an air quality equivalent to smoking between 20 to 40 cigarettes. These ultrafine particles, less than 2.5 micrometres in diameter (a ninth of a grain of sand), are referred to as PM2.5 particles.



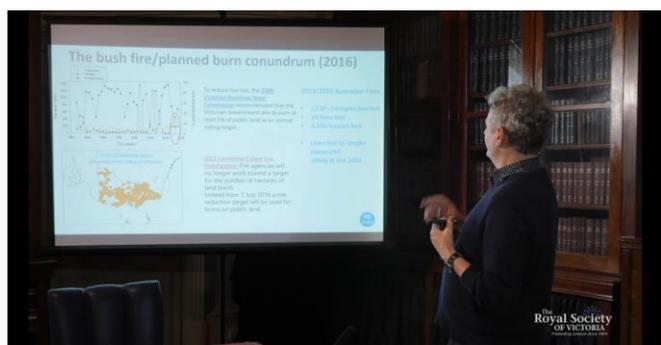
Source: US EPA

These particles readily enter the lungs when breathed in, and if small enough, enter the bloodstream, risking irritation, infection and an increased chance of lung and heart disease. Exposure to fine particles for prolonged

periods of time is known to increase levels of morbidity and mortality amongst vulnerable members of our population, such as those with pre-existing respiratory or cardiac conditions.

Following the 2009 Black Saturday bushfires, the Victorian Bushfires Royal Commission recommended that 5% of public land should be burned annually to reduce the risk of catastrophic bushfires. While protective against large, uncontrollable bushfires, these prescribed burns produce smoke that can have a significant impact on health.

For this reason, the Victorian Department of Environment, Land, Water and Planning (DELWP) developed an air quality forecasting framework, AQFx, to provide information to DELWP and the State Control Centre for decision-making (to decide whether to proceed with planned burns or warn populations of incoming smoke plumes respectively).



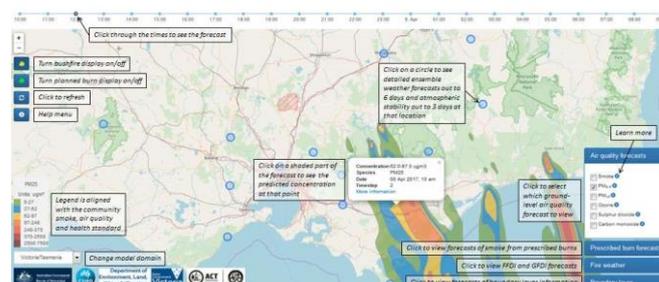
Dr Martin Cope: the bush fire/planned burn conundrum

AQFx uses a numerical air quality forecasting model to provide information in a multi-tiered system, each tier being increasingly more detailed but commensurate with an increasingly shorter time scale. Information taken into account for the models include:

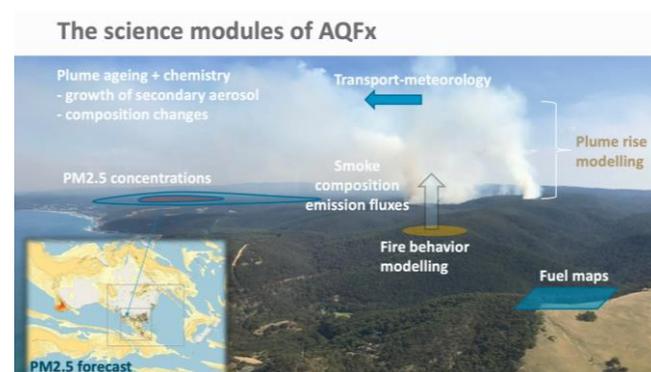
1. **Fire behaviour modelling:** characterising the fuel of the fire and the rate of fuel consumption. This can be modelled in CSIRO's Pyrotron, a wind tunnel oven lined with a bed of various fuel types (e.g. bark, dry leaves, grass, etc.) that are set alight to study how the fire evolves with wind blowing over the top.
2. **Smoke composition emission fluxes:** observational studies performed by sampling smoke (in suits that resemble the

Ghostbusters' getup to approach large fires).

