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Presentation 10: Ultra-fast Lasers Towards TRIR Spectroscopy

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In this work, we present Time-Resolved InfraRed (TRIR) absorption spectroscopy as a tool to study ultra-fast molecular dynamics, and the process to develop an ultra-fast material study workstation. This research emphasises the critical role of ultra-fast lasers in capturing the transient states of molecules, essential for understanding their dynamic behaviour. The focus is on the design, implementation, calibration, and benchmarking of this system. Studying molecular dynamics is vital for unravelling the complexities of chemical reactions and physical phenomena at a molecular level, impacting fields ranging from biochemistry to material sciences. TRIR spectroscopy stands out as a significant method in observing and interpreting ultrafast molecular events, which are pivotal in advancing scientific and industrial applications.

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