

HIGH-SPEED VIBRATIONAL SPECTROSCOPY WITH TIME-STRETCH TECHNOLOGY

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The advancement of manipulation technologies for ultrashort laser pulses has led to significant improvements in the measurement speed of broadband vibrational spectroscopy. Laser frequency comb spectroscopy, particularly dual-comb spectroscopy, has dramatically increased the scan rate of interferometric measurements, thereby enabling high-speed Fourier-transform spectroscopy. However, its measurement speed is limited to approximately 1 MSpectra/s due to the signal-to-noise ratio. We have recently pioneered even faster vibrational spectroscopy techniques, capable of running at tens of MSpectra/s, by applying time-stretch technology. In this talk, I will introduce our latest developments in both infrared and Raman spectroscopy: time-stretch infrared spectroscopy (TS-IR) and time-stretch coherent Raman spectroscopy (TS-CRS).