3. **Plume rise modelling:** determining the heat of the smoke, as hotter smoke rises higher into the atmosphere. Smoke that reaches the stratosphere can travel around the globe, while smoke from cooler fires and smouldering vegetation hugs the ground and lingers for days. Smoke from the 2019-2020 bushfires reached the stratosphere and circumnavigated the globe.



4. **Meteorology:** analysing wind patterns to predict the movement of smoke based on forecasts produced by the Bureau of Meteorology (BoM).
5. **Plume aging and chemistry:** as smoke ages, the number of particles increases. It is not only important to measure particular matter produced by the fire itself, but to also take PM2.5 particles produced in the surrounding environment into account (e.g. particles from dust, construction, woodstock fires, sea salt aerosols, etc.).



The first time AQFx was utilised for a stress response (rather than routine planned burns) was the 2016 Tasmanian fires that ignited in a dry lightning storm. Smoke travelled across northern Tasmania to Victoria and up along the eastern seaboard. BoM produced daily air pollution forecasts (with an emphasis on smoke) using AQFx, and the levels of smoke

and PM2.5 concentrations predicted were indeed accurate. The model appeared to be more accurate for areas further away from the fire (e.g. predictions for regions over 100 km away, and for Melbourne and Sydney). Wind forecasts provided by BoM allowed AQFx to accurately predict how the smoke would blow across mainland Australia, however smoke close to the fires themselves meander and behave in a less predictable manner.

For effective planning, emergency management requires data, smoke and fire intelligence, visualisation tools, and good communication. Satellite data, such as those provide by geostationary satellite Himawari 8, provide valuable information to track bushfire hot-spots and the evolution of fires to predict their smoke emissions.



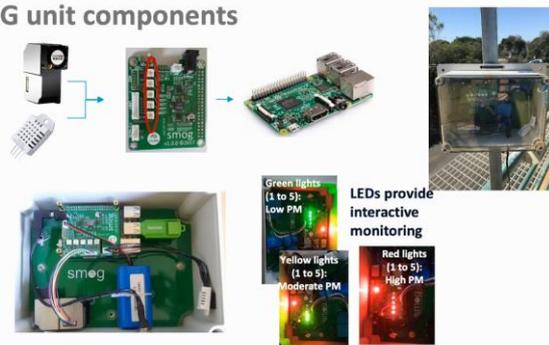
An impression of Himawari 8. Source: BoM

Dr Cope and colleagues have trained an artificial intelligence algorithm to determine sources of smoke and their distribution patterns by distinguishing clouds from smoke in Himawari 8 data. (Note that while our local satellite provides a resolution in the 10's of centimetres, Himawari 8 is a Japanese-owned satellite with a resolution of 1 km that images every 10 minutes, providing better spatial-temporal resolution.)

To supplement available observations, Cope's team developed low-cost SMOG units, which are the size of lunchboxes and readily made. SMOG units measure smoke levels by determining the obscuration of light and transmitting information collected back to a central location. Dr Cope's team has even worked with primary school students to build SMOG detectors, encouraging them to take their detectors home, analyse their own data and share these with the AQFx as an impactful

citizen science initiative. Because they are so easy to make, they can be scattered across the country to provide near-real time smoke intelligence for all regions.

SMOG unit components



The forecasting of pending smoke impacts provides advanced warning for populations and input to visibility advisories for general aviation and the Australian Defence Force. This summer, it was put to the test extensively, highlighting how important it is for us to see the smoke coming.



Questions and answers via Zoom with RSV Members following the screening of Martin's presentation (Chair: RSV Future Focus Lead, Rob Gell AM; Vote of Thanks: RSV Councillor Dr Catherine de Burgh-Day).

