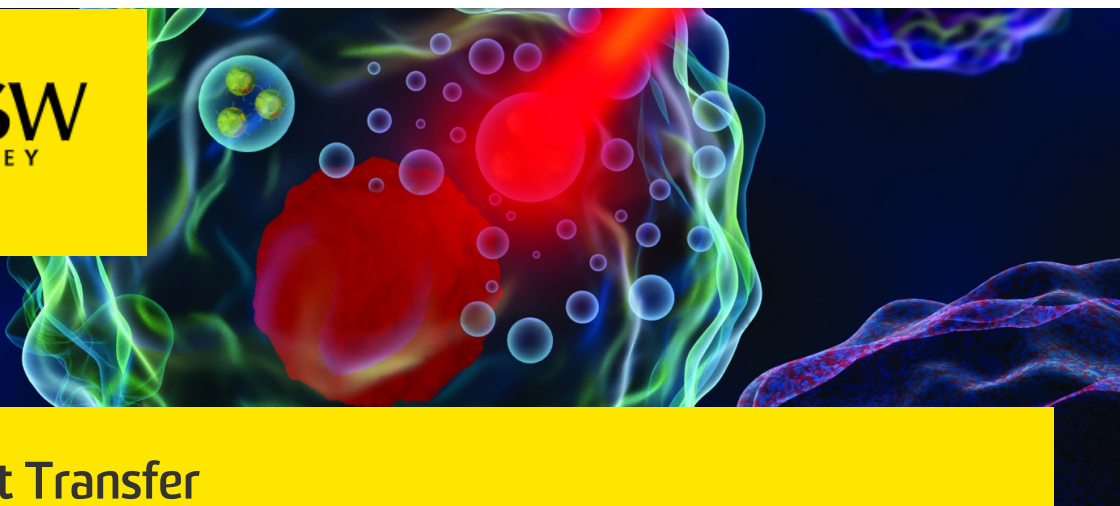




**UNSW**  
SYDNEY



## Efficient Heat Transfer

**Efficient heat transfer is crucial for the thermal management of next-generation medical devices. It is equally important in thermal therapies such as hyperthermia and cryotherapy as well as in thermally responsive nanocarriers for drug delivery and diagnostics.**

### Competitive advantage

- Expertise in bio-heat transfer and nanoparticle transport
- Skills in the application of optically or magnetically heated nanoparticles for targeted destruction of tumours and infectious organisms
- Experience with enhancement of heat transfer and cooling in micro electronic devices

### Impact

- Enhancing heating efficiency of nano structures for hyperthermia/ thermal ablation/drug delivery
- Development of plasmonic platform to accelerate reaction time in nucleic acid-based tests (digital Polymerase Chain Reaction (PCR))
- Providing effective solutions for thermal management/cooling of medical devices

### Successful outcomes

- Computational model for the temperature in multilayer superficial human tissues in the case of an external water-filtered infrared-A irradiation has been used to improve the efficiency of treatment of recurrent breast cancers.

### Capabilities and facilities

- Expertise in multi-disciplinary numerical modelling of hyperthermia of tumours with embedded nanoparticles
- Access to high performance computational clusters and computational software

### Our partners

- Department of Radiation Oncology, Prince of Wales Hospital
- Synov PTY LTD (Developing highly sensitive DNA test platforms)

### More Information

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