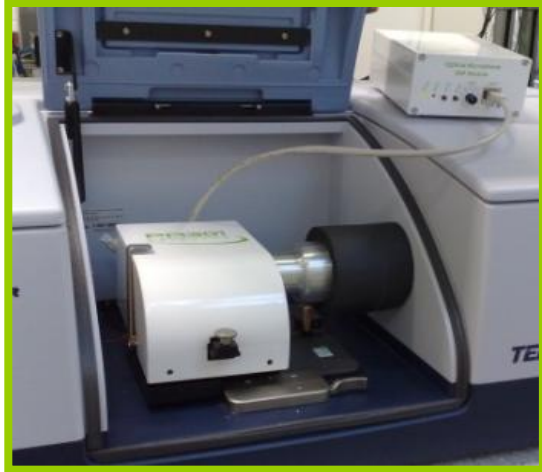


# Soil and mineral samples



## Measurement of Soil and mineral samples with photoacoustic spectroscopy



- Photoacoustic spectroscopy (PAS) is an advantageous method for the measurement of soil and mineral samples since it is contactless measurement and insensitive to the sample morphology.
- In PAS no sample preparation is needed such as for example mixing with KBr in diffuse reflectance.
- Mineral samples typically have a very hard surface, and therefore, a proper optical contact is hard to obtain with ATR method even with a diamond ATR.

