RENCONTRE INTER-UFR PHYSIQUE-CHIMIE

Ultra-high resolution MIR laser spectroscopy using SI traceable frequency combs

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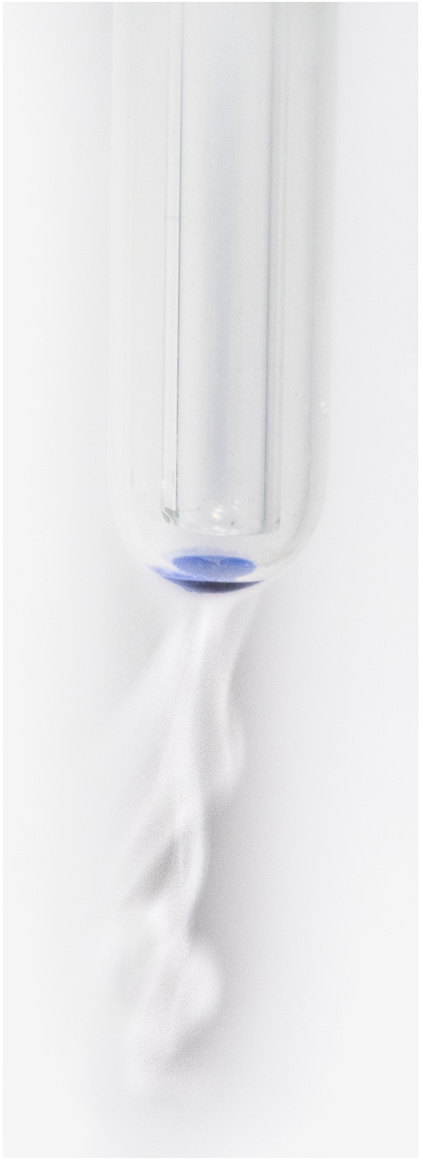
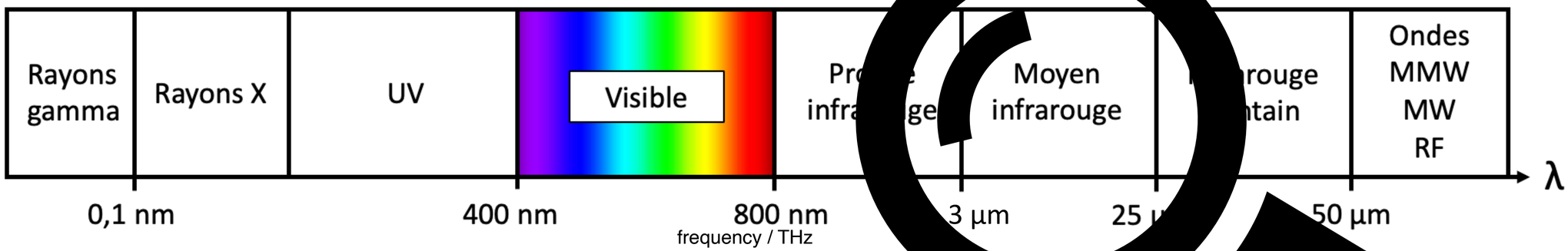
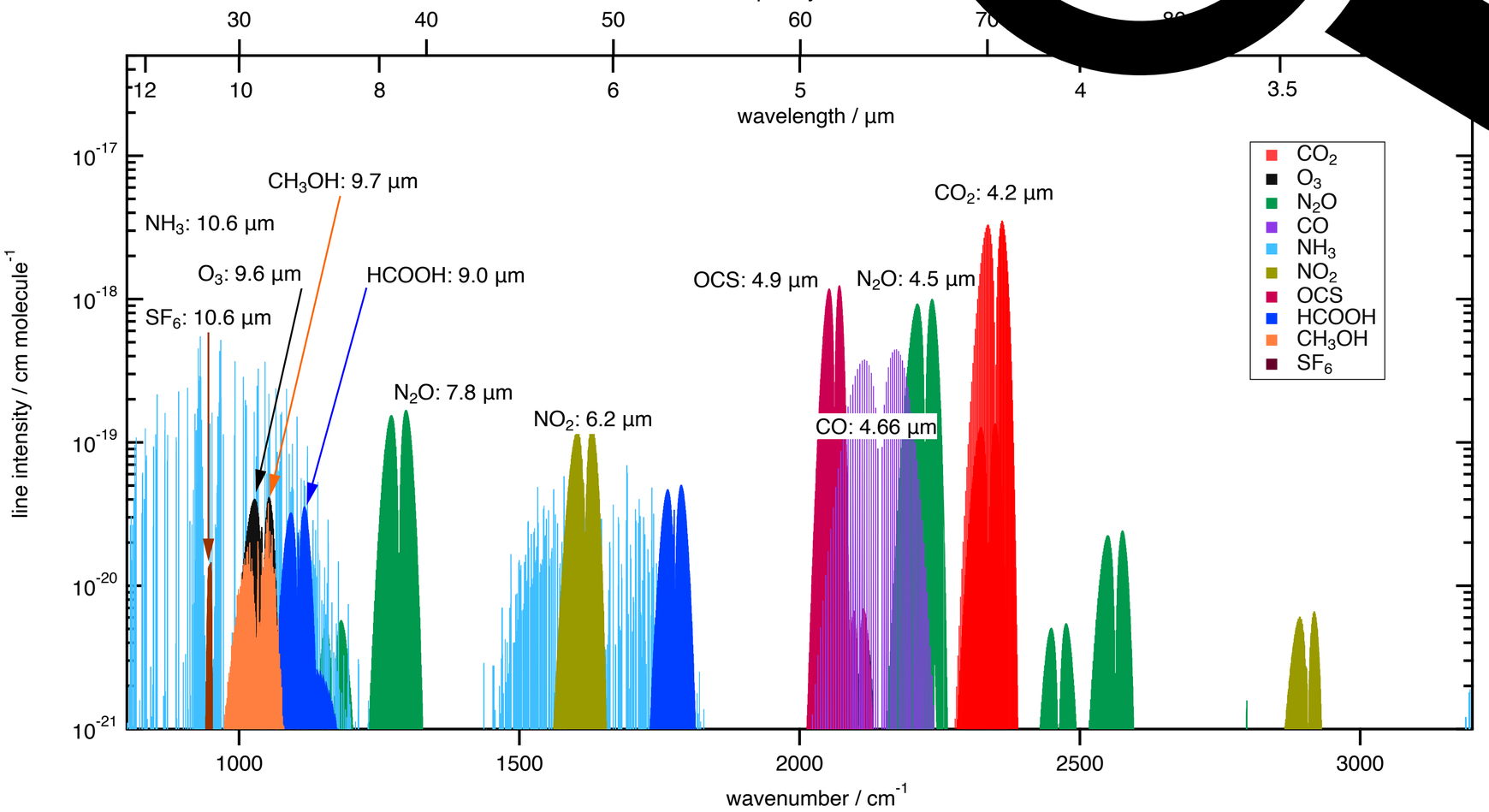


