

Microchannel cooling for microprocessors and heat exchangers

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Horizon Europe Matchmaking Event
Energy Research

19 October, 2021.

University of Leicester

27th in the UK (and 185th in the world) in the [Times Higher Education \(THE\) World University Rankings](#)

75% of our research was judged to be internationally excellent with wide-ranging impacts on society, health culture, and the environment (Research Excellence Framework evaluation)

School of Engineering

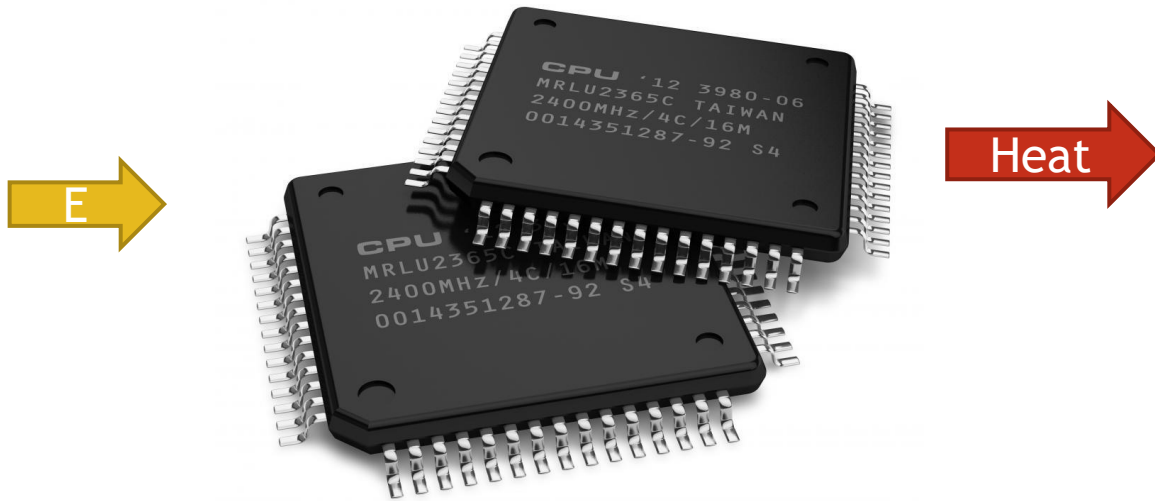
The School of Engineering opened in 1961, and it has developed into a home for multi-disciplinary Engineering teaching and research.

There are approximately 40 staff and 600 students.