## Parameters:

Sample: **Fluor apatite with natural enclosures (< 10%)**

Measurement time: **25 seconds (10 scan)**

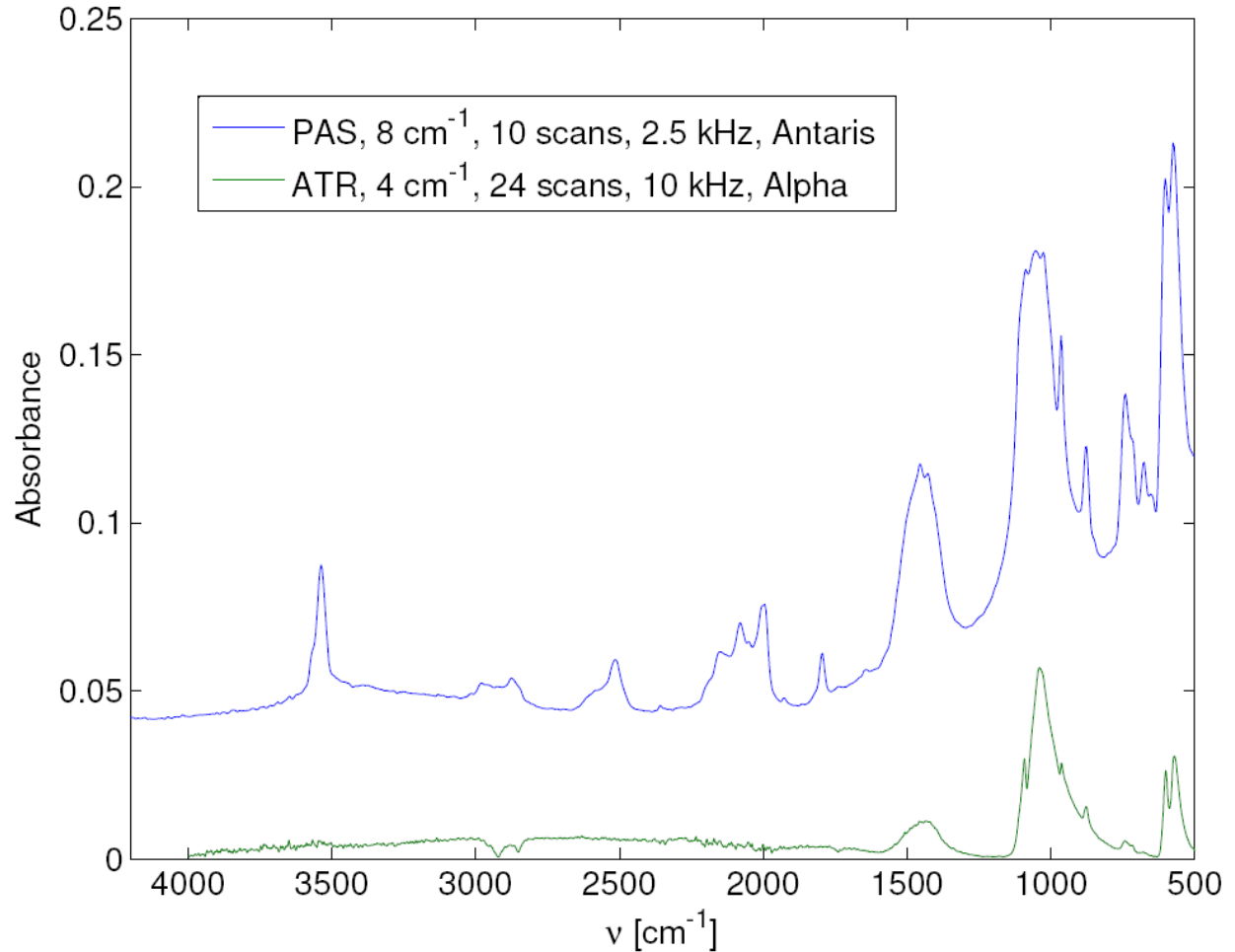
FTIR device: Thermo Antaris

Resolution:  $8 \text{ cm}^{-1}$

HeNe laser frequency: 2.5 kHz

Atmosphere: Helium

Pressure: 1 atm



## Parameters:

Sample: **Flogopite with natural enclosures** (< 5%)

