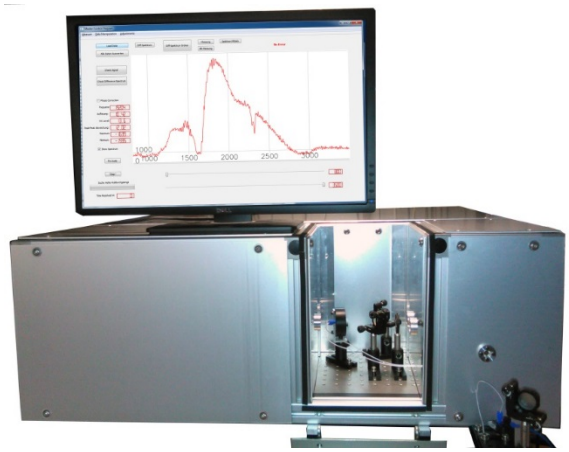
Ultra Rapid-Scan Spectrometry

Novel FTIR-Spectrometer with
1000x faster Time Resolution

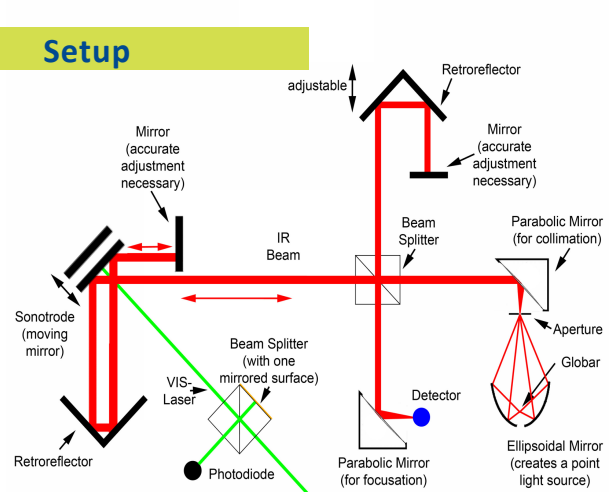
Prototype



Invention

Fast time resolved FTIR measurements in the µs-regime of nonrepetitive or unhomogenious samples, fast process monitoring or measurements in a changing environment are not possible until today. The present invention provides an alternative arrangement of a FTIR spectrometer with a resonator as a moving mirror. The time resolution can be significantly improved in comparison to conventional rapid scan FTIR to a range of 10 to 20 µs and a spectral resolution of up to 5 to 10 cm-1.

Setup



Development Stage

- A fully functional prototype with automated measuring and evaluation software has been implemented. A selfmade flow cell for liquid sample has been installed.
- Bacteriorhodopsin was used as a test system. Measurements were successfully realized using rehydrated films as well as liquid samples.
- The next stage are measurements with a truely nonrepetetive sample. Bovine rhodopsin will be a promising candidate for this purpose.

Potential Application Areas

Time-resolved measurements are of great interest for kinetic processes, for example, in the investigation of biochemical reactions, combustion reactions or process control. FTIR, as a sensor for molecular vibrations, provides versatile information on biological systems. The present ultra rapid-scan technology opens up completely new possibilities by identifying so far unknown molecular mechanisms.

Licensing Opportunities

- exclusive license agreement to a FTIR manufacturer

IP Rights

- **European Patent Application 14 194 520**
  Filing date: 24th November 2014

  „Oscillating reflector with ultrasonic resonator, interferometer with an oscillating reflector and Fourier transform infrared spectrometer “

Kontakt

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