

Research Workshop

An Innovative Hybrid Nanofluid Spray Cooling Based Thermal Management System for Efficient Cooling of Electric Vehicle High Power Electronics

Research Centre for Green Energy, Transport and Building (RCGETB)

Date: 23 November 2023 (Thursday)

Time: 2:30 pm - 3:30 pm

Venue: Online (MS Teams)



Dr Muhammad ASIM

Lecturer

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Biography

Dr Muhammad Asim's research interests focus mainly on the field of renewable energy including Advanced HVAC systems, integrated waste heat recovery techniques, thermofluids, solar thermal desalination, and thermal management of high power electronics in electric vehicles as well as heat pumps designing. He completed his PhD from the City University of Hong Kong in 2020 and served as Post-Doctoral Engineer in Sustainable Energy Ltd. at HKSTP for one year where he extensively worked on optimisation and designing of refrigeration and heat pump systems.

Abstract

In recent years, as electric vehicles gained popularity and countries introduced policies for clean energy and clean environment, thermal management of electric vehicle (EV) high power electronics became a research focus due to high power density, chip miniaturization, dense packaging and increased vehicle speeds and mileages. Heat dissipation in high power electronics of current electric vehicles (EVs) can reach up to 500 W/cm^2 , and it may exceed 1000 W/cm^2 in future EVs. Such a high heat flux may not be removed by even efficient cooling technologies (for instance, spray cooling) due to the limited heat removal capacity of existing thermal fluids, such as water and dielectric fluids. To address this issue, the spray cooling potential of the next generation thermal fluid, called the hybrid nanofluid, is proposed in this research.

This research will reveal the spray cooling potential of the hybrid nanofluid for effective thermal management of high power electronics of both current and future electric vehicles. Although hybrid nanofluids proposed in this research may pose potential threat to aquatic and terrestrial environments, it will be used in a closed loop confined space once integrated in EVs and will not be exposed to the environment.

All are welcome!
Register Now!



Kindly make the reservation at: <https://forms.office.com/r/rDAmYGdHW9>

This workshop is fully supported by the grants from the Research Grants Council of the Hong Kong Special Administrative Region, China (Project No. UGC/IDS(R)24/20).

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