Our thanks to Martin for an excellent presentation, and in particular his flexibility in filming the talk ahead of time for our social distancing benefit. As yet our tailored YouTube content isn't available, but you can review the proceedings of the Zoom meeting

at: <https://www.facebook.com/royalsocietyvictoria/videos/907955672981523/>



Second Call for Applications

The Royal Society of Victoria has established four prestigious competitive prizes open to post-graduate, doctoral students in all areas of the Biomedical & Health Sciences, Biological Sciences (Non-human), Earth Sciences and Physical Sciences.

The Biological Sciences (Non-human) prize and Earth Sciences Prize are also supported by the legacy of our previous Presidents, Edmund D Gill and Neil Archbold respectively. We also gratefully acknowledge the support of Max and Margaret Richards across all categories.



2019 finalists with RSV officers

- The category of **Biomedical and Health Sciences** includes the fields of Endocrinology, Epidemiology, Genetics, Human Physiology, Human Anatomy, Immunology, Medical Parasitology, Microbiology, Neurology, Nuclear Medicine, Pathology, Pharmacology, Radiology and related human sciences apart from clinical trials.
- The category of **Biological Sciences (Non-human)** includes the fields of Agriculture, Biochemistry, Botany, Cell Biology, Ecology, Evolutionary Biology, Forestry, Zoology, and related non-human science.
- The category of **Earth Sciences** includes the fields of Geochemistry, Geochronology, Geology, Geophysics, Planetary Physics, Meteorology, Oceanography, Palaeontology, Physical Geography and related sciences.
- The category of **Physical Sciences** includes the fields of Astronomy, Astrophysics, Chemistry, Mathematics, Physics, all branches of Engineering and related sciences.

Eligibility:

Application is open to candidates in the fourth* year of their doctoral candidature in Universities in the State of Victoria at the time of application, and who are members of the Royal Society of Victoria. Candidates who have submitted their thesis are ineligible.

In order to promote the interests of young people starting their careers, we are limiting applications to doctoral candidates under 40 years of age.

Applicants who are not already members are required to join the Society (see below). RSV student membership for eligible applicants in 2020 is free.

*For institutions with three-year doctoral programs, please read this as “final year.” Technically, you must be close to submitting your final research thesis for assessment in the year of award application.

Applications:

Applications opened for the 2020 round on 1 March and will close at 5.00pm on 31 May.

Candidates should nominate themselves.

The application for a prize should consist of:

- **An application form** (incorporating your extended abstract) to be submitted electronically, then printed (from your confirmation email), co-signed by your Supervisor or Head of Department (to ratify your contribution to your doctoral research, particularly if it is a team research project) and submitted along with your RSV Membership Form (if required).

- **An extended abstract** presenting a succinct summary of your research work. This is incorporated in the body of the application form to guide structure and length, and includes a title, rationale for the study, aims, methods, results, conclusions and significance, indicating why your research is important and of scientific interest.

Submission:

Submission of the prize application form and abstract should be co-signed with your supervisor and received as a single file via email marked for the attention of the Chief Executive Officer at rsv@rsv.org.au.

Conditions:

If you are not already a member of the Royal Society of Victoria, please submit as a **separate** document a completed Royal Society of Victoria Membership Application form for 2020 Prize applicants. Student membership for all eligible Prize applicants will be free of charge for the remainder of 2020.

The Royal Society of Victoria may re-classify the field of an application if it fits best in a field other than the one nominated by the applicant.

The Society reserves the right not to consider applications that do not comply with the above requirements and not to make an award if there is no suitable candidate.

Judging:

On the basis of the written abstracts, the judges will select a short list of two candidates in each of the four fields of Biomedical and Health, Biological (Non-human), Earth Sciences and Physical Sciences.

