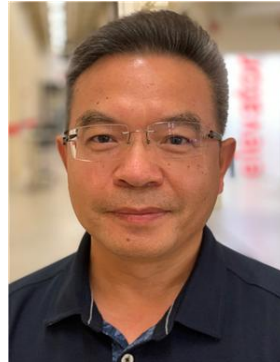


## An IEEE Milwaukee Magnetics Chapter Event

### Past, Present and Future of Electronics Cooling

**Tuesday, September 9, 2025**  
**2:00 pm – 3:00 pm**  
**Engineering Hall Room 136**

Reception to follow  
3:00 pm – 3:20 pm  
Engineering Hall Room 136



**Dr. Winston Zhang**  
Founder and CEO, Novark Technologies

**ABSTRACT:** The history of modern computing has been shaped as much by advances in thermal management as by improvements in semiconductor design. From the early days of the IBM PC, where processors dissipated only a few watts and required no active cooling, to today's graphics processing units (GPUs) exceeding 1,000 W per chip, the demand for efficient electronics cooling has steadily grown in both urgency and complexity. This presentation provides a historical perspective on the evolution of thermal solutions for central processing units (CPUs) and GPUs, including the adoption of pin-fin heat sinks, forced convection, thermoelectric coolers, heat pipes, and vapor chambers. In addition to reviewing classical approaches, the presentation highlights the transition into the post-Moore's Law era, where computational power has grown not by simple transistor scaling but through massively parallel architectures and accelerated computing. This shift has driven unprecedented power density, requiring new generations of cooling technologies, from advanced liquid-cooling loops to two-phase solutions. Finally, the presentation outlines emerging opportunities in electronics cooling across diverse domains, including AI data centers, telecommunications, automotive power electronics, electric-vehicle battery systems, LEDs, and renewable energy.

**BIOGRAPHY:** **L. Winston Zhang** is the founder and CEO of Novark Technologies based in Shenzhen, China since 2004, and an adjunct lecturer in the Department of Mechanical Science and Engineering at University of Illinois at Urbana-Champaign since 2022. He has three decades of experience in heat transfer and electronics cooling. He has co-authored more than 40 peer-reviewed technical papers on heat pipe technology, thermal management of electronics, compact heat exchanger design, and heat exchanger applications and has earned three U.S. patents and 80 for China. He received his Ph.D. in mechanical engineering from the University of Illinois at Urbana-Champaign in 1996 and his MBA from Marquette University in 2001. He was a licensed professional engineer (P.E.) in the State of Wisconsin since 1999 and a Fellow of the American Society of Mechanical Engineers (ASME) since 2017, past Asia liaison and steering committee member for the Annual Semiconductor Thermal Measurement and Management Symposium (SEMI-THERM), current Track Co-Chair for the ASME International Technical Conference and Exhibition on Packaging and Integration of Electronic and Photonic Microsystems (InterPACK) and past board member of the Taiwan Thermal Management Association (TTMA).