

BioPRIA NEWSLETTER

Nov/Dec 2021

Monash's sustainable water treatment system has been recognised as Australia's runner up in the James Dyson Award

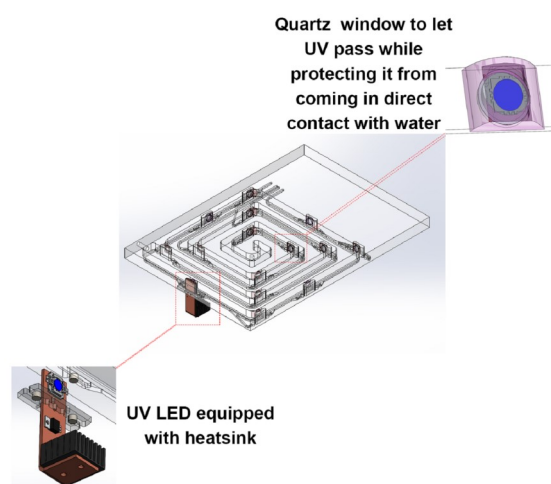
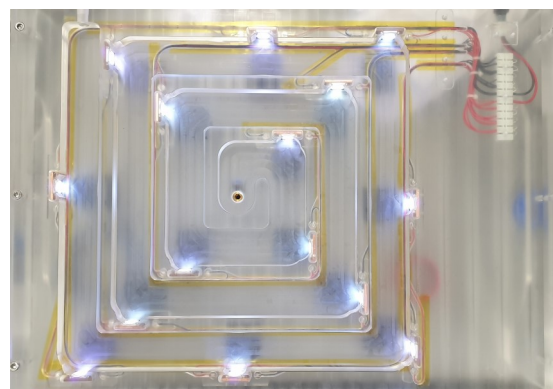
Congratulations to PhD students, **Mostafa Deghani** and **Mahdi Naseri**, and undergraduate **Clare Carew** for their recognition as Australia's national runner-up in the 2021 [James Dyson Award](#) competition. We are so proud of your innovative work on the SASS: Stand Alone Sunflow System technology!

SASS is a sustainable and stand-alone water treatment system, that requires only sunlight to operate and can be used for the removal of persistent organic pollutants (POPs) from water resources. The SASS design avoids using fossil fuel-based energy sources or chemicals that pose a hazard to human or environmental health.

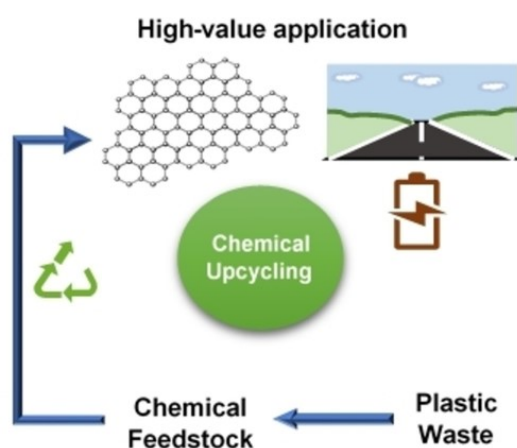
The system uses a cellulose/zinc oxide catalyst activated by sunlight to breakdown organic pollutants in water circulated through a treatment tank. The pilot prototype takes advantage of sunlight. When there is insufficient sunlight is available, mounted UV lights powered by solar panels are activated. At the end of the treatment cycle, clean water is discharged from the system. Efficacy of the system was examined using a variety of persistent organic pollutants such as per- and polyfluoroalkyl substances (PFAS), dioxane solvents, industrial dyes, and real wastewater samples, until degradation to below health and environmental advised levels were achieved.

The SASS technology is aimed to treat organic contaminants of polluted water in small and medium industries or low resource settings.

Watch [the SASS video](#) and learn more about [the technology here](#).



Latest PALS Research Publication



Strategic Approach Towards Plastic Waste Valorization: Challenges and Promising Chemical Upcycling Possibilities

This review provides a comprehensive insight on the promising chemical routes available for upcycling of the most widely used plastic and mixed plastic wastes. It also highlights the challenges associated with these problem-solving techniques and the opportunities available for future research.

Further reading: Roy, P.S., Garnier, G., Allais, F., Saito, K. (2021). Strategic approach towards plastic waste valorization: challenges and promising chemical upcycling possibilities. *ChemSusChem* 14(19). p. 4007-4027.

<https://doi.org/10.1002/cssc.202100904>

BioPRIA's Activities

We are so pleased that even though the pandemic has presented many challenges, BioPRIA has become adaptable and still engage in high level activities. Over the past few months, we have been busy with the activities that provides students & staff with the opportunities to showcase their research at the virtual conferences. **A/Prof Warren Batchelor** and **Dr Vikram Raghuvanshi** presented their work on nanomaterials at the *Tappi Nano 2021* webinar series. Majority of BioPRIA students & researchers have participated at the *Materials Oceania 2021* conference, held during 11-14 October 2021 through their presentations and posters. An exciting news also came from our PhD student— **Gloria Diaz Arenas**, who was announced as the runner-up at *the 2021 New Speaker Competition Australia Runoff*, hosted by the Appita Young Professional Network.

Furthermore, we have been working with our partners **Norske Skog** and **Appita** to deliver interactive workshops on plant trial design and data analysis. This workshop has attracted quite number of industry participants who want to learn more about the importance of data-driven decision making.

Now, as the world starts to open up, we look forward to resuming our normal activities while, continue to adding values to our students and industrial partners.

Farewell to Colleagues

In October, we farewell two amazing BioPRIA staff: **Dr Clare Manderson** and **Ms. Heather McLiesh**. They both have been a significant member on our Diagnostics team—working hard with our students & staff to bring the blood typing project to life. Many accomplishments were achieved within the team, such as: the world first's laser blood incubator that could prevent fatal blood transfusions and also, the development of agglutination assay to detect the presence of antibodies raised in response to the SARS-CoV-2 infection.

We thank Clare and Heather for their contributions, friendship and all the wonderful work that they've done at BioPRIA, Monash University. We wish them the best in their future endeavours.



On Maternity Leave

Dr Joanne Tanner has taken a 6 months maternity leave, starting from 29th of October 2021. We wish her all the best during her maternity leave.

PhD Completions

Congratulations Leo & Ruth on completing your PhD studies!

Leo's thesis titled "**Application of multivariate statistical analysis and machine learning on the signals recorded in analytical chemistry in the metabolomic studies of natural products**", supervised by Prof. Brett Paull from the Australian Centre for Research on Separation Science in University of Tasmania. Leo is currently employed as a postdoctoral fellow at the University of Tasmania.

Ruth's thesis titled "**Engineered nanocellulose superabsorbents for application in agricultural soils**", supervised by Prof. Gil Garnier, Prof. Antonio Patti and Dr. Vanessa Wong. Ruth is now working as a R&D pilot plant coordinator at Calix Limited.

Welcome!

We are pleased to welcome two new PhD candidates, **Joel Mather** and **Naghmeh Nasiri** to the BioPRIA team. Joel will be working on "well-defined cellulose/PNIPAM conjugates for thermally responsive hydrogels, under supervision of Dr. Joel Hopper and Prof. George Simon. While Naghmeh's project will focus on "surface engineering of nanocellulose and nanoparticles for applications", with A/Prof Warren Batchelor as her main supervisor.