The award is based on demonstration of the applicant's excellence in scientific research, ability to communicate scientific information clearly and succinctly to an audience of scientists and members of the general public on their particular research field and to answer questions from the audience.



Each of the short-listed candidates will be required to give a 15-minute oral presentation (10 minutes presentation, 5 minutes discussion) before a general audience of scientists and members at the Society on **Wednesday, 19th August 2020** commencing from 6:30 p.m. Finalists who are unable to present cannot be considered for an award. The order of speaking is decided by ballot on the night. The presentations are open to fellow students, friends and families as well as Members and supporters of the Society.

The winners will be judged and announced on the night, when the prize and a certificate will be presented by the Society's President.

*****Please note: online delivery of presentations will be pursued in the event that COVID-19 containment conditions continue to restrict large gatherings.***

The Awards:

The successful candidates will each receive a certificate and a prize of \$1000. Winners will also receive free student membership of the Royal Society of Victoria for a period of two years and the opportunity to participate in the Society's programs and access our professional networks for mentoring and collaboration as desired. The runners-up each receive a certificate and a cash prize of \$500 plus free student membership of the Royal Society of Victoria for a period of two years.

Enquiries:

Chief Executive Officer, The Royal Society of Victoria, 8 La Trobe Street, Melbourne 3000
Telephone: (03) 9663 5259 or email rsv@rsv.org.au . All online application and membership forms are available through following the process at <https://rsv.org.au/awards-and-prizes/young-scientist-research-prizes/>

Call for Nominations



2019 Medallist Professor Andrew Pitman is presented with the RSV Research Medal by Victoria's Commissioner for Environmental Sustainability, Dr Gillian Sparkes MRSV

In its Centenary year (1959) the Royal Society of Victoria instituted a Medal for Excellence in Scientific Research. The award consists of a Silver Medal, which is awarded annually for scientific research in one of four categories that rotate from year to year.

Nominations are invited for the **Royal Society of Victoria Medal for Excellence in Scientific Research 2020 in Category IV: Physical Sciences**. This category includes research in the disciplines of Astronomy, Astrophysics, Chemistry, Engineering, Mathematics, Physics and related sciences.

The last Medal recipient in this category was [Professor Lloyd Hollenberg](#) (2016). All past medallists are listed at



Our first medallist (1959): geologist Dr George Baker MRSV

Award criteria:

The award of the Medal is based on demonstration of the candidate's excellence and leadership in scientific research. The candidate's research work shall have been carried out in Australia (including its territories), or on Australia, with preference for work done in Victoria, or on Victoria.

Nomination:

- Nominations open on **31 March, 2020** and close at **5pm** on **31 July, 2020**.
- Candidates cannot nominate themselves.
- Scientific Societies, Academies, Universities, Research Institutes, CSIRO, and Members of the Royal Society of Victoria are invited to make nominations.
- The nomination statement should demonstrate the candidate's:
 - 1. Exemplary publication track record during the ten year period from 1st January 2010 to 31st December 2019.** The track record will be judged on

The RSV Medal for Excellence in Scientific Research 2020

papers published and/or accepted for publication in refereed international journals. Work outside the ten year period will not be considered.

Career record relative to opportunity will be considered by the assessors. Nominators should indicate whether the nominee is an early career researcher, has had career interruptions, or has had extended periods of part-time employment. For multi-authored publications, the contribution of the applicant should be indicated.

- 2. Consistent excellence** in innovation or ground-breaking research and patents, incorporating novel scientific techniques and methods – described in plain language.
- 3. Exemplary leadership in science** incorporating evidence of: a major contribution to the public promotion of science, advocacy for science, partnership building, collaborations, role model and influence across the scientific community.

