



The MacDiarmid Institute

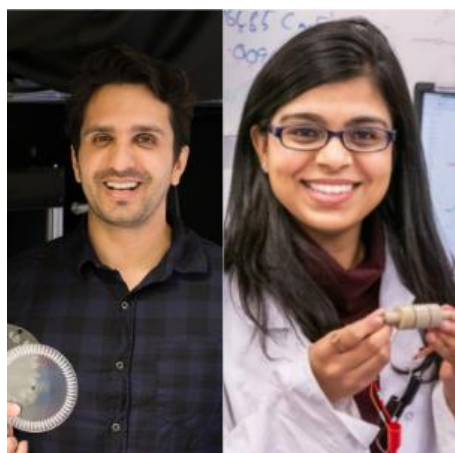
for Advanced Materials and Nanotechnology

We hope you and your whānau are safe and well during these lockdowns. As expected, 2021 is turning into another unpredictable year for many, including for our MacDiarmid Institute researchers and students.

This newsletter is for you and we're particularly excited about this update as we enter a new chapter of the Institute, with [new research programmes](#). You'll read how there are more opportunities to stay connected with the MacDiarmid Institute whānau. So please stay in touch - we'd love to receive feedback on what was and wasn't useful, and to hear if there's anything else MacDiarmid-related that you'd like to be kept up to date on. Please also forward this newsletter to other alumni you know.

Our new Research Programmes (which began [on 1 July 2021 and continue to the end of December 2028](#)) will address some of the greatest challenges facing Aotearoa New Zealand today; [Towards Zero Carbon](#), [Towards Zero Waste](#) and [Towards Low Energy Computing](#). Crosscutting these three Research Programmes sits our [Mātauranga Māori Research Programme](#). This programme provides a platform for the other three research programmes, intersecting with the theme of sustainability.

News and Updates



[Two MacDiarmid alumni shortlisted for the KiwiNet Awards](#)
[Dr Matheus Vargas](#) of [Orbis Diagnostics](#), and [Dr Shalini Divya](#) of [Tasmanlon](#), are shortlisted finalists for the 2021 KiwiNet Breakthrough Innovator Award. Both Orbis Diagnostics and Tasmanlon are [MacDiarmid Institute affiliated spinout companies](#)



[Alumni Business Scholarships - Applications close 15 October](#)

Every year we offer a limited number of competitive business scholarships to our alumni to enable them to undertake further postgraduate study in business-related areas. Applications for 2022 are open and close October 15, more information is [available here](#). Questions about the application process can be directed to: Deputy Director, Commercialisation and Industry Engagement, [Assoc Prof Geoff Willmott](#).



[Science advisory panels](#)

We commenced an online platform for regular engagement between technology companies and our scientists in the form of Science advisory panels. Each panel session hosts a company that is interested in pursuing research to overcome a technical challenge with commercial relevance. If you or your company is interested in being part of our Science advisory panel, please contact [Kevin Sheehy](#).



[Internships](#)

As you probably know, we offer internships to our affiliated graduates so they can experience working on real industry problems. We have a comprehensive network of companies, start-ups, NGOs and government agencies. If your company or workplace wishes to host an internship, please [contact us](#).



[Discovery Scholarships for Māori and Pacific Island undergraduate students](#)

In 2022 we will award a third round of Discovery Scholarships. We are looking to grow our scholarship programme and are seeking sponsorship from interested organisations and companies. If you or your workplace are interested in being part of this please [email us](#).

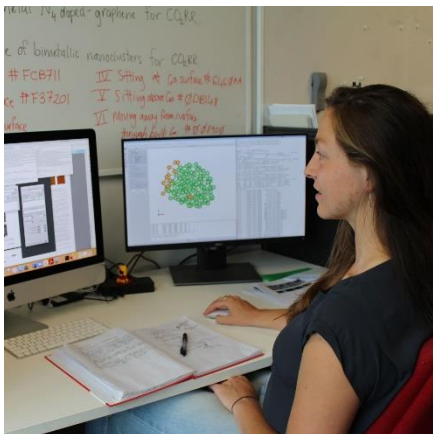


[Techweek 'Deep Tech - Creating a boost for New Zealand's economy'](#)

This year's events were attended enthusiastically by investors, entrepreneurs, mature companies and professional services firms as well as students, researchers and alumni and Minister Megan Woods (Christchurch). These events always spark new potential for projects and industry interest in MacDiarmid Institute research.



