

Nutrients in a Circular Economy



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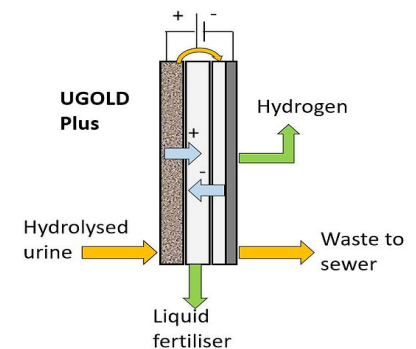
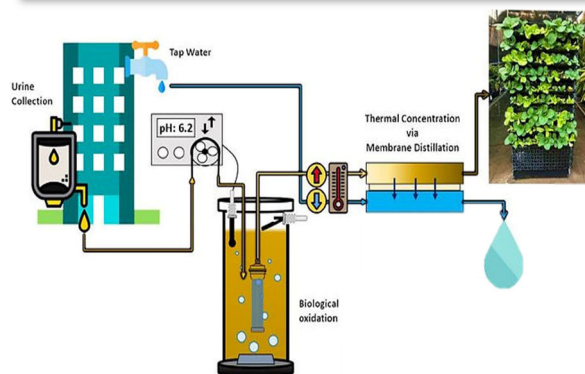
Weonjung Sohn

Message from our Hub Director

Prof. Ho kyong Shon



Welcome to the first newsletter of the Australian Research Council Research Hub for Nutrients in a Circular Economy (ARC NiCE Hub)! Our Hub, which was officially announced in July 2021, and formally launched in November 2022, aims to further Australia's key partnership to transform the wastewater industry and build confidence in a market where re-using wastewater and urine as a source of fertiliser for agriculture, horticulture and parklands is viable. To achieve these aims, communication and collaboration between institutions and industry partners will drive the success of the ARC NiCE Hub, we have devised a series of webinars, including a Scientific Platinum Webinar, Industry Webinar and early-career researcher (ECR) Webinar, allowing all Hub members to tune-in regardless of their location. In this issue we are pleased to introduce industry partners, the first summit and publications from Hub's HDR students and research fellows. We also highlight recent publications and upcoming events. Please contact us or visit our website to learn more about our research and engagement activities.



UrVal

or "You are valuable, Urine is Valuable" is a plant fertiliser produced by a process where urine stabilisation and sanitation is achieved using ultrafiltration (UF) based membrane bioreactor (MBR) followed by dewatering.

UGOLD Plus

uses only two steps for full treatment and concentration of urine: pre-hydrolysis to generate ammonia, and microbial electrolysis to produce hydrogen gas, remove micropollutants and concentrate urine into a liquid fertiliser.



Australian Government

Australian Research Council

Our Partners

Universities



Industry Partners



International Organisations



**ARC NiCE Hub Launch Ceremony and the 2nd NiCE Summit
17th of November, 2022**

Aerial, UTS Function Centre, Building 10, Level 7, 235 Jones Street, Ultimo, NSW, 2007

Photos of our Research

UGOLD plus fertiliser, UOM

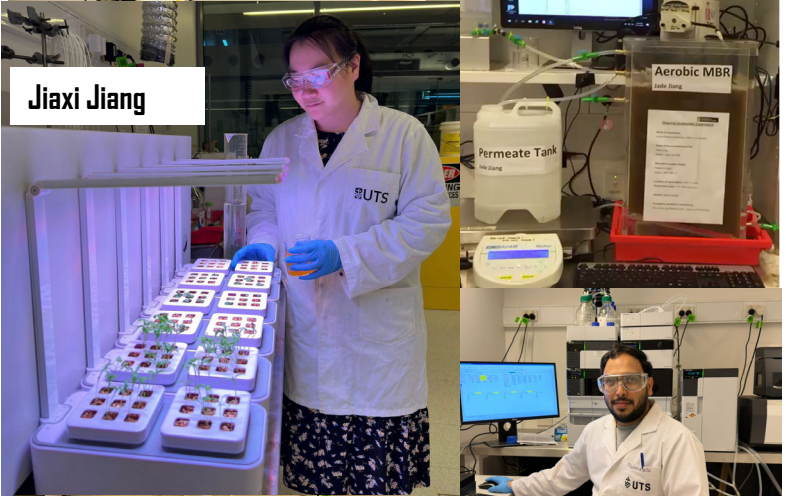


Negar in the Lab



Chen

Membrane bioreactors (MBR) for UrVal production, UTS



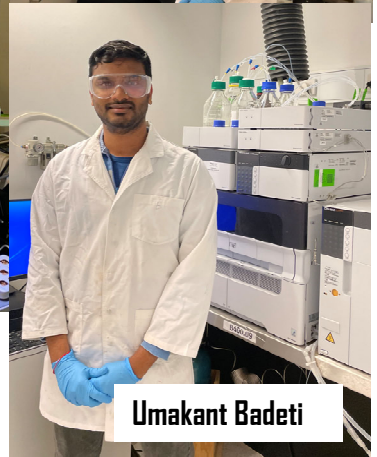
Jiayi Jiang



Abdulaziz Almontashiri



Weonjung Sohn



Umakant Badeti

About Us

Nutrients in a circular economy is a hub where researchers, scientists, engineers, government agencies and industry experts are working together to develop, test and upscale new technologies to achieve nutrient recovery from waste.