Submission:

The submission should consist of:

- The nomination statement, signed by the nominator, covering points 1 to 3 above. This must be in Times New Roman, 11 point, and no more than three A4 pages please.
- A brief (no more than five A4 pages) Curriculum Vitae of the candidate. A list of publications, attached in supplement, should be constrained to the ten year period from **1st January 2010 to 31st December 2019**.
- The nomination submission should in the form of a single PDF file sent via email to the Chief Executive Officer at ceo@rsv.org.au

Conditions:

The Royal Society of Victoria reserves the right to seek independent referees in considering the nominations received, and not to consider nominations that do not comply with the nomination format or do not address the award criteria.

If no candidate of sufficient merit is nominated, no award need be made in a particular year.

No posthumous award will be made.

The Award:

The successful candidate will receive an engraved silver medal which is presented by the Society's patron, the Governor of Victoria or, in the event of Her Excellency's unavailability, a senior leader of Victoria's science community.

The medallist will be required to present a lecture to the Society Members and guests on the evening of Thursday, 10th December 2020 at which the Medal will be presented.



2016 Medallist Professor Lloyd Hollenberg is presented with the RSV Research Medal by Dr Amanda Caples, Victoria's Lead Scientist.

Enquiries: CEO, The Royal Society of Victoria, 8 La Trobe Street, Melbourne 3000
Telephone: (03) 9663 5259, or ceo@rsv.org.au.

Please Support the Royal Society of Victoria

We are an independent, non-government organisation that relies on membership subscriptions, grants and private philanthropy to fulfil our objectives for community science engagement and literacy.

Donations to the Royal Society of Victoria can be made at any time via the following methods:

Online: we gratefully accept contributions through credit card and PayPal transactions on our website at <https://rsv.org.au/about-us/support/>

Via mail: the form **below** can assist you in allocating your donation to your preferred activity area, using either your credit card details (Visa or Mastercard), a cheque/money order made out to the Royal Society of Victoria, or notification of a direct Electronic Funds Transfer (EFT) transaction to the Society's bank account.

In person: we gratefully accept donations at the Society's office in cash, cheque/money order or via credit card.

Donation Form

<i>Please allocate my donation to the following program areas:</i>	
Highest Priorities	Donation Amount
<i>The Area of Greatest Need, as Identified by the Society's Council</i>	\$
Science Program	
<i>Area of Greatest Need</i>	\$
<i>Filming RSV Events for Sharing with Audiences Online</i>	\$
<i>Upgrading Audio-Visual Equipment in the Ellery Theatre</i>	\$
<i>Awards & Prizes for Victorian Scientists</i>	\$
<i>Regional & Interstate Travel for RSV Speakers/Presenters</i>	\$
Science Program Total:	\$
Science Outreach	
<i>Area of Greatest Need</i>	\$
<i>Bursaries for Victorian Students through the Science Talent Search</i>	\$
<i>Kids' Science Clubs</i>	\$
<i>Girls in Physics (with VicPhysics Teachers' Network)</i>	\$
<i>Citizen Science Programs (with Science for All)</i>	\$
<i>Gender & Cultural Diversity in STEMM Initiatives</i>	\$
<i>Community Lifelong Learning Programs</i>	\$
<i>National Science Week Community Grants Program</i>	\$
<i>Victorian Teachers' Professional Development & Extension</i>	\$
Science Outreach Total:	\$
Science Heritage	
<i>Area of Greatest Need</i>	\$
<i>Repair & Refurbishment of the RSV's Heritage-Listed Buildings</i>	\$
<i>Conservation & Curation of the RSV's Heritage Journal Collection</i>	\$
<i>Victorian Science History Research Projects & Papers</i>	\$
Science Heritage Total:	\$

Please Support the Royal Society of Victoria

Science Advocacy	
<i>Area of Greatest Need</i>	\$
<i>Convene Senior Government & Industry Forums with Leading Scientists</i>	\$
<i>Convene Community Forums with Leading Scientists</i>	\$
<i>Publish the Evidence Base Produced by Victorian Scientists</i>	\$
<i>Advocate on Issues Related to Science & Scientific Findings with Government</i>	\$
Science Advocacy Total:	\$
Indigenous Community Science Engagement	
<i>Area of Greatest Need</i>	\$
<i>Indigenous Community Science Engagement</i>	\$
<i>Tertiary Scholarships for Indigenous Students</i>	\$
Indigenous Community Science Engagement Total:	\$
Total Donation:	\$

