

# CDF DAY - 12 DEC 2024



A\*STAR has funded over **200 early career researchers** through the Career Development Fund (CDF).

This event showcases the outstanding contributions of A\*STAR's early career researchers in diverse fields, offering an enriching experience for attendees to exchange knowledge and connect with emerging talents.

<b>DATE</b>	12 Dec 2024 (Thursday)
<b>TIME</b>	9 AM to 2 PM
<b>VENUE</b>	MPH 1 & 2 F2 Innovis Level 1
<b>POSTER SESSION</b>	Techmarketplace F2 Innovis Level 8

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# About the CDF Day 2024

Since the start of RIE 2025, A\*STAR has funded over 200 early career researchers (ECRs) through the Career Development Fund (CDF).

To celebrate the achievements of our ECRs, Research Office is organising a CDF Day 2024 to showcase the remarkable work of A\*STAR's ECRs in diverse fields and promises to be an enriching experience for all attendees as a platform for knowledge sharing and network building amongst emerging talents.

Through engaging discussions and presentations, our participants will gain valuable insights into the latest trends and developments in their fields. The event also provides a platform for networking with fellow researchers, thus fostering collaborations that can lead to ground-breaking research and projects. Additionally, CDF 2024 will offer a unique chance for our ECRs to showcase research outcomes, raising visibility and recognition within the academic community and beyond.

Overall, CDF Day 2024 is set to inspire, educate, and empower attendees, paving the way for future success and innovation.