New Zealand-China Alliance for Green Energy and Environment Research (NZCA-GREEN) launched in July. It is a platform for developing collaborative research on sustainable energy and environment between NZ and China. NZCA-GREEN is aiming to coordinate new research collaborations to tackle energy and environmental challenges. If alumni are interested in join, please contact [Dr Ben Yin](#).



[Liquid metals that create nanostructure - it's the little details that count](#)

MacDiarmid Institute PhD candidate Stephanie Lambie successfully kick-started a new collaboration with [FLEET](#). Looking at the properties of liquid metals, in this case, bismuthgallium alloys, which create nanoscale patterns, that could be useful in nanoelectronics, or that could play a role as catalysts to speed up chemical processes using low amounts of energy.

A new paper in Science by [Associate Investigator, Dr Philip Brydon](#), reports a [new superconducting material](#) that can withstand remarkably high magnetic fields - more than 25 times larger than what the standard theory predicts. This material, called CeRh₂As₂, appears to have a rare transition between two distinct superconducting states as a function of the magnetic field. There are only a handful of other materials where this has been reported.

$$\begin{aligned}
 H_N = & t_1 [\cos(k_x) + \cos(k_y)] - \mu + \alpha_F \tau_z [\sin(k_x) \sigma_y - \sin(k_y) \sigma_x] \\
 & + t_{c,1} \tau_x \cos\left(\frac{k_x}{2}\right) \cos\left(\frac{k_y}{2}\right) \cos\left(\frac{k_z}{2}\right) + t_{c,2} \tau_y \sin\left(\frac{k_x}{2}\right) \cos\left(\frac{k_y}{2}\right) \cos\left(\frac{k_z}{2}\right) \\
 & + \lambda \tau_z \sigma_z \sin k_z (\cos k_x - \cos k_y) \sin k_x \sin k_y.
 \end{aligned}$$



[Te Ao Pūtaiao Me Te Ao](#)

Discovery Camp alumna Isitokia Paasi interned with our Stakeholder Partner Iwi [Diane Bradshaw](#) and [Dr Karyne Rogers](#) at [GNS Science](#), evaluating the geological and geochemical whakapapa, and cultural connections of stone artefacts from the Kawhia Museum.

Recent media



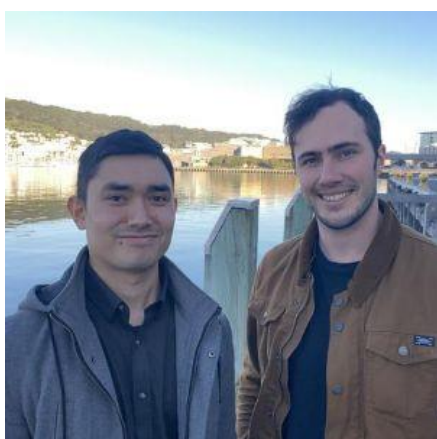
[RadioNZ Nights' Materials: Fact or Fiction](#)

In our partnership with RadioNZ Nights, Emily Kendall, a PhD Student from the University of Auckland's Department of Physics gave us her scientific take on the [Proton Pack from Ghostbusters](#), and [Principal Investigator Professor Duncan McGillivray](#) also from the University of Auckland, related the [liquid metal from Terminator 2](#).



[The free camp that encourages Māori and Pacific students to consider careers in science](#)

Recently profiled in The Spinoff, DiscoveryCamp is an opportunity for year 12 and 13 Māori and Pacific students where they are encouraged to draw on their own indigenous knowledge and find joy in science. If you know any rangatahi, encourage them to [apply](#) by Friday 17 September!