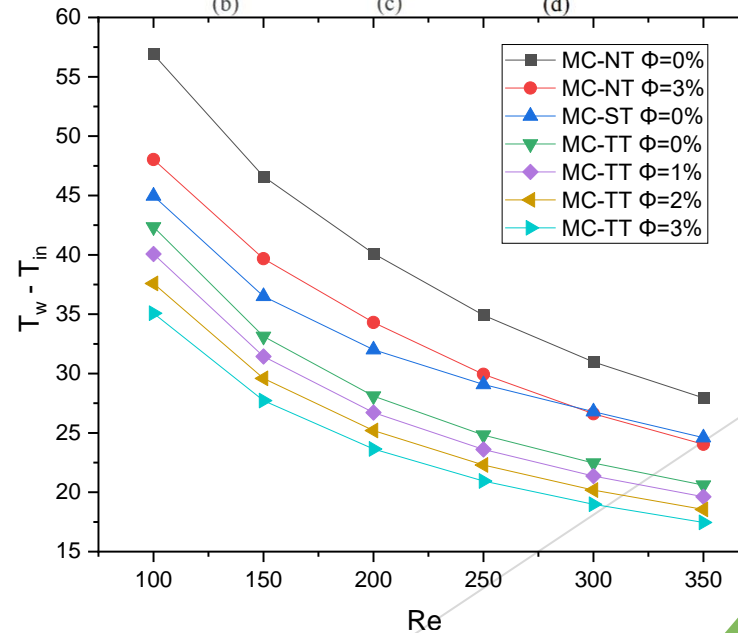
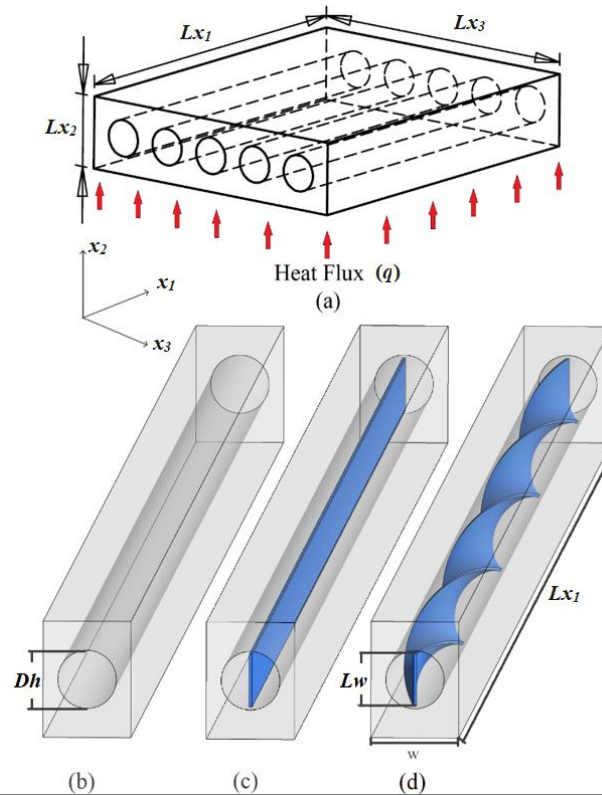
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Aerodynamic noise	Turbomachinery aerodynamics	Computational Fluid Dynamics
Jet noise	Axial turbines	Computational Aero-acoustics
Cavity flows	Axial compressors	Measurement techniques for compressible flows