## CDF Day 2024 Organising Committee

### Advisor

Prof Andy Hor

### Reviewers

Prof Pierre Braunstein

Prof Chen Xiaoming

Prof Ekkehardt Hahn

Prof Jin Guo-Xin

Prof Takumi Konno

Dr Chen Jinmiao

Dr Fu Yu

Dr Hai Yan

Dr Lim Yee Hwee

Dr Ng Huey Yuen

Prof Malini Olivo

Dr Ooi Chin Chun

Dr Jay Shin

Dr Rosa So

Dr Tam Wai Leong

Dr Wu Wei

Dr Yao Kui

Prof Zhang Yong Wei

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Dr Wong Chia Woan

Dr Zong Yun

Dr Goh Seok Hong

Ms Joanna Ng

Ms Tan Feng Guat

Mr Ong Hong Ren

Ms Ong Siew Khim

Mr Muhammad Ali Mohamed Amin

Dr Teo Teck Hui

Dr Ronald Chan

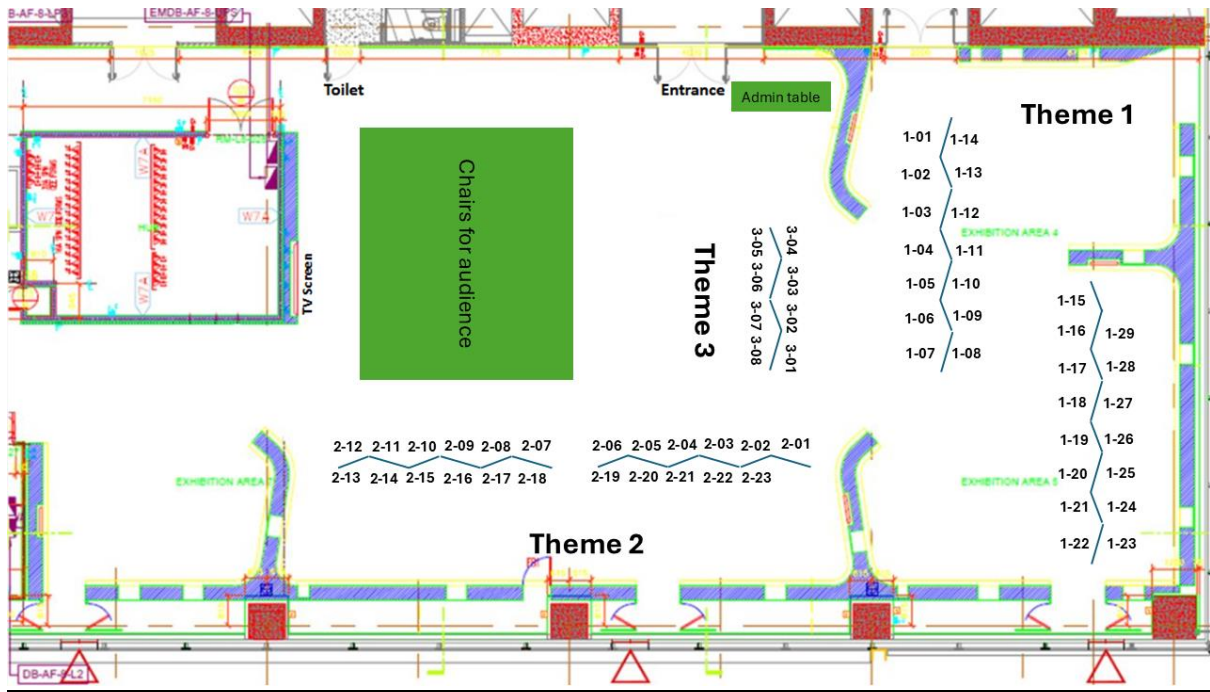
Ms Gina Choo

# Programme

TIME	EVENT
0830	<b>Registration</b>
0900	<b>Welcome Address</b> Prof Andy Hor, Deputy Chief Executive (Research)
0915	<b>Introductory Speech by Plenary and Keynote Chair</b> Prof Ng Huck Hui, Assistant Chief Executive (Research and Talent Development)
0920	<b>Plenary Speech I</b> <i>"From COVID-19 to virus-driven cancers: a journey from basic immunology to AI pathology"</i> by Dr Joe Yeong, IMCB
0940	<b>Plenary Speech II</b> <i>"Building my career in decarbonisation"</i> by Dr Leow Wan Ru, ISCE <sup>2</sup>
1000	<b>Tea Break</b>
1030	<b>Introductory Speech by Plenary and Keynote Chair</b> Prof Ng Huck Hui, Assistant Chief Executive (Research and Talent Development)
1035	<b>Keynote Speech I</b> <i>"The Roller Coaster of Research Grants: Navigating the Highs, Lows, and Lessons Learned"</i> by Dr Hannah Yong, IHDP
1045	<b>Keynote Speech II</b> <i>"CDF: Choices Decide Future"</i> by Dr Aaron Lau, Q.InC
1055	<b>Keynote Speech III</b> <i>"Advancing oxide thin films for next-generation microelectronics - A journey from CDF to CRP and beyond"</i> by Dr Liu Huajun, IMRE
1105	<b>Keynote Speech IV</b> <i>"Transforming Plastic Waste: A Computational Workflow for Accelerating Circular Economy Solutions"</i> by Dr Li Nannan, IHPC
1130	<b>Poster Session</b>
1230	<b>Lunch and Networking</b>
1330	<b>Closing Remarks by Poster Chairs</b> Dr Fu Yu, Senior Principal Investigator, IMCB Prof Zhang Yong Wei, Distinguished Principal Scientist, IHPC Prof Pierre Braunstein, CNRS Emeritus Research Director, University of Strasbourg
1345	<b>Poster Award Presentation and Photo-Taking</b>

# Floor Plan (Poster Session)

## TechMarketPlace, F2 Innovis, Level 8



# Plenary Speakers



**Dr Joe Yeong**  
Principal Scientist II,  
IMCB

*"From COVID-19 to virus-driven cancers: a journey from basic immunology to AI pathology"*

Dr Joe Yeong's main research focus is to understand and overcome the resistance of cancer immunotherapy, by using advanced technologies and AI. As an immunopathologist, his key vision is to bridge immunologists and pathologists. He is the pioneer in spatial technologies, translated assays to clinic, and has published > 120 papers in the field (Top 2% Scientist). His works on cancer immunology are included in multiple national & international funded studies as well as industry sponsored projects (>16 million dollars since 2017). He served as a committee member in the World Immunotherapy Council, Society for Immunotherapy of Cancer (SITC) and is one of the organisers for its 2019 & 2023 WIC Global Symposium, as well as multiplex IF expert consensus meeting 2022. He also serves as Program Chair of one of the largest AI medical Imaging conferences, CLINICCAI-MICCAI. He is also having editorial roles of Nature Springer, ASCO, Elsevier, SLAS Technology (Journal) and World Scientific (Chief Editor). He serves as a Secretary (Executive) in Singapore Society of Oncology – Cancer Immunotherapy Consortium, Co-lead in Education/Diagnostic of Singhealth Duke-NUS Cell Therapy Centre as well as Advisor (Spatial Technology), Cancer Discovery Hub, National Cancer Centre. In 2023, he co-founded World Immunotherapy Council Asian Chapter for promoting tumour immunology and advancing cancer immunotherapy education, information and research across Asia. He is also a regular reviewer for top journals such as JITC, Mod Path, Lancet and Nature.

