

[MOEMS module]

FTIR* engine NEW C15511-01

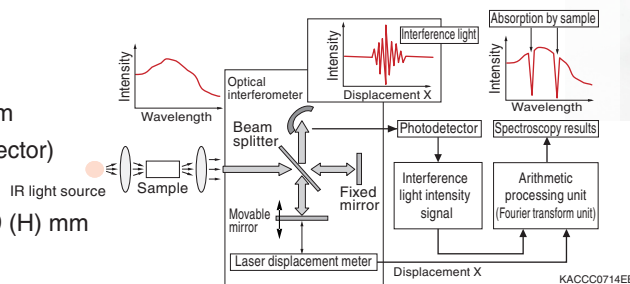
The FTIR engine is a compact spectrometer module covering the wavelength range from 1100 to 2500 nm. It consists of a Michelson optical interferometer (fabricated using unique MEMS technology), an InGaAs photodiode, and a VCSEL.

*FTIR (Fourier transform infrared spectroscopy)

FEATURES

- Resolution: 5.7 nm ($\lambda=1532$ nm)
- SNR: >10000 : 1
- Wavelength repeatability: ± 0.5 nm
- Optical fiber: $\phi 600$ μm (SMA connector)
- Interface: USB 2.0
- Dimensions: 87 (W) \times 76 (D) \times 49 (H) mm

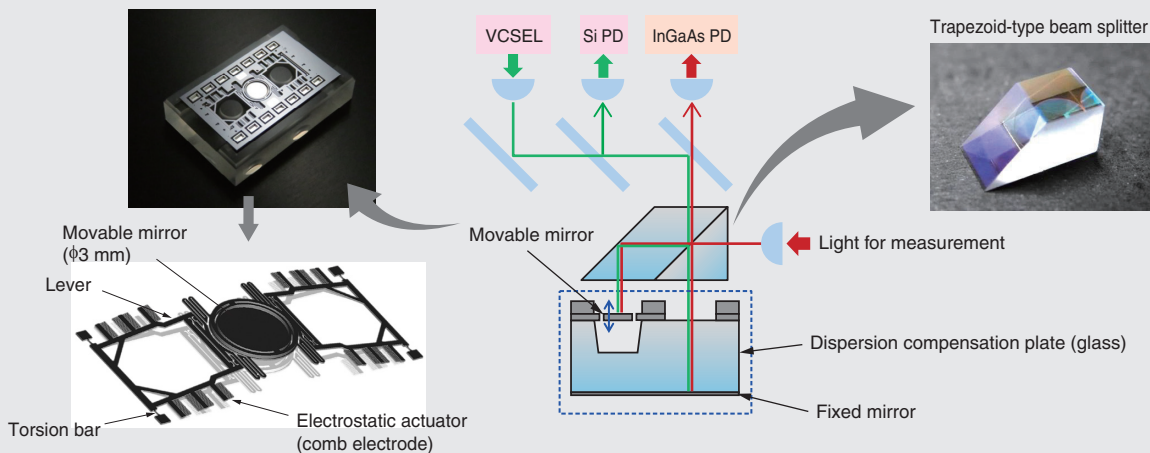
FTIR configuration and principle



FTIR technology

A large diameter $\phi 3$ mm movable mirror created with MEMS technology is used in the optical interferometer for enhancing the sensitivity. A VCSEL for monitoring the movable mirror's position is used to ensure highly accurate spectroscopic data.

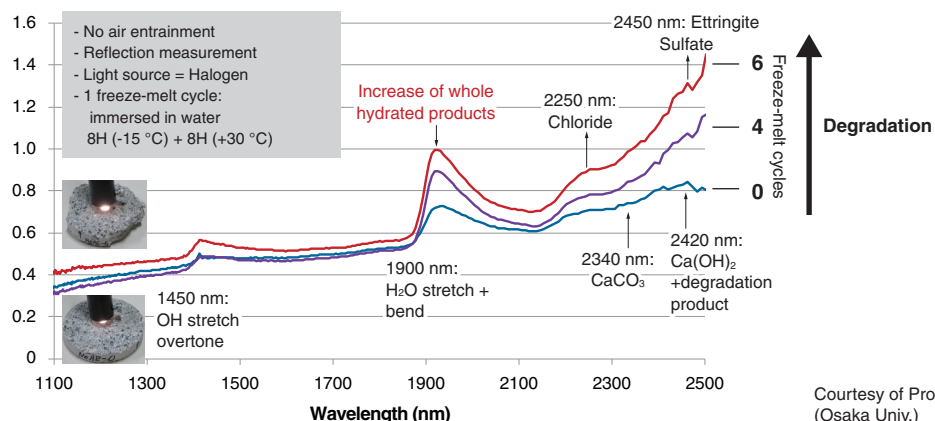
Structure of compact FTIR engine



Application example

Degradation of mortar strength can be estimated by seeing the NIR spectrum; differences in mortar samples before and after freeze-melt cycles can be found in the 1450 nm, 1900 nm and the 2250 to 2450 nm regions.

Measurement results (ripening condition measurement)



Courtesy of Prof. Satoru Nakashima (Osaka Univ.)