[Interactive tool to help experts discover research faster](#)

[Dr Kyle Webster](#), alumnus and CEO of MacDiarmid affiliated startup, [Litmaps](#) spoke with RadioNZ about the successful NZ\$1m seed funding for an online platform helping scientists find gaps in the literature and better navigate their fields of expertise.



[How a South Auckland deep tech company grew 440% in a year](#) [NanoLayr](#) (formerly known as Revolution Fibres) has grown 440% in the past year. The 10-year old deep tech company has employed a number of MacDiarmid alumni, and has found its products in demand for masks during the pandemic.

If you have something newsworthy coming up (a paper about to be published, job-related announcement, or anything cool your company is working on) and you'd like some help obtaining media around it, please email [Vanessa Young](#) (ideally before the publication or announcement – we're used working with embargoed content).



Opportunities



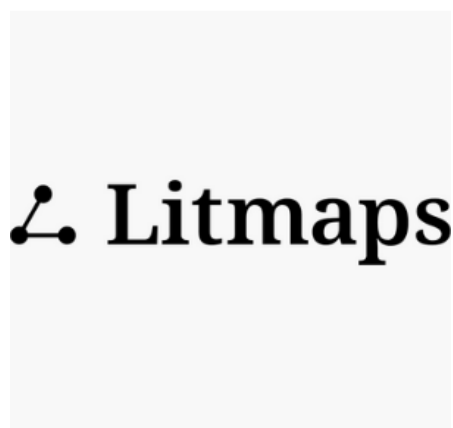
[Marama Labs - Fulltime Business Development Manager in Wellington](#)

MacDiarmid affiliated spinout, Marama Labs are looking for a full time Business Development Manager, to amplify their commercial activity in the Australia and New Zealand wine market. To apply, please send a cover letter and CV to team@maramalabs.com. If you have any questions about the role, please also get in touch.

[Nanolayr - fulltime Technical Manager in Auckland](#)

Nanolayr are seeking a lead role in the Life Science RD&I team. It'll be a big role with a lot of complexity, where you get to work with some amazing people and move at a pace. Expand on what they have to offer with DermaLayr Technology Platform as seen on brands like ActivLayr, RevCell and many others. [Apply via Seek.](#)





[Litmaps - Research and Development Scientist in Wellington](#)

MacDiarmid affiliated spinout, Litmaps is recruiting for this newly created role for the right person to leverage their scientific background to make real change in the way research is done and used. To apply please send a CV, cover letter, and any questions to careers@litmaps.co



[Prime Minister's Science Prizes 2021](#)

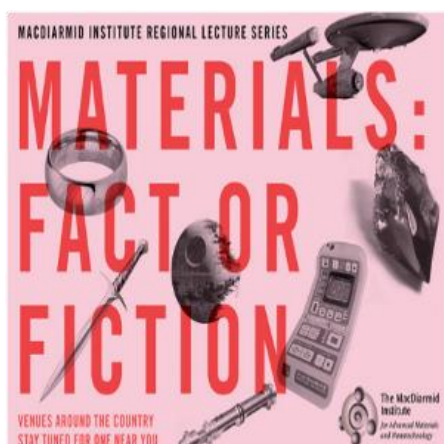
Applications for this year's range of Prime Minister's Science Prizes are now open (due 15 October 2021). There are five prizes in total with a combined value of 1 million dollars. The prizes are supported by the New Zealand Government with funding from MBIE.



[Annual NanoCamp and](#)

[DiscoveryCamp](#) for Year 12 and 13 secondary school students

The hugely popular five-day, all-expenses-paid residential programmes is taking place 16-21 January, 2022 in [Auckland \(NanoCamp\)](#) and [Wellington \(DiscoveryCamp\)](#). Providing students the opportunity to learn about nanoscience through lectures and lab experience with MacDiarmid Institute investigators. If you would like to get involved with a talk, being in the lab or any of the social activities, please contact [Genevieve Fitzjames](#).