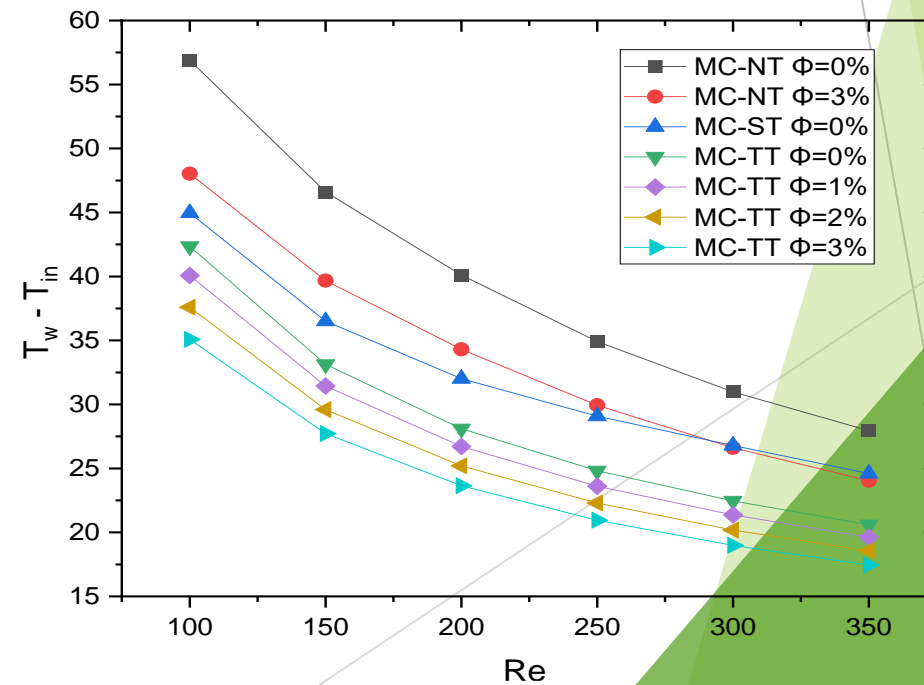
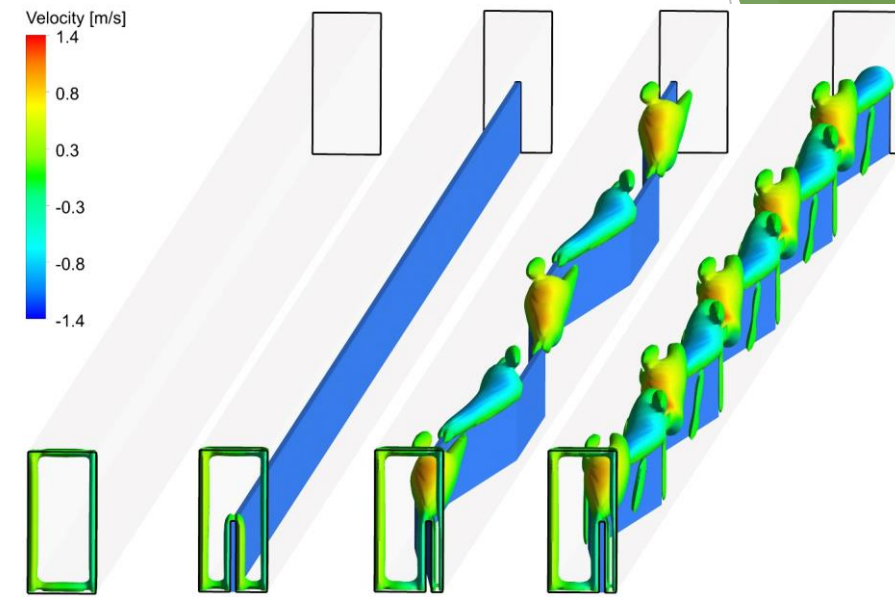
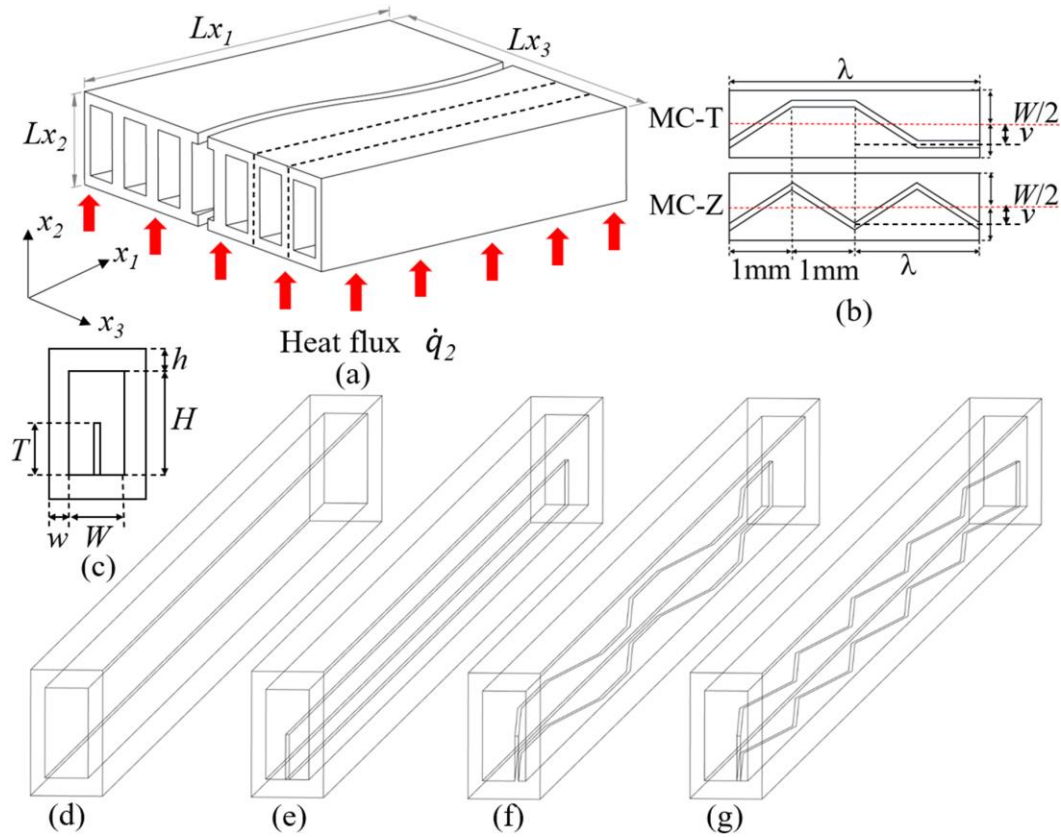
Microchannel cooling



