



Topic of the Speech:

Thermophysiological Comfort of Protective Clothing Systems

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Professor Lijing Wang received his PhD degree from the University of New South Wales, Australia, and M.Eng and B.Eng degrees from Tianjin Polytechnic University, China. After his PhD completion, he worked as a postdoctoral research fellow in 1999 and 2000 at the Department of Mechanical and Manufacturing Engineering, Department of Aerospace Engineering, and Cooperative Research Centre for Advanced Composite Structures (CRC-ACS) on projects related to 3D textile composite materials, automated manufacturing, and robot vision systems. He then worked more than 8 years as a Research Academic, then Senior Research Fellow at the Centre for Material and Fibre Innovation at Deakin University. He joined the RMIT University School of Fashion and Textiles in 2009.

At RMIT, Prof Lijing Wang currently leads the Smart Textiles research cluster and Saving Lives research stream at Centre for Materials Innovation and Future Fashion. In his research career, he has been the chief investigator in more than 30 research projects funded from national competitive grants, and industry grants. He has more than 230 publications with an H-index of 26. He is an experienced PhD supervisor and he received RMIT Award for Innovative Research Supervision in 2017.

His key research areas of interest are smart and high-performance textiles; wearable technology; protective garments; clothing comfort; fibres and polymers material science, engineering and modelling; material functional design; and clothing supply chain sustainability.

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ABSTRACT SUBMISSION



-For invited speaker only

Thermophysiological Comfort of Protective Clothing Systems

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ABSTRACT (NO MORE THAN 500 WORDS:)

Clothing provides a portable environment maintaining human body comfort. Personal protective clothing, such as firefighting garments and encapsulated chemical suits, is to protect its wearer from hazards in the workplace and must be worn regardless the environmental thermal conditions. While in use, protective clothing insulates the body, resulting in rapid accumulation of body heat and moisture inside the clothing system. The body heat and moisture cannot be quickly moved away from the skin and dissipated into the environment, causing over-retention of internal body heat, thermal stress and thermophysiological discomfort. When working under extreme environments, such as facing intensive heat, or flame, the wearer's performance and safety is jeopardized. Hence, thermal comfort is highly desirable for a clothing system like personal protective equipment in the environment where the risk for the wearer facing to high temperature is very high, and protection from extreme external heat and hazards cannot be compromised. It is therefore a great challenge to design the clothing system for both protection and comfort. This presentation introduces examples of personal protection clothing systems, recent development of protective clothing design for thermal regulation and the methods for comfort evaluation. It focuses on firefighting garments, and chemical protective clothing. The textile material design and new technology integration into the clothing system are also discussed for regulating body temperature and maintaining the wearer's thermal comfort.