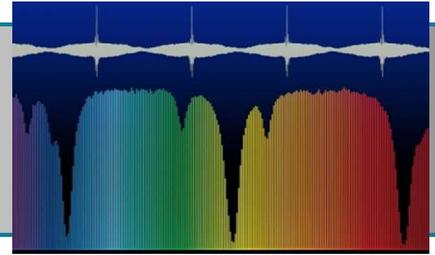


TECHNO OFFER

SpectroComb

Ultrafast Mid-Infrared Spectroscopy

Keywords : Spectroscopy / mid-infrared / Ultrafast / Broadband



CONTEXT

The necessity to discriminate infrared spectra with high sensitivity at the microsecond time-scale is required for example in kinetics of fast chemical reactions (transient biochemical reaction, protein folding, plasma / combustion analysis...).

Photonics infrared technologies are quite limited in temporal resolution in these wavelength (few millisecond in best case and more usually seconds for analysis with FTIR).

As a consequence, on this time-scale, users have to move to non-optical methods like Microscale Mass Spectroscopy which offer a good specificity / sensitivity at the cost of higher CAPEX and OPEX compared to optical methods.

Mid-infrared spectroscopy could offers a good trade-off performance / price by overcoming the limitation of FTIR.

DESCRIPTION

Dual Comb spectroscopy (DCS), based on the interference of two mutually coherent frequency combs with slightly different repetition rates, has been investigated in depth for its high-resolution, sensitivity and short data acquisition time. However, most of DCS setups need the two combs to be locked, which requires state-of-the-art stabilization or complex synchronization

Former results built upon electro-Optic modulator obtained significant results in NIR frequencies till $3\mu\text{m}$ but were not yet transferred to $4\text{-}5\mu\text{m}$ Mid-Infrared frequencies, in particular due to extinction ratio of the modulators in the MIR.

This new SPECTROCOMB device makes available such former knowledge and architecture to Mid-IR frequencies.

COMPETITIVE ADVANTAGES

- Performances and tunability
- Ergonomy and usage
- Real-time measurement



Markets & applications

Applications

- ❖ Combustion - Exhaust Gas emission analysis
- ❖ Catalysis
- ❖ Electrochemistry



Development stage

TRL 4



Research team

ICB UMR 6303 CNRS Dijon



Intellectual property

2 patents



Target partnership

Patent licensing

CONTACT-US

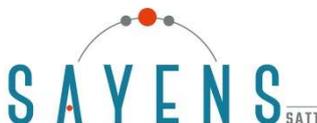
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