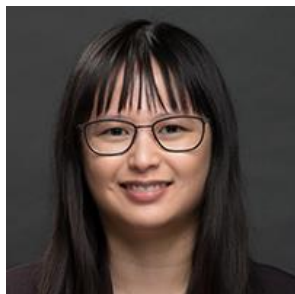


**Dr Leow Wan Ru**  
Principal Scientist I,  
ISCE<sup>2</sup>

*"Building my career in decarbonisation"*

Dr Leow Wan Ru is a Principal Scientist in the Agency for Science, Technology and Research (A\*STAR) and jointly a Nanyang Assistant Professor in Nanyang Technological University. She received the prestigious Singapore National Research Foundation (NRF) Fellowship, Class of 2024, L'Oreal Women in Science Singapore, MIT Technology Review Innovators Under 35 Asia Pacific. Her research interests are focused on the study and design of novel and efficient photocatalytic and electrocatalytic systems for decarbonised chemical conversions. She has published 60 papers in journals such as Science, Nature Catalysis, Nature Communications, Journal of the American Chemical Society, Angewandte Chemie and Advanced Materials.

# Keynote Speakers

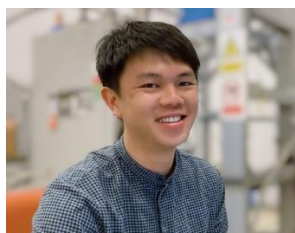


**Dr Hannah Yong**  
Senior Scientist I,  
IHDP

*"The Roller Coaster of  
Research Grants:  
Navigating the Highs,  
Lows, and Lessons  
Learned"*

Dr Yong pursued her PhD in Obstetrics and Gynaecology at the University of Melbourne and completed her post-doctoral training at the Centre for Trophoblast Research at the University of Cambridge under the A\*STAR International Fellowship. She moved back to Singapore in 2019 and joined the Singapore Institute for Clinical Sciences, now the Institute for Human Development and Potential.

Her research interests lie in understanding the mechanisms underlying pregnancy complications and the developmental programming of offspring health. Presently, she holds two early career investigator project grants (A\*STAR CDF and NMRC OF-YIRG) investigating the impact of maternal mental health on the placenta and its consequences for offspring neurodevelopmental outcomes.

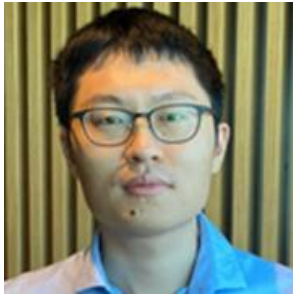


**Dr Aaron Lau**  
Senior Scientist II, Q.InC

*"CDF: Choices Decide  
Future"*

Dr Aaron Chit Siong Lau, DPhil (Oxford, 2017), is Senior Scientist II at IMRE, A\*STAR Singapore, Investigator at the A\*STAR Quantum Innovation Centre (Q.InC), and Adjunct Assistant Professor at the Singapore University of Technology and Design (SUTD). He has received awards such as the A\*STAR Graduate Scholarship, Oxford Hetherington Prize, Career Development Award, MTC Young Individual Research Grant, and MTC Individual Research Grant.

He is fascinated with the physics of low-dimensional materials and pioneers novel nanofabrication techniques to study quantum transport. Passionate about scientific communication, Aaron serves as an A\*STAR ambassador, engaging in initiatives like Scientist-In-Schools to inspire the next generation of scientists and engineers.



**Dr Liu Huajun**  
Principal Scientist I,  
IMRE

*"Advancing oxide thin films for next-generation microelectronics - A journey from CDF to CRP and beyond"*

Dr Huajun Liu is a Principal Scientist and Group Leader of The Oxide Lab at the Institute of Materials Research and Engineering (IMRE), A\*STAR, Singapore. He has received numerous prestigious accolades, including the A\*STAR Fellow 2024, the Charles Hatchett Award, the President's Graduate Fellowship, and the A\*STAR International Fellowship. Dr. Liu has an extensive publication record in top scientific journals such as Science, Nature, and Nature Materials. As a leading principal investigator, he has successfully secured highly competitive research grants, including the NRF Competitive Research Programme (CRP) and the MTC Individual Research Grant (IRG). His pioneering research focuses on developing oxide thin films for next-generation microelectronics, with applications in microelectromechanical systems (MEMS) and photonic devices.



