



CAMBRIDGE  
CARES

CAMBRIDGE CENTRE  
FOR ADVANCED RESEARCH AND  
EDUCATION IN SINGAPORE LTD.

## CARES Biannual Newsletter Issue 6, October 2025

# Highlights



### *Biannual Reports*

Our 22nd Biannual Report shares research updates from all programmes, small projects, and collaborations; including updated publications and a foreword highlighting significant updates.

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### *Presidential visit to CARES*

CARES showcased our decarbonisation work in the areas of energy, transport, and manufacturing to Mr Tharman Shanmugaratnam, President of the Republic of Singapore.

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### *First public event in Cambridge*

Our lifelong learning research programme (CLIC) reached new audiences in the UK. We were honoured the Vice-Chancellor of the University of Cambridge attended as our Opening Speaker.

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# Outreach & Engagement



**Top left:** Baroness Jones of Whitchurch, UK Minister for the Future Digital Economy and Online Safety, visited CARES on 29 May to learn how the centre has advanced over a decade of UK-Singapore research partnerships in different topical areas.

**Top right:** CARES has developed a digital twin platform with Singapore's lead public sector R&D agency (A\*STAR I2R) using AI and real-time plant data to enhance predictive maintenance in pharmaceutical manufacturing.

**Middle:** The Health-driven design for cities (HD4) programme, investigating the urban environment in Singapore and its effects on health outcomes and human behaviour, welcomed over 120 attendees to its inaugural seminar series in July and August. Ms Sharyl Chin should act as the external contact for any HD4 queries.

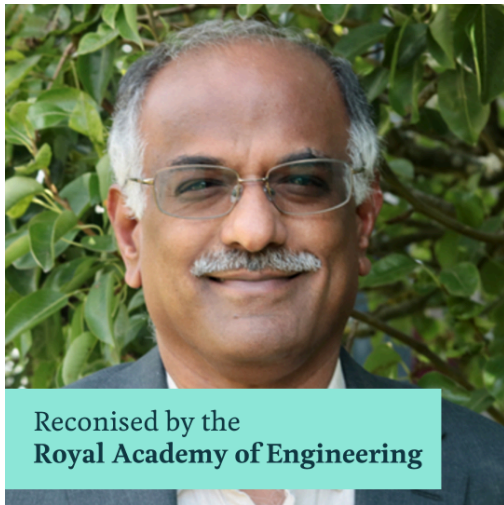
**Bottom:** As we find new ways to connect with Cambridge, we recently welcomed Gates Cambridge (left) for their international interview round that ran for the first time in Singapore. Cambridge and Imperial Admissions (right) have also been using our CREATE building to run undergraduate and postgraduate workshops.

# Congratulations

Prof Swaminathan

Staff promotions

Elected as a new Fellow of the Royal Academy of Engineering for his expertise in the physics and chemistry of turbulent reacting flows.

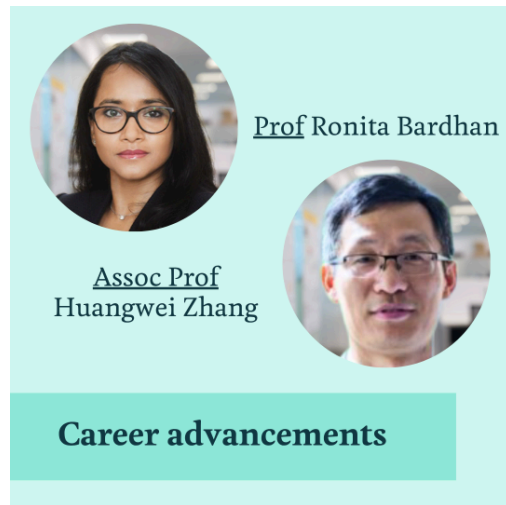


### Phua Shin Zert

As the first CARES researcher turned Gates Cambridge scholar, Shin Zert is pursuing a Master of Philosophy in Human-Inspired Artificial Intelligence.



Prof Ronita Bardhan (HD4 programme) and Assoc Prof Huangwei Zhang (HYCOMBS programme) have both been promoted with new titles.



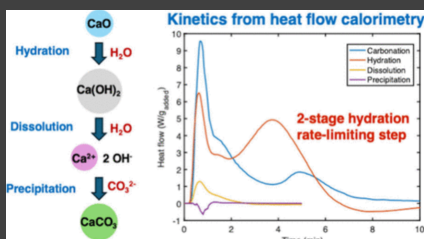
### Accelerated Materials

The CARES spin-off acquired investment from UntroD joined by SGInnovate and Cambridge Enterprise Ventures to advance materials discovery and manufacturing.





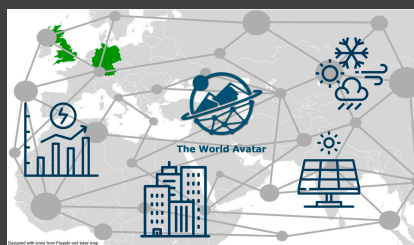
# Publications



## Investigating the Kinetics of CO<sub>2</sub> Mineralization via the Carbonation of CaO in Ammonium Carbonate Solution by Reaction Heat Flow Calorimetry

*Dara Khairunnisa Binte Mohamed, Alexei A. Lapkin, Cun Wang, Jie Bu, Longgang Tao, and Wen Liu*

This study examines the carbonation kinetics of CaO materials with ammonium carbonate to enhance the CO<sub>2</sub> mineralisation processes at industrial scales. [Read the paper.](#)



## Municipal heat planning within The World Avatar

*Yi-Kai Tsai, Markus Hofmeister, Srishti Ganguly, Kushagar Rustagi, Yong Ren Tan, Sebastian Mosbach, Jethro Akroyd, and Markus Kraft*

This paper presents a novel integration of building energy simulation within The World Avatar, using simulation agents to provide highly granular building energy data. Pirmasens, a mid-sized city in Germany, was used as a case study to demonstrate the practical applicability of the agent in municipal heat planning.

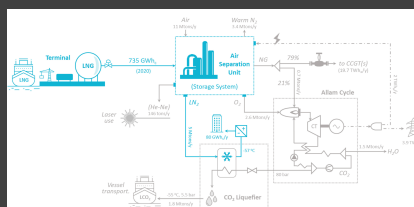
[Read the paper.](#)

CARES is open to collaborating with new partners and projects. Please see our [Careers page](#) for a list of opportunities or email [enquiries@cares.cam.ac.uk](mailto:enquiries@cares.cam.ac.uk)

Thank you for reading this #CambridgeCARES newsletter, follow our social channels for any updates!



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## Comparative techno-economic analysis of integrated process designs combining LNG cold utilization and carbon capture

*Fadhel Ayachi, Li Chin Law, Epaminondas Mastorakos, and Alessandro Romagnoli*

This paper investigates multiple integrated process designs for unused cryogenic sources with carbon capture technologies, offering a promising pathway for the low-carbon energy transition.

[Read the paper.](#)



CARES was established in 2013 in Singapore and is the University of Cambridge's first research centre outside the UK.

Flagship C4T programme on decarbonisation  
CLIC studies cognitive flexibility throughout the life course  
HYCOMBS studies hydrogen and ammonia combustion  
SM3 will investigate ways to shift the chemical industry to a more circular model  
HD4 will explore public health and the built environment in Singapore  
AMPLE scales up nanomaterial production  
PIPS is an industry-funded project for pharmaceutical manufacturing

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