

# Quantum Nanodiamond Thermometry for Biological System

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Diamond quantum thermometry exploits the optical and electrical spin properties of colour defect centres in diamonds and, acts as a quantum sensing method exhibiting ultrahigh precision and robustness. Compared to the existing luminescent nanothermometry techniques, a diamond quantum thermometer can be operated over a wide temperature range and a sensor spatial scale ranging from nanometres to micrometres. Further, diamond quantum thermometry is employed in several application, including electronics and biology, to explore these fields with nanoscale temperature measurements. This talk will cover the operational principles of diamond quantum thermometry for spin-based and all-optical methods, material development of diamonds with a focus on thermometry, and examples of applications in biological systems with demand-based technological requirements.

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