

EXTENDING FREQUENCY COMB SPECTROSCOPY TO THE MID AND FAR INFRARED RANGE

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Visible and near-IR optical frequency combs have become key metrological tools for atomic and molecular spectroscopy, in the last 20 years. Their extension to the mid-IR and THz spectral ranges required appropriate and non-trivial nonlinear techniques for down-conversion. Such developments significantly improved the accuracy of frequency measurements across vibrational and rotational spectra of molecules, thus enormously enlarging the quality and application range of spectroscopic measurements. Very recently, Quantum Cascade Lasers have shown a great potential for comb generation in spectral intervals chosen by design with all-in-one miniature devices. I will discuss progress in mid-IR and THz combs for application to high resolution molecular spectroscopy and I will show very recent results for QCLs comb generation and control.