Personal Details

Family name:

Given names (in full):

Payment Details

Title (circle one) Prof Dr Mr Mrs Ms Miss Other

I am paying by (select one):

Credit Card Please note we do not accept Diners or American Express
 VISA Mastercard **Please charge the amount entered against "Total Donation," above, to my credit card.**

Card No. Expiry Date:

Name on Card Signature of Card Holder

Cheque or Money Order

I enclose my cheque or money order made out to **The Royal Society of Victoria**.

Electronic Funds Transfer (EFT)

I have transferred my donation to the Royal Society of Victoria as follows:

BSB: 083-019 **Account No:** 51-515-2492 **Account Name:** The Royal Society of Victoria

Reference: Your Surname and "donation"

*Please detach this page and return with your preferred payment method to:
 The Royal Society of Victoria, 8 La Trobe Street, Melbourne, VIC 3000. ABN: 62 145 872 663.*

Grateful thanks for your generous support for our many endeavours!

We will provide a tax receipt for all donations received over \$2.



The Royal Society OF VICTORIA

Promoting science since 1854

PROXY Form for Voting at the Annual General Meeting of THE ROYAL SOCIETY OF VICTORIA (INC)

In accordance with the Rules of the Society, financial Members of the Royal Society of Victoria Inc. may vote in person or by proxy. Rule 21 (1) requires notice of the appointment of a proxy, who is a member of the Society, to be given or sent to the Honorary Secretary at the Society’s Office (via email is preferred: rsv@rsv.org.au) no later than **5.00 pm on Wednesday 13th May 2020**, the last working day before the meeting, **which will be held at 5:00 pm on Thursday 14th May 2020 online as a Zoom meeting**.

To assist Members in lodging notice of the appointment of a proxy this form is provided.

I.....,
(Block letters please)

being a Member of The Royal Society of Victoria Inc., appoint as my proxy:

The Chairman of the Meeting*

.....*
(Name of the Member who is to be proxy, **block letters please. Must be a fully subscribed, voting Member of the Royal Society of Victoria**)

***Please tick one box.**

My instructions are to vote for / against (circle one for each motion)

If direction to vote ‘For’ or ‘Against’ is not provided, the Proxy is considered undirected and so may be used at the discretion of the nominated Proxy holder.

Ordinary Business:

Moved: D. Zerman Seconded: P. Baines **For / Against / Proxy’s Discretion**
That in accordance with Rule 11 (4) (a) the Minutes of the 2018 Annual General Meeting held 9th May 2019 as presented to Council be confirmed.

Moved: D. Zerman Seconded: P. Baines **For / Against / Proxy’s Discretion**
That the 2019 Annual Report (including the President’s Report) of the Royal Society of Victoria be received in accordance with Rule 11 (4) (b) and (d).

Moved: A. Davison Seconded: P. Baines **For / Against / Proxy’s Discretion**
That the 2019 Financial Report and Auditor’s statement of the Royal Society of Victoria be received in accordance with Rule 11 (4) (b) and (d).

Moved: A. Davison Seconded: P. Baines **For / Against / Proxy’s Discretion**
That Pitcher Partners Advisors Pty Ltd be invited to accept the position of Auditor of the Royal Society of Victoria for 2020 in accordance with Rule 11 (c).

Signature

Date

Please return to:
The Honorary Secretary
The Royal Society of Victoria
8 La Trobe Street
Melbourne VIC 3000

To reach the Royal Society of Victoria office (email: rsv@rsv.org.au) no later than **5.00pm on Wednesday 13th May, 2019**