國立虎尾科技大學 工程學院
NATIONAL FORMOSA UNIVERSITY • College of Engineering

庫秉弦 **助理教授**

Dr. Abhishek Kumar **Assistant Professor**

BAR-509A
Technology Research Building

Tel: +886-05-6313108

Email: kumar0313@nfu.edu.tw

國立陽明交通大學機械工程系博士，台灣新竹

Ph.D., Department of Mechanical Engineering, National Yang Ming Chiao Tung University, Hsinchu, Taiwan

經驗 Experience

國立台灣大學助理教授	**Assistant Professor, National Formosa University**
國立台灣大學博士後研究員	**Postdoctoral Research Fellow, National Formosa University**

研究興趣 Research Interests

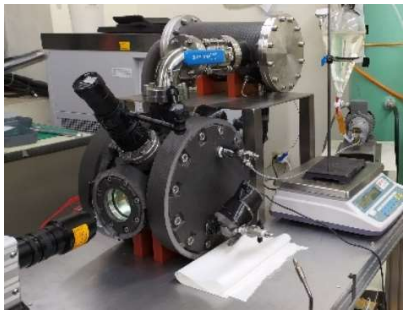
沸騰和冷凝	**Boiling and Condensation**
高效率熱管	**High Efficient Heat pipes**
低 GWP 和 HVAC&R 節能	**Low GWP & HVAC&R Energy Saving**
冷凍系統傳熱傳質強化	**Heat and Mass Transfer Enhancement for Refrigeration System**
奈米流體傳熱	**Nano-fluid Heat Transfer**
高效率的熱管理系統)	**Efficient Thermal Management System**
超臨界實驗系統	**Supercritical Experimental Systems**
多尺度建模 (CFD)	**Multiscale Modelling (CFD)**
受大自然啟發的增強傳熱技術	**Nature-Inspired Technology for Enhanced Heat Transfer**

永續能源與熱管理實驗室
Sustainable Energy & Thermal Management Laboratory

It is well-accepted that in today's global world, cooling requires a lot more energy than heating. As a result, improving heat transport and cooling effectively have become crucial. Heat transfer and mass transfer fundamental and applied research using a combination of experimental and numerical modeling is the main focus of heat transfer and enhancement. Modern technologies include phase change cooling, nanofluid heat transmission, microchannel boiling and condensation, extremely efficient heat pipes, and creative nature-inspired heat transfer

enhancement techniques. Furthermore, we conduct basic research on enhancing the efficiency of refrigeration systems using lubricating oil and low-GWP refrigerants. In the field of green and clean energy, we are looking forward to setting up a laboratory-scale pilot power generation system based on the supercritical carbon dioxide Rankine cycle. 人們普遍認為，在當今的全球化世界中，冷氣比供暖需要更多的能源。因此，有效改善熱傳輸和冷卻變得至關重要。採用實驗和數值模擬相結合的傳熱和傳質前沿基礎和應用研究是傳熱和強化的主要焦點。現代技術包括相變冷卻、奈米流體傳熱、微通道沸騰和冷凝、極其高效的熱管以及受自然啟發的創造性傳熱增強技術。此外，我們也進行關於提高使用潤滑油和低 GWP 冷媒的冷凍系統效率的基礎研究。在綠色清潔能源領域，我們期待建立基於超臨界二氧化碳朗肯循環的實驗室規模中試發電系統。

Supercritical System



Pool Boiling System*

Convective Boiling System*

*Collaboration (NYCU)

Publications

[1] A. Kumar, C.-C. Wang, Heat transfer characteristics of R-454B and R-454B/POE-oil mixture on smooth and GEWA tube: Alternative to R-410A, International Journal of Heat and Mass Transfer, 193 (2022) 122972.

[2] A. Kumar, C.-C. Wang, Nucleate pool boiling heat transfer of R-1234ze(E) and R-134a on GEWA-B5H and smooth tube with the influence of POE oil, Applied Thermal Engineering, 201 (2022) 117779.

[3] A. Kumar, M.-R. Chen, J.-H. Wu, K.-S. Hung, L.-K. Su, C.-C. Wang, Heat Transfer Performance of R-1234ze(E) with the Effect of High-Viscosity POE Oil on Enhanced GEWA-B5H Tube, Processes, 9 (2021) 2285.

[4] A. Kumar, Q.-N. Shafiq, C.-C. Wang, Pool Boiling Heat Transfer Characteristics of R-12334zd(E) on Smooth Tube Subject to POEC-220 Lubricant Oil, in: N.Y.M.C.T. University (ed.), International Journal of Refrigeration, 2022.

[5] A. Kumar, X.-Z. Wang, B. Jaya Lakshmi, J.-T. Hung, Y.-K. Chen, C.-C. Wang, Nucleate boiling heat transfer of R-134a and R-134a/POE lubricant mixtures on smooth tube, Applied Thermal Engineering, 185 (2021) 116359.

[6] A. Kumar, M.-R. Chen, K.-S. Hung, C.-C. Liu, C.-C. Wang, A Comprehensive Review Regarding Condensation of Low-GWP Refrigerants for Some Major Alternatives of R-134a, Processes, 10 (2022) 1882.

[7] A. Kumar, K.-S. Hung, C.-C. Wang, Nucleate Pool Boiling Heat Transfer from High-Flux Tube with Dielectric Fluid HFE-7200, Energies, 13 (2020) 2313.

[8] Uzair Sajjad, A. Kumar, and Chi-Chuan Wang, Nucleate pool boiling of high flux sintered coated porous surfaces with dielectric liquid, HFE-7200, Journal of Enhanced Heat Transfer, (2020).
[9] A. Kumar, M. Muneeshwaran, C.-C. Wang, Recent progress in pool boiling heat transfer of low GWP refrigerants with the effect of POE lubricant oil, Thermal Science and Engineering Progress, 45 (2023) 102127
[10] A. Kumar, B.J. Lakshmi, S.-Y. Yang, C.-C. Wang, Effect of viscosity grade (POE) on the smooth-tube pool boiling performance with R-1234ze(E) refrigerant, Applied Thermal Engineering, 241 (2024) 122328.

Web page:

1. **https://scholar.google.com/citations?user=AUgltSEAAAAJ&hl=en**
2. **https://www.researchgate.net/profile/Abhishek-Kumar-20**