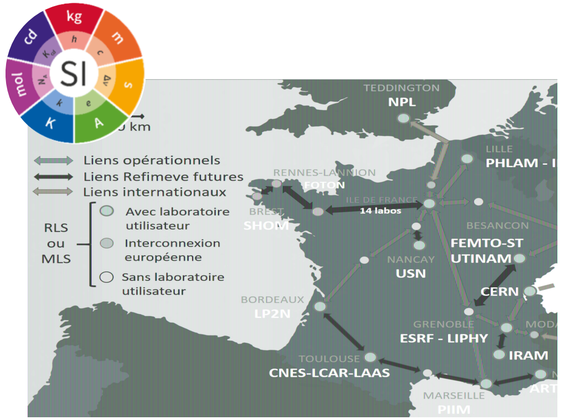
MIR spectral & molecular fingerprint region

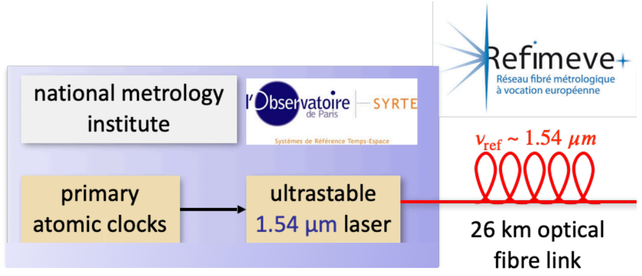




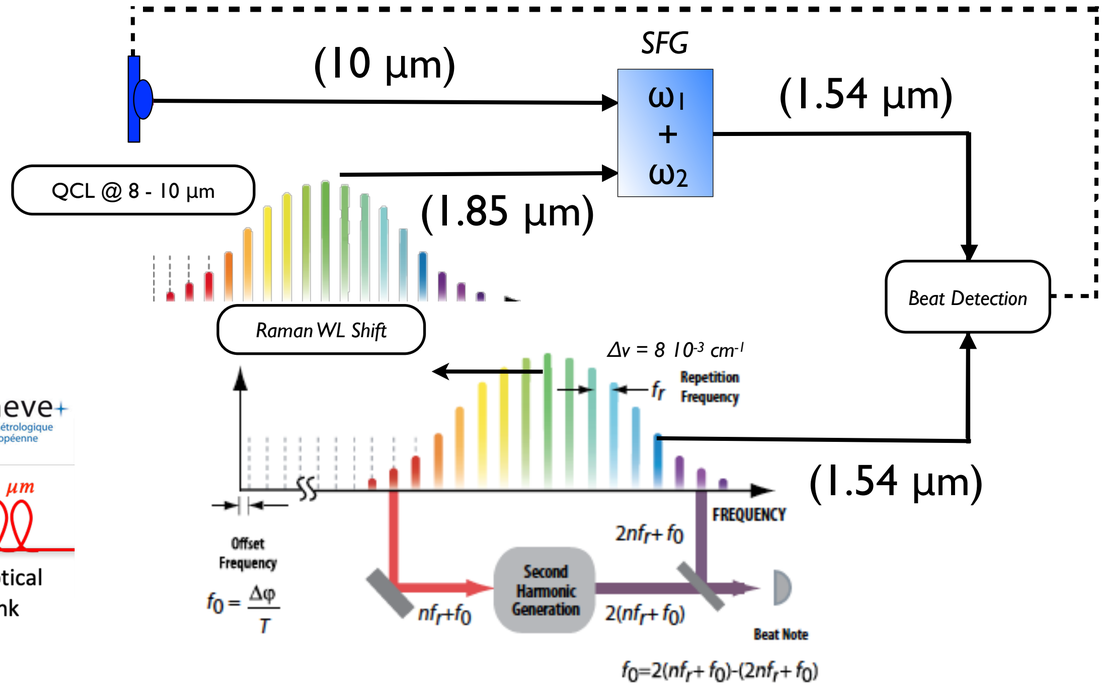
SI traceable frequency reference for MIR-QCL