Measurement time: **25 seconds (10 scans)**

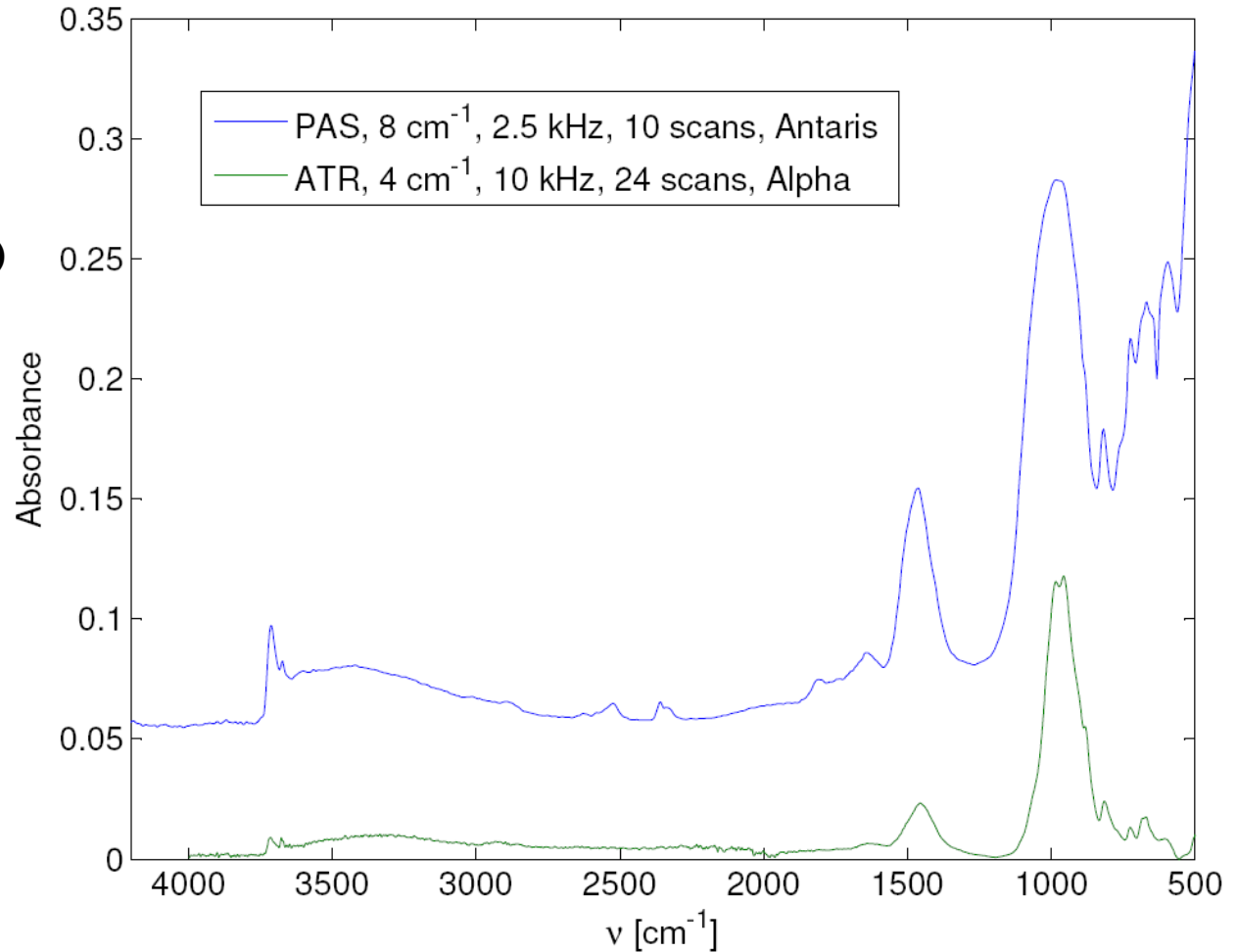
FTIR device: Thermo Antaris

Resolution:  $8 \text{ cm}^{-1}$

HeNe laser frequency: 2.5 kHz

Atmosphere: Helium

Pressure: 1 atm



## Parameters:

Sample: **Ca,Mg carbonate (with natural enclosures (< 12%))**

Measurement time: **25 seconds (10 scans)**

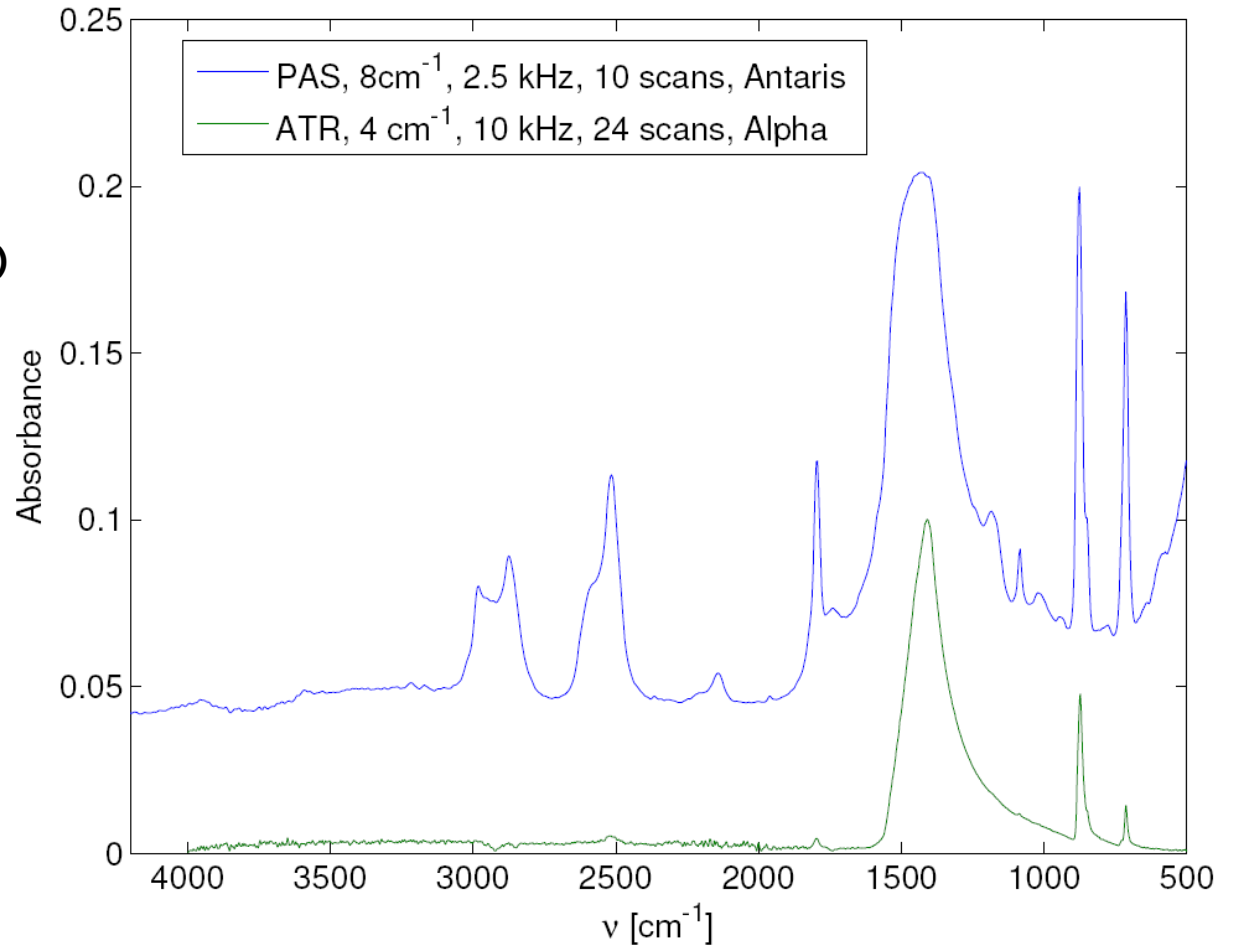
