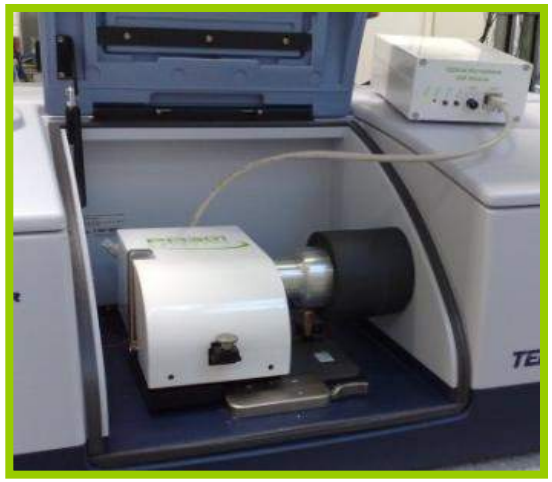
Dark samples

Measurements of dark and black samples with photoacoustic spectroscopy



- Photoacoustic spectroscopy suits extremely well for the measurement of dark samples that have low transmittance or reflectivity on a wide spectral range
- The reason for this is that the photoacoustics is a direct absorption measurement technique – the higher the absorbance the higher the signal is
- With other techniques (transmission, ATR, DRIFT) proper spectra are difficult to obtain from dark samples due to the high absorption
- With the PA301 accessory no sample preparation is needed and contaminated sample cups can be discarded after use

Bitumen

Parameters:

Sample: **Bitumen**

Measurement time: **250 seconds (100 scans)**

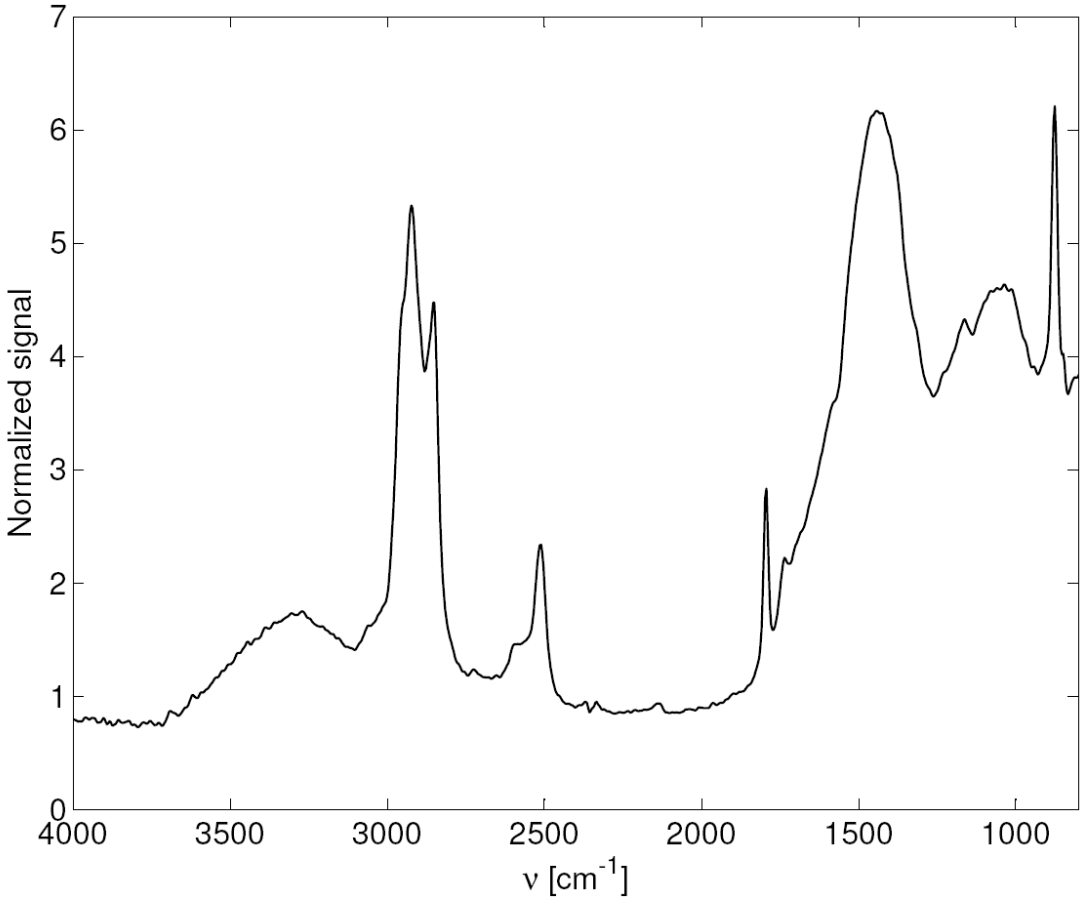
FTIR device: Thermo Antaris

Resolution: 8 cm^{-1}

HeNe laser frequency: 2.5 kHz

Atmosphere: Helium

Pressure: 1 atm



Heavy oil

Parameters:

Sample: **Heavy oil, POR LS420**

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

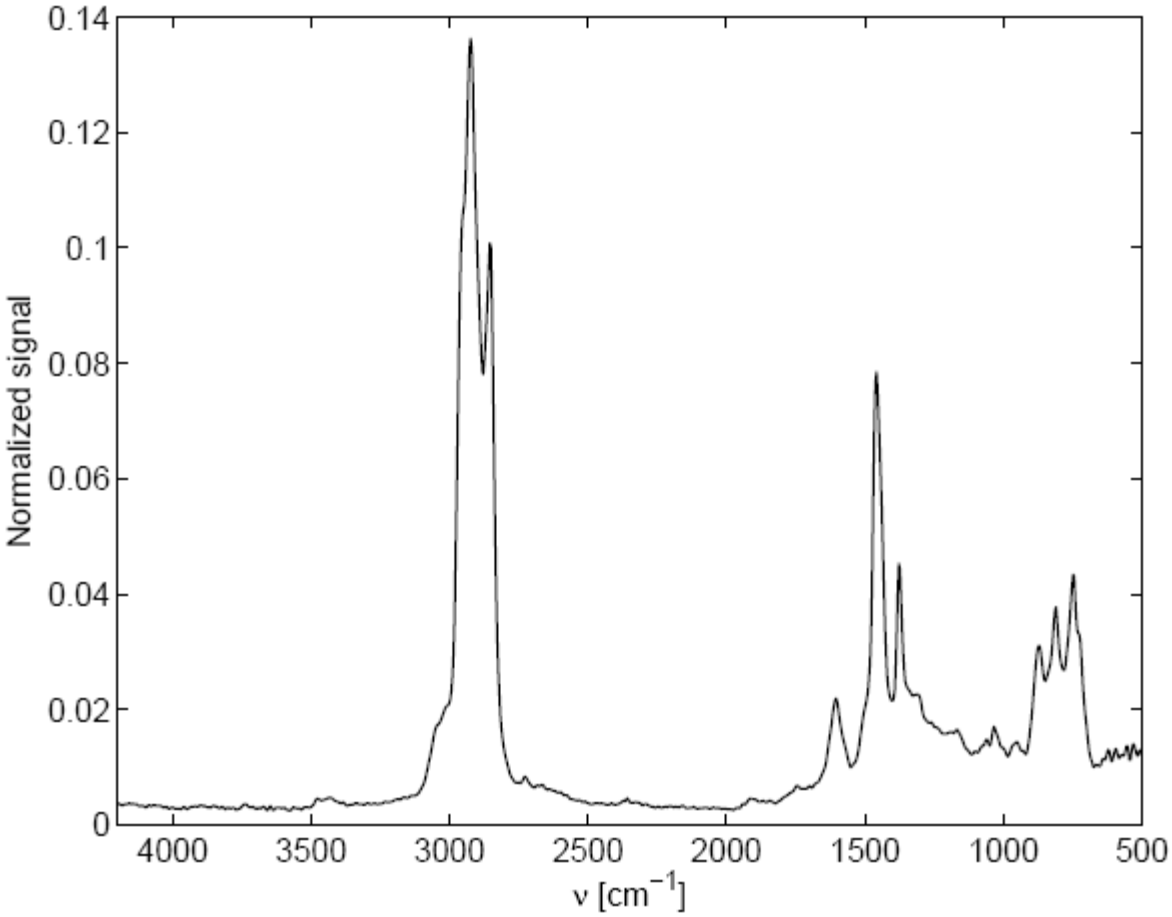
FTIR device: Thermo Antaris

Resolution: 8 cm^{-1}

HeNe laser frequency: 2.5 kHz

Atmosphere: Helium

Pressure: 1 atm



Asphalt

Parameters:

Sample: **Asphalt**

Measurement time: **100 seconds (20 scans)**

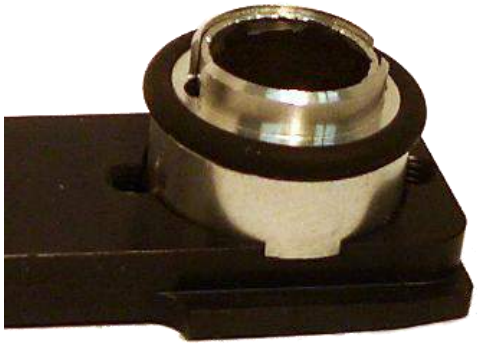
FTIR device: Thermo Antaris

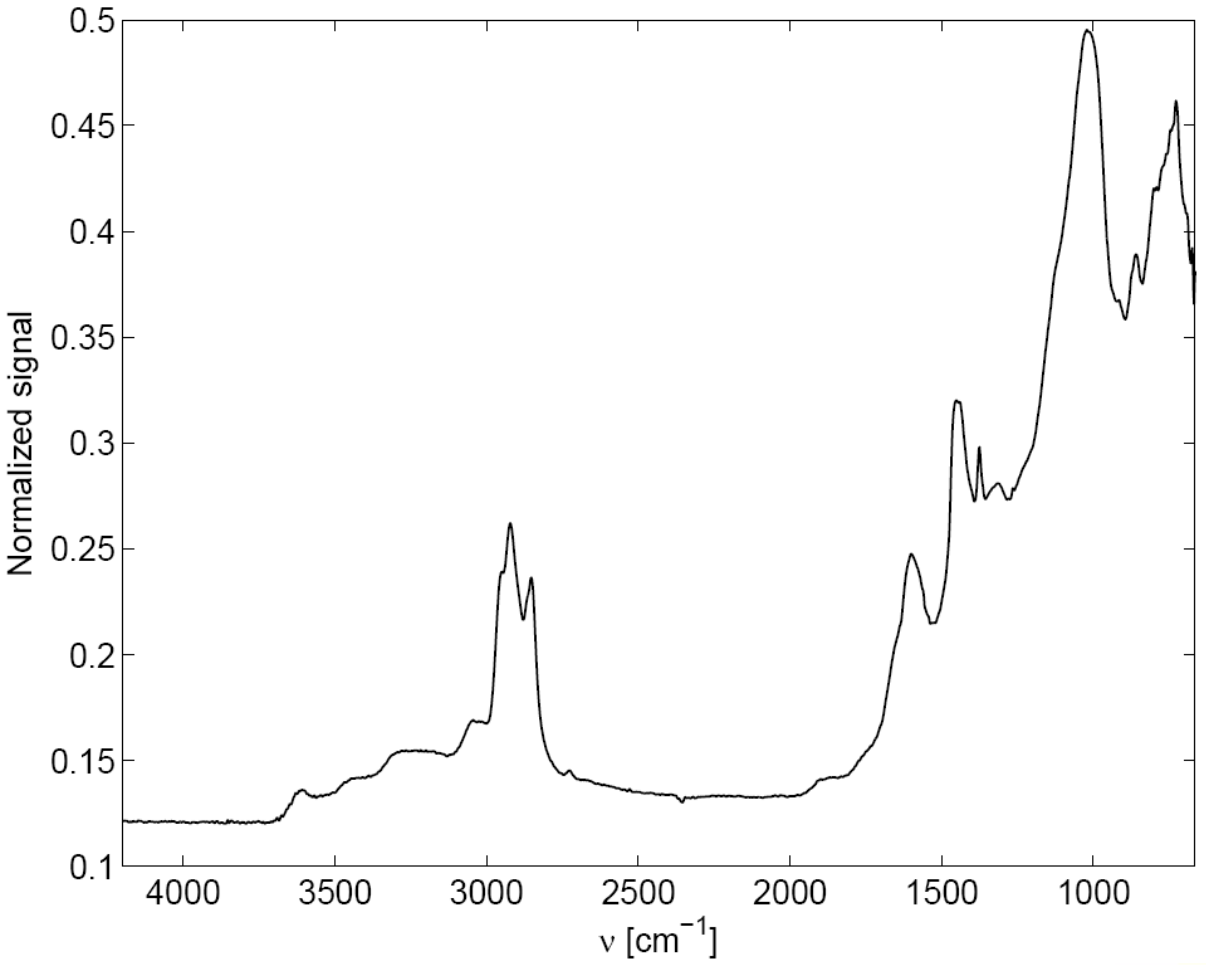
Resolution: 4 cm^{-1}

HeNe laser frequency: 2.5 kHz

Atmosphere: Helium

Pressure: 1 atm





Resin

Parameters:

Sample: **Resin**

Measurement time: **100 seconds (20 scans)**

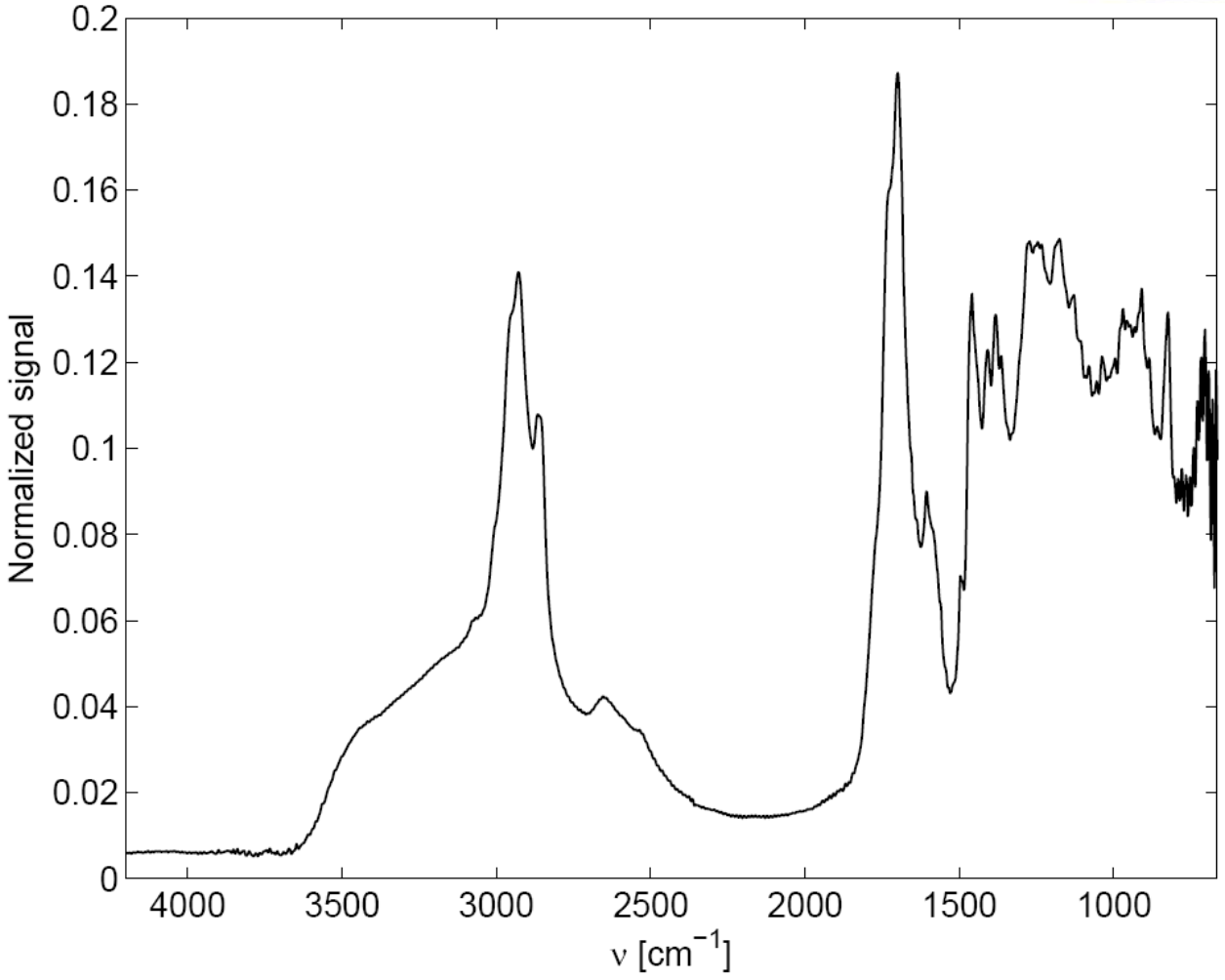
FTIR device: Thermo Antaris

Resolution: 4 cm^{-1}

HeNe laser frequency: 2.5 kHz

Atmosphere: Helium

Pressure: 1 atm



Coal

Parameters:

Sample: **Coal**

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

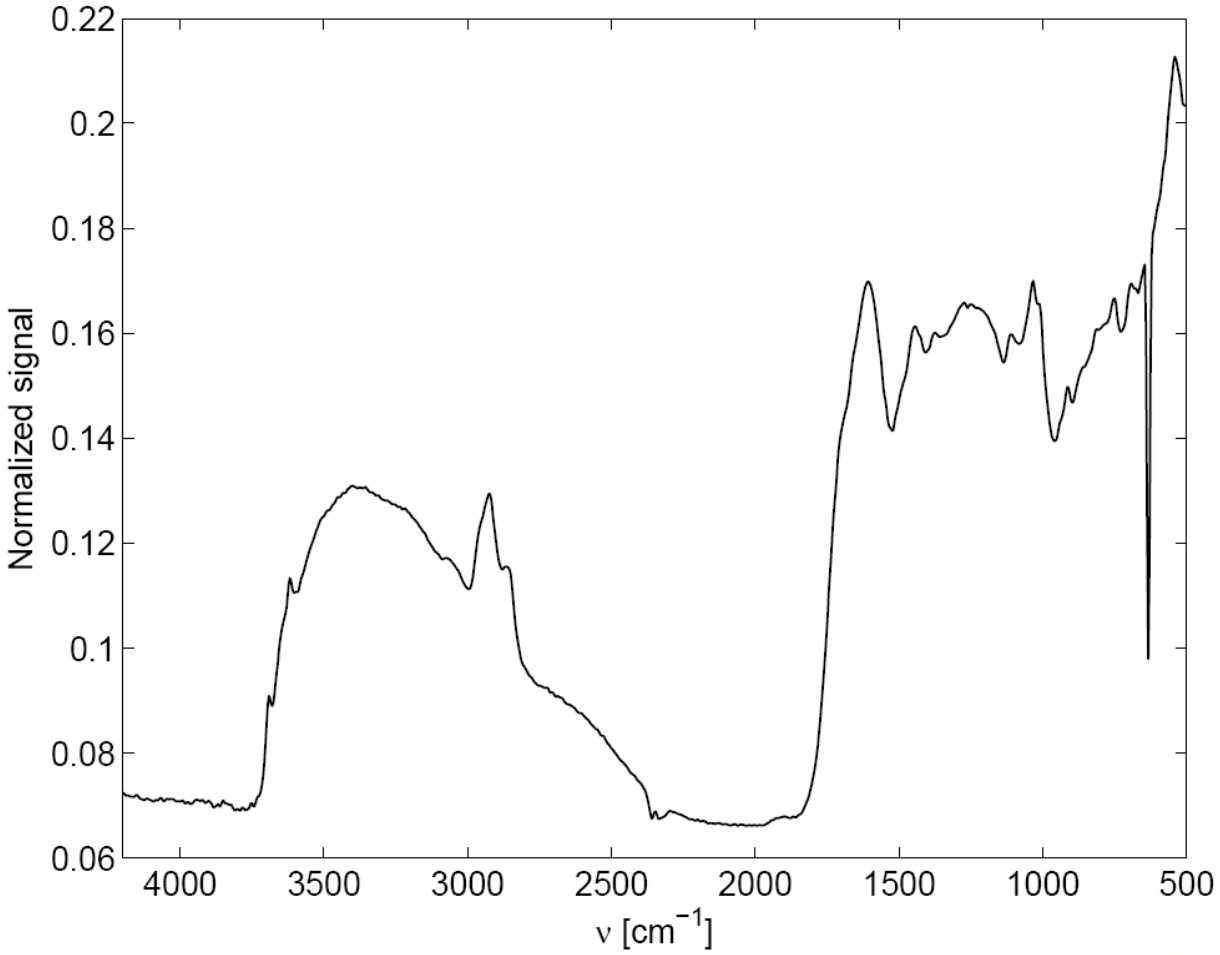
FTIR device: Thermo Antaris

Resolution: 8 cm^{-1}

HeNe laser frequency: 2.5 kHz

Atmosphere: Helium

Pressure: 1 atm



Black powder in fireworks (mix)

Parameters:

Sample: **Black powder in fireworks mix**

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