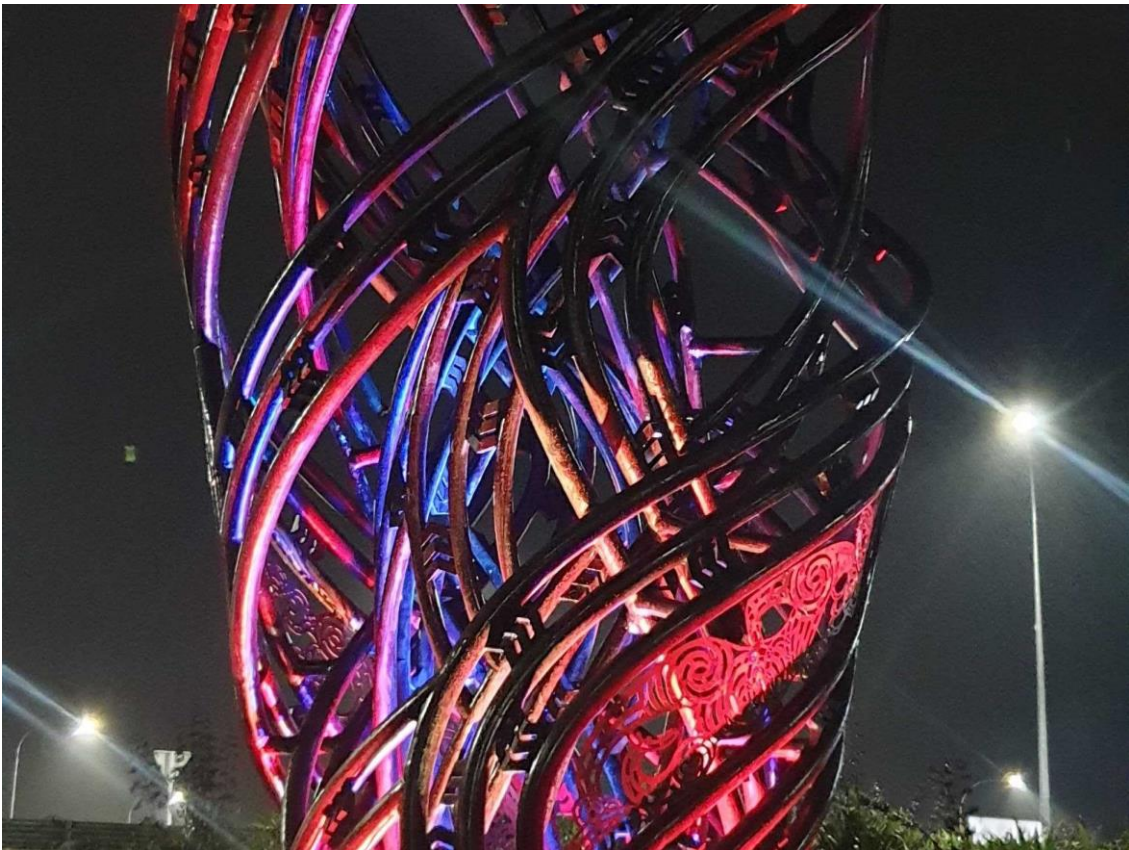


As you'll know from your time as a MacDiarmid student or early career researcher, we're always looking for volunteers to help with our educational outreach ([Regional Lecture Series](#), events organised through our [museum partnerships](#), and our [RNZ series](#) etc.) If outreach is your thing, and you'd like to stay involved with this, please [contact us](#).

Anything to share?

We'd love to celebrate your journey post-graduation. It helps us tell stories and paint pathways for secondary school students and others who are keen to see where science can lead them. If you would like to share with us your story or a recent discovery, achievement, media appearance etc. [Contact us!](#) We'll take care to only share where and how you'd like us to.

If you haven't already please join [The MacDiarmid Institute Alumni LinkedIn group](#), and follow our [MacDiarmid Institute LinkedIn](#) page and be sure to put us as an education provider or employer so that you see all the updates about opportunities. Lastly, if you are a MacDiarmid alumni and have been forwarded this email by someone else and would like to join our quarterly alumni newsletter mailing list (and also hear of opportunities in between newsletters, e.g. jobs, and updates on the Techweek events, etc.), please join our Alumni LinkedIn page and also [contact us](#) so we can keep you up to date.



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