INFRARED SPECTROSCOPY USING QUANTUM CASCADE LASERS

PENG WANG, TOM J. TAGUE , *Bruker Optics, Billerica, MA 01821*; LAURENT DIEHL, CHRISTIAN PFLÜGL, and FEDERICO CAPASSO, *School of Engineering and Applied Sciences, Harvard University, Cambridge, MA 02138*.

A single Fabry-Perot quantum cascade laser (QCL, bandwidth 60cm-1) operated in continuous mode at 283K on a thermoelectric cooler has been combined with Fourier-transform infrared (FTIR) spectrometers for transmission measurement through strongly absorbing samples or samples in strongly absorbing solvents. Because of the high brightness of the QCL device, absorption features of many optically dense media can be investigated directly in transmission mode, which are usually not accessible with standard globar light sources used typically in FTIRs. Applications include but not limited to analysis of proteins in water solutions, tissues, thick films and tablets etc.