SI referencing @ 1.54 µm

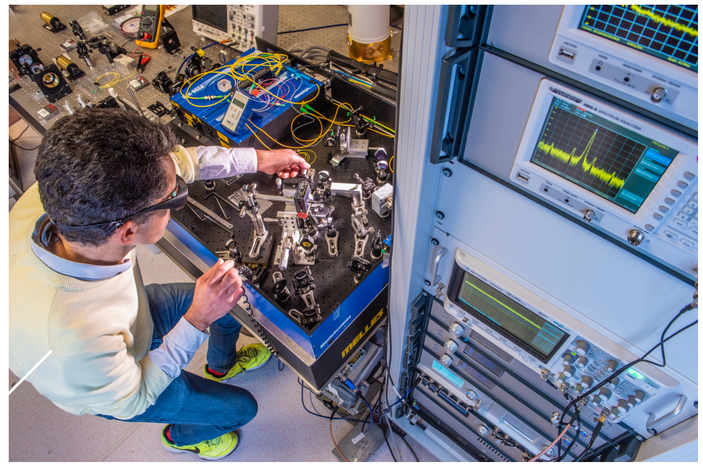


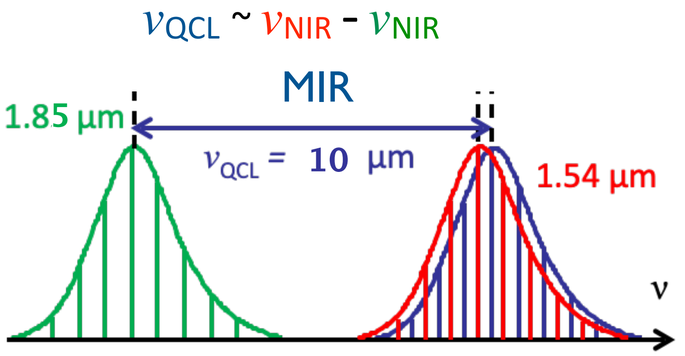


Tunable comb-stabilized mid-IR QCL



Santagata et al. Optica (2015)





Spatial transfer

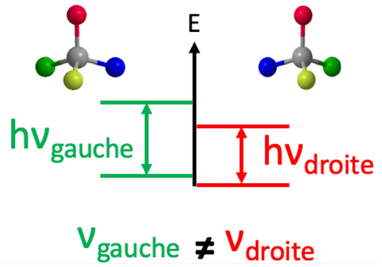
Frequency transfer

Applications in

Fundamental Physics

Tests of fundamental symmetries

chiral molecules

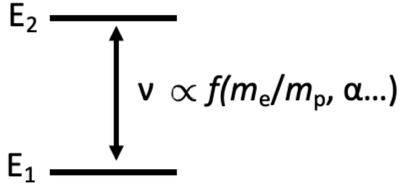


Accuracy targets for transition energy:

< 0.1 - 1 Hz (10^{-15})

Study of fundamental constants

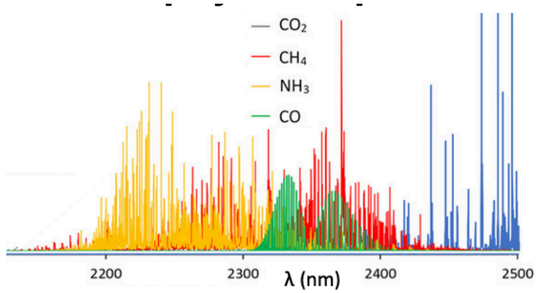
$\frac{m_e}{m_p}$ **Electron - proton mass ratio**



< 1 - 0.1 kHz (10^{-12})

Atmospheric and Physical Chemistry

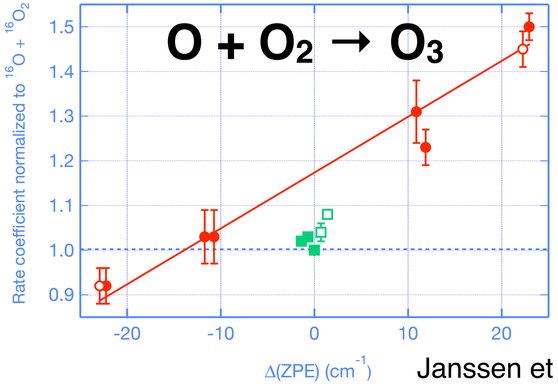
Spectroscopic parameters for remote sensing



Spectral resolution/ accuracy:

~ 100 kHz (10^{-9})

Symmetry selection in molecular systems



Janssen et al. PCCP (2001)

< 10 kHz (10^{-10})