**Dr Li Nannan**  
Senior Scientist I, IHPC

*"Transforming Plastic Waste: A Computational Workflow for Accelerating Circular Economy Solutions"*

Dr Li Nannan received her Bachelor of Science in Chemical Engineering from California Institute of Technology and her Ph.D. in Chemical and Biological Engineering from Princeton University. Her research focuses on leveraging computational methods and machine learning to predict material behaviours and accelerate the development of innovative materials, particularly to address pressing challenges in energy and environmental sustainability. She specializes in modelling soft matter systems, such as polymers and colloids, using molecular simulation methodologies. She is an A\*STAR NSS BS-PhD scholar, and a recipient of the A\*STAR Career Development Fund 2023.



# Poster Exhibition

## Theme 1: Biomedical Sciences

POSTER	RESEARCHER	RI	POSTER TITLE
1-01	Fong Siew Wai	ID Labs	Unlocking the Secrets of Mosquito Saliva: Investigating Immune Modulation during Mosquito-Borne Virus Infections
1-02	Wai Ling Eve Chow	ID Labs	Developing a new class of antifungals with chitin-targeting and membrane-disrupting functionalities for high potency, low toxicity and broad-spectrum activity
1-03	Fathima Rifkhana Shah Jahan	A*SRL	Elucidating the role played by the LINC complex in squamous cell carcinomas
1-04	Quang Bach Le	BTI	A bioengineered orthopaedic membrane for enhanced bone fracture healing
1-05	Lee May Yin	GIS	Nicotinamide phosphoribosyltransferase (NAMPT) is an integrator of circadian clock regulation and NAD <sup>+</sup> metabolism in liver cancer
1-06	Li Zhe	GIS	Profiling DNA Modification Landscape for Cardiomyocyte Development and Reprogramming in Human and Mouse
1-07	Rajkumar Dorajoo	GIS	Bulk and cell-type specific telomere dysfunctions associated with bronchiectasis
1-08	Candida Vaz	IHDP	The impact of bariatric surgery induced weight loss on the dynamics of small non-coding RNA
1-09	Hannah Yong	IHDP	Assessing the utility of omega 3 fatty acid supplementation to improve placental lipid function in pregnancies of high maternal antenatal mental stress
1-10	Jun Shi Lai	IHDP	Psychosocial-phenotypes associated with dietary patterns in middle-aged multiethnic Asian women
1-11	Noor Hidayatul Aini Bte Suaini	IHDP	Genetic profiling of Asian children with atopic dermatitis
1-12	Asfa Alli Shaik	IMCB	Novel therapeutic directions for triple-negative breast cancer: From proteomic heterogeneity toward personalized medicine
1-13	Claire Neo	IMCB	Investigating the m <sup>6</sup> A-transcriptome of induced pluripotent stem cell (iPSC) derived $\beta$ -like cells from Type II diabetic patients
1-14	Esther Wong	IMCB	Ocular gene therapy using Crispr/Cas-mediated base editing to target VEGF in the diseased eye.
1-15	Grace Lim	IMCB	Yap functions as a mechanosensor driving gastric cancer

1-16	Na Zhang	IMCB	Establishing a projection-based system for high throughput neuronal single cell RNA sequencing
1-17	Pei Liu	IMCB	Multiplexed genome editing using an improved adenine base editor
1-18	Xinting Zheng	IMRE	CRISPR based nanosensor for point-of-care inflammation detection
1-19	Zhang Biyan	SlgN	Understanding the role of core binding factors in B cell development
1-20	Larry Sai Weng Loo	SIFBI	Understanding the effects of novel alpha-gal-free cultured meat cell line for future food production
1-21	Ngoc Phuong Thao Nguyen	SIFBI	Enhancing Micronutrients Biosynthesis: Unleashing the Potential of Regulatory Network
1-22	Balaji Balagurunathan	SIFBI	Novel fungi-derived functional ingredients to enhance the competitiveness and sustainability of fungal bioprocesses
1-23	Phoon Pui Yeu	SIFBI	Developing emulsion gel hybrids structured by natural food fibres, for improved texture and processability in healthier vegan meat alternatives
1-24	Franziska Paul-Shushan	IMCB	CIDEC as a gate keeper of lipid droplet size regulation
1-25	Yin Win Khin	SIFBI	Tailoring protein functionality for food applications through extraction process
1-26	Jia Xu	IHDP	Roadmap of maternal gut microbiome from preconception to postpartum and its link with women's metabolic health and healthy aging
1-27	Chelsia Wang	BTI	Developing allogeneic CAR-modified natural killer cells as a platform for immunotherapy against solid tumors
1-28	Bryan Ng	IHDP	Integrating accelerated ageing in human glial cells
1-29	Crystal Yeo Jing Jing	IMCB	Hepatocyte-intrinsic metabolic dysfunction and liver steatosis in spinal muscular atrophy