- ▶ Internet of Things, numerous and dispersed microprocessors
- ▶ Electricity \rightarrow Heat
- ▶ Microchannels designed to minimize contact temperature \rightarrow lowers electrical resistance \rightarrow lowers energy consumption
- ▶ Application potential to larger heat exchangers

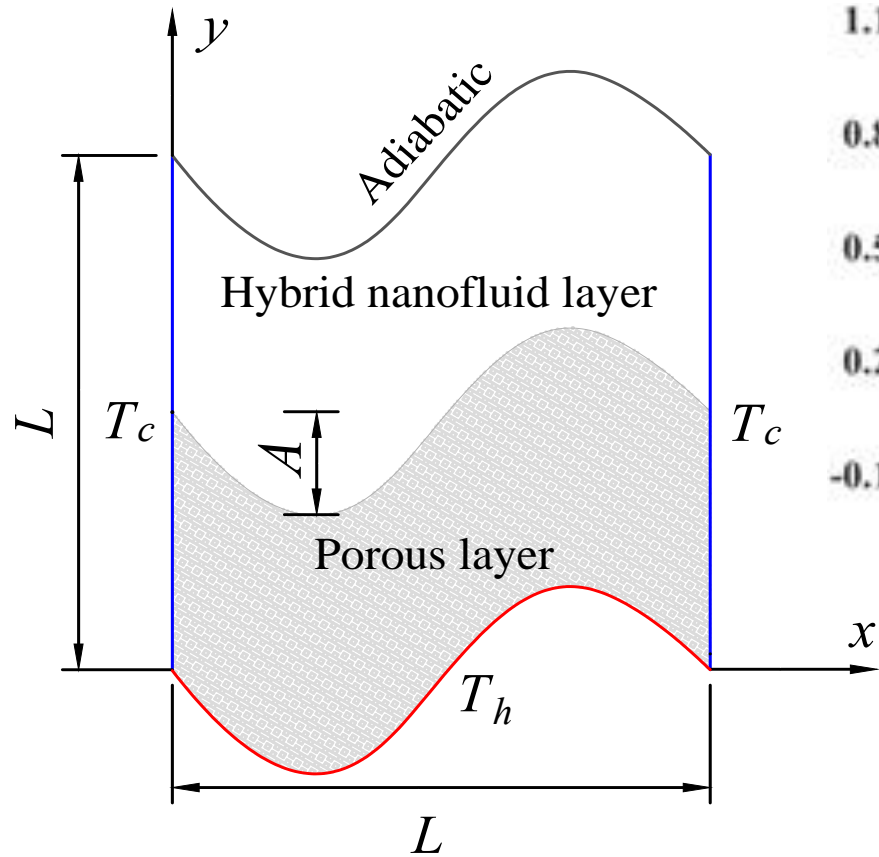


Microchannel cooling