FTIR device: Thermo Antaris

Resolution: 8 cm<sup>-1</sup>

HeNe laser frequency: 2.5 kHz

Atmosphere: Helium

Pressure: 1 atm



## Parameters:

Sample: **Coal**

Measurement time: **25 seconds (10 scans)**

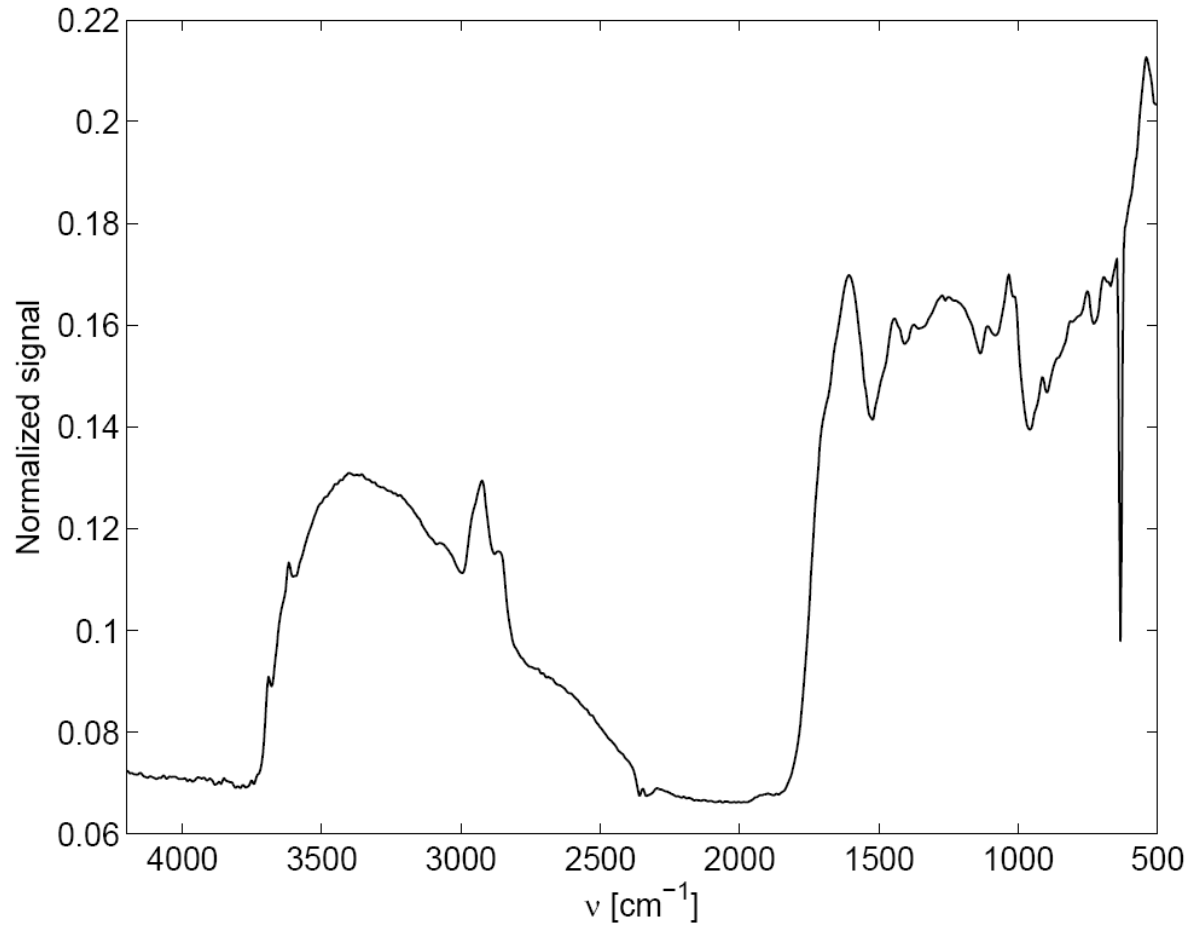
FTIR device: Thermo Antaris

Resolution: 8  $\text{cm}^{-1}$

HeNe laser frequency: 2.5 kHz