# Poster Exhibition

## Theme 2: Physical and Engineering Sciences

POSTER	RESEARCHER	RI	POSTER TITLE
2-01	Kai Liang Tan	ARTC	Power ultrasound as a new stimulus for adhesive debonding on-demand
2-02	Zheng Jie Tan	ARTC	Novel Supports for Enabling Metal Additive Manufacturing of Complex Geometries
2-03	Nannan Li	IHPC	A Computational Workflow for Accelerated Screening of Dynamic Crosslinkers in Mixed Plastic Upcycling
2-04	Wang Dan	IHPC	Integrated topology and fiber path optimization of Double-Double laminates
2-05	Xing Haw Marvin Tan	IHPC	Frequency-Tunable & Switchable Acoustic Resonators for High-speed Wireless Communication
2-06	Dorsasadat Safanama	IMRE	Printable Solid Electrolytes for Miniaturized 3D Solid State Batteries
2-07	Jun Zhu	IMRE	Covalent Organic Frameworks as Electrocatalysts for Oxygen Reduction Reaction
2-08	Mengfei Wu	IMRE	Coupling Photon Upconversion with Dielectric Nanoantennas for Short-Wave Infrared Detection
2-09	Zeng Wang	IMRE	Deep Ultraviolet Metaoptics
2-10	Sirawit Pruksawan	IMRE	Development of Hydrogel-Based Smart Mechanical Metamaterials for Biomedical Devices
2-11	Yifei Luo	IMRE	A skin-like sensor on hairy plants for long-term electrophysiology
2-12	Amol Amrute	ISCE <sup>2</sup>	Mechanochemically-assisted catalysis for the hydrogenation of CO <sub>2</sub> to valuable chemicals
2-13	James David Nobbs	ISCE <sup>2</sup>	Secondary Phosphine Synthons for Sustainable Catalysis
2-14	Mingwu Tan	ISCE <sup>2</sup>	Efficient conversion of CO <sub>2</sub> to Sustainable Aviation Fuel via Bi-Functional Catalysts and Relay Catalysis
2-15	Xin Yi Oh	ISCE <sup>2</sup>	On-demand bonding and debonding polymer adhesives from renewable resources
2-16	Yun Liu	IHPC	Machine learning accelerated computation of absorption tail for rapid screening of photovoltaic materials
2-17	David Khoo	NMC	Development of Phase Difference Extraction Method for Accurate Mass Flow Measurements

2-18	Thomas Kwok	SIMTech	Alloy X: The Everything Aluminium Alloy Do we really need so many different aluminium alloys?
2-19	Wenjin Yan	SIMTech	Ozone Micro-bubbling: Enhancing Anode Dissolution Uniformity for Electrochemical Wastewater Treatment
2-20	Chew Youxiang	SIMTech	Process and design optimization of Direct Energy Deposition bulk multi-material
2-21	Kunting Chua	IHPC	Modelling turbulence in the scrape-off layer to improve plasma confinement in fusion reactors: effect of magnetic geometry
2-22	Landobasa Tobing	IME	Metaxicon for on-chip mid-infrared sensing based on Bessel beam
2-23	Wan Yuan Beatrice Soh	IMRE	Automated electrokinetic stretcher for manipulating nanomaterials

# Poster Exhibition

## Theme 3: Computer and Information Science

POSTER	RESEARCHER	RI	POSTER TITLE
3-01	Ruohan Wang	I <sup>2</sup> R	Towards Smarter AI: Task Similarity, Knowledge Consolidation and Transfer in Meta-Learning
3-02	Tang Xinyi	I <sup>2</sup> R	A Novel Imaging Radar and Its AI Pipeline
3-03	Haiyan Yin	IHPC	Towards Meta Continuous Reinforcement Learning Agents for Solving Text-based Games
3-04	Jiawei Du	IHPC	Leverage foundation models for modular dataset distillation
3-05	Qing Guo	IHPC	Visual Continuous Representation for Robust Vision Perception
3-06	Sui Xiuchao	IHPC	CRAFT: Cross-Attentional Flow Transformer for Robust Optical Flow
3-07	Yuhuan Wu	IHPC	Revisiting Highly Efficient Self-Attention for Dense Prediction
3-08	Yifang Yin	I <sup>2</sup> R	OpenAVS: Training-Free Open-Vocabulary Audio Visual Segmentation with Foundational Models