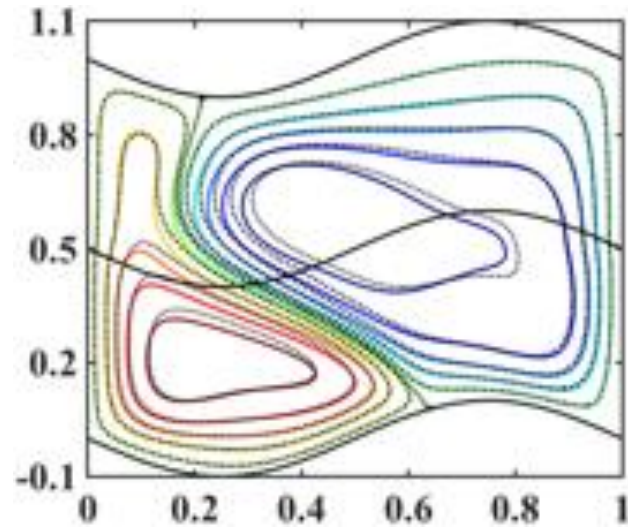


► Nanofluid heat transfer enhancement

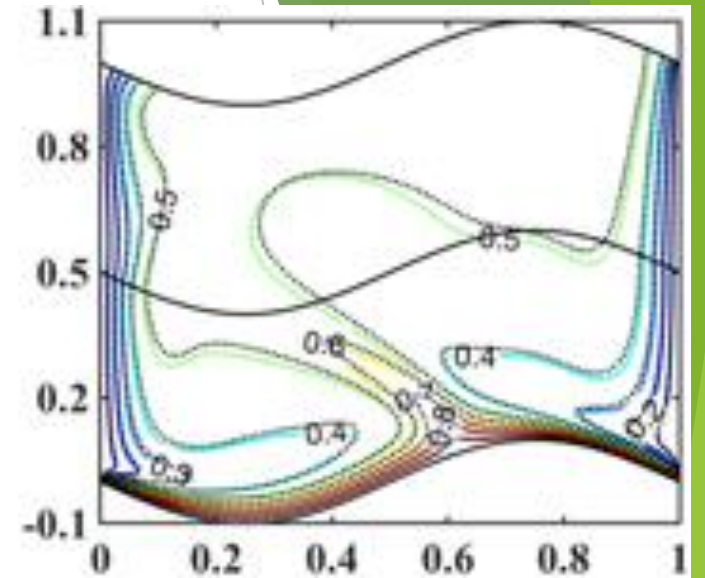
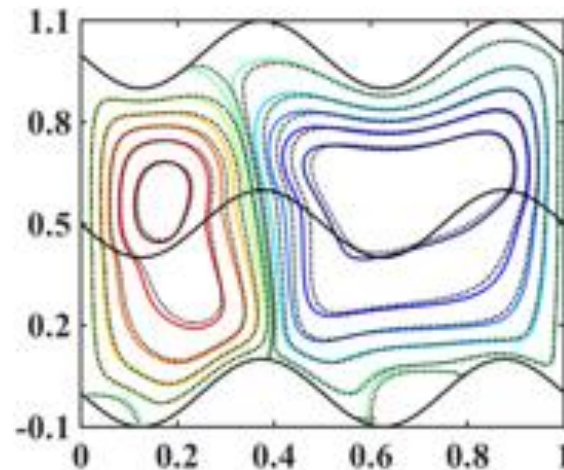
Hybrid nanofluid in porous media



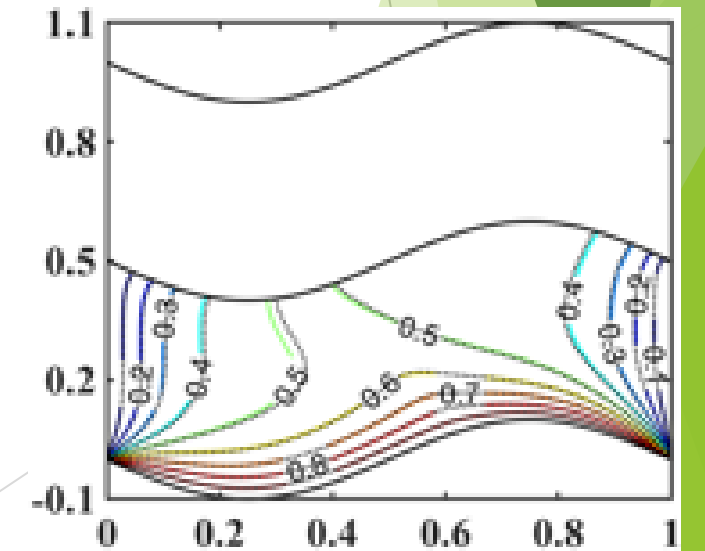
► Nanofluid heat transfer enhancement



► Streamlines



► Isotherms



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