Atmosphere: Helium

Pressure: 1 atm



## Parameters:

Sample: **Middleton organic soil sample**

Measurement time: **25 seconds (10 scans)**

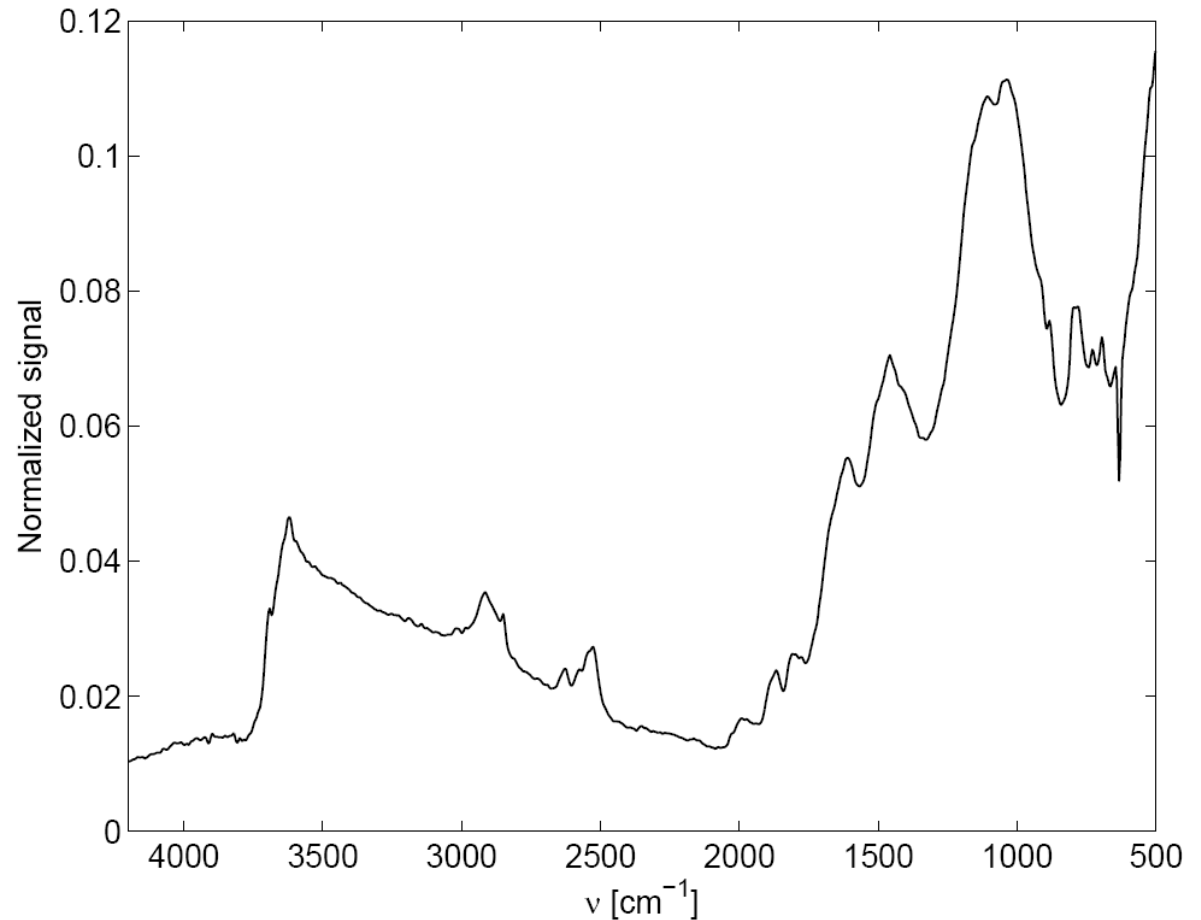
FTIR device: Thermo Antaris

Resolution: 8  $\text{cm}^{-1}$

HeNe laser frequency: 2.5 kHz

Atmosphere: Helium

Pressure: 1 atm



## Parameters:

Sample: **Marathon county soil sample**