The main focus of the hub is the recovery of nutrients from human urine, however, many of our industry partners are also working on the recovery of valuable nutrients from different type of waste material.

UTS, the School of Civil and Environmental Engineering Research Showcase was held on Wednesday 28 September 2022 at the University of Technology Sydney, Broadway Campus.

Congratulations to the winners, who presented the impact of urine diversion and nutrient recovery from urine!



Umakant Badeti
(Umakant.Badeti@student.uts.edu.au)
Best oral presentation (1st winner, Session 2)

"Impact of urine diversion on a decentralised wastewater recycling plant"

Morteza Afsari
(Morteza.Afsari@student.uts.edu.au)
Best poster presentation (3rd winner)

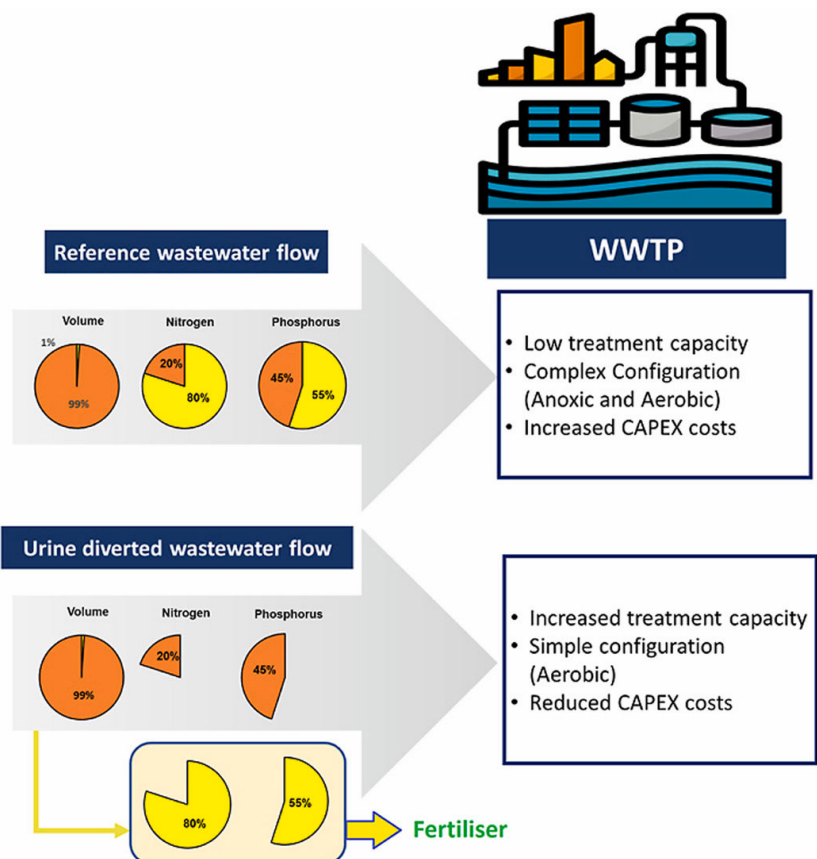


"Nutrient recovery from human urine using membrane technology"

Recent Publication Success

by Badeti et al. 2022. *Chemosphere*, 300, 134489.

"Impact of source-separation of urine on treatment capacity, process design, and capital expenditure of a decentralised wastewater treatment plant"



2021/2022 Publications

- Almunashiri et al. 2022. Removal of pharmaceutical compounds from synthetic hydrolysed urine using granular activated carbon: Column study and predictive modelling. *Journal of Water Process Engineering*, 45, 102480.
- Almunashiri et al. 2021. Removal of pharmaceuticals from nitrified urine. *Chemosphere*, 280, 130870.
- Badeti et al. 2022. Impact of source-separation of urine on treatment capacity, process design, and capital expenditure of a decentralised wastewater treatment plant. *Chemosphere*, 300, 134489.
- Freguia et al. 2021. Sustainable engineering of sewers and sewage treatment plants for scenarios with urine diversion. *Journal of Hazardous Materials*, 415, 125609.
- Jiang et al. 2021. Critical flux on a submerged membrane bioreactor for nitrification of source separated urine. *Process Safety and Environmental Protection*, 153, 518-526.
- Ren et al. 2021. Fertiliser recovery from source-separated urine via membrane bioreactor and heat localized solar evaporation. *Water Research*, 207, 117810.

Contact Us   

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