Measurement time: **25 seconds (10 scans)**

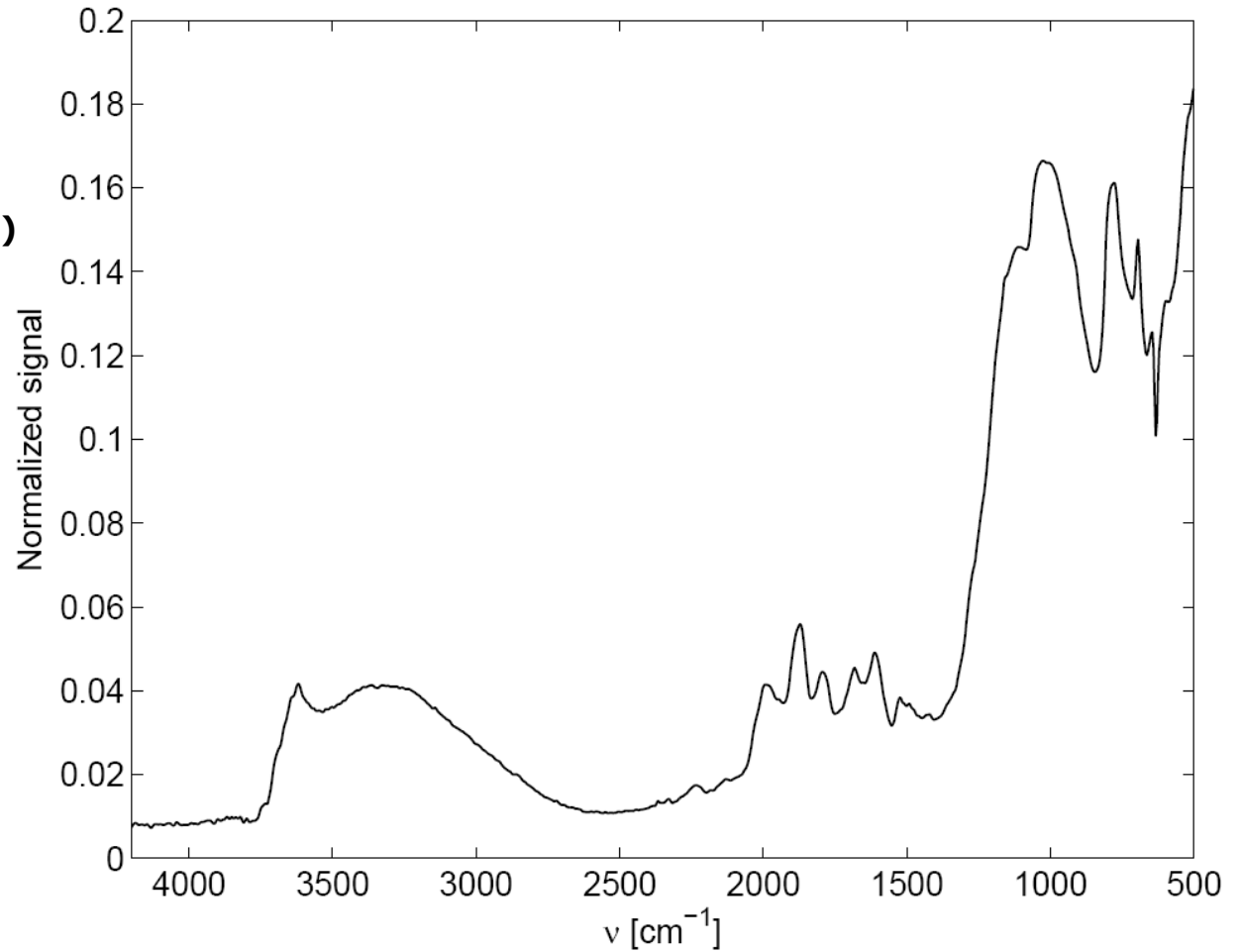
FTIR device: Thermo Antaris

Resolution:  $8 \text{ cm}^{-1}$

HeNe laser frequency: 2.5 kHz

Atmosphere: Helium

Pressure: 1 atm





## Parameters:

Sample: **Bluestem clay soil sample**

Measurement time: **25 seconds (10 scans)**

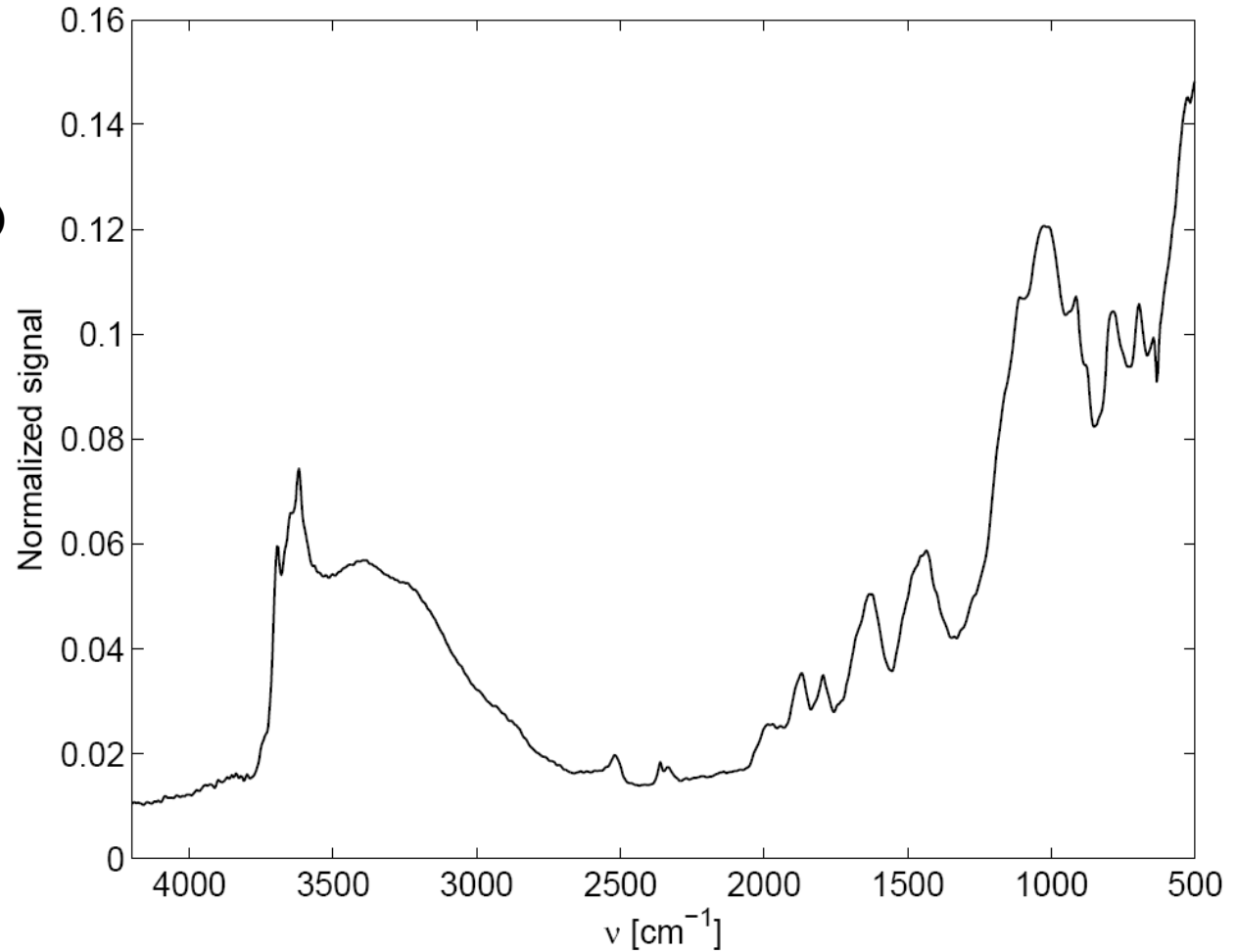
FTIR device: Thermo Antaris

Resolution: 8  $\text{cm}^{-1}$

HeNe laser frequency: 2.5 kHz

Atmosphere: Helium

Pressure: 1 atm



## Parameters:

Sample: **Silverlake soil sample**

Measurement time: **25 seconds (10 scans)**

FTIR device: Thermo Antaris

Resolution: 8  $\text{cm}^{-1}$

HeNe laser frequency: 2.5 kHz

Atmosphere: Helium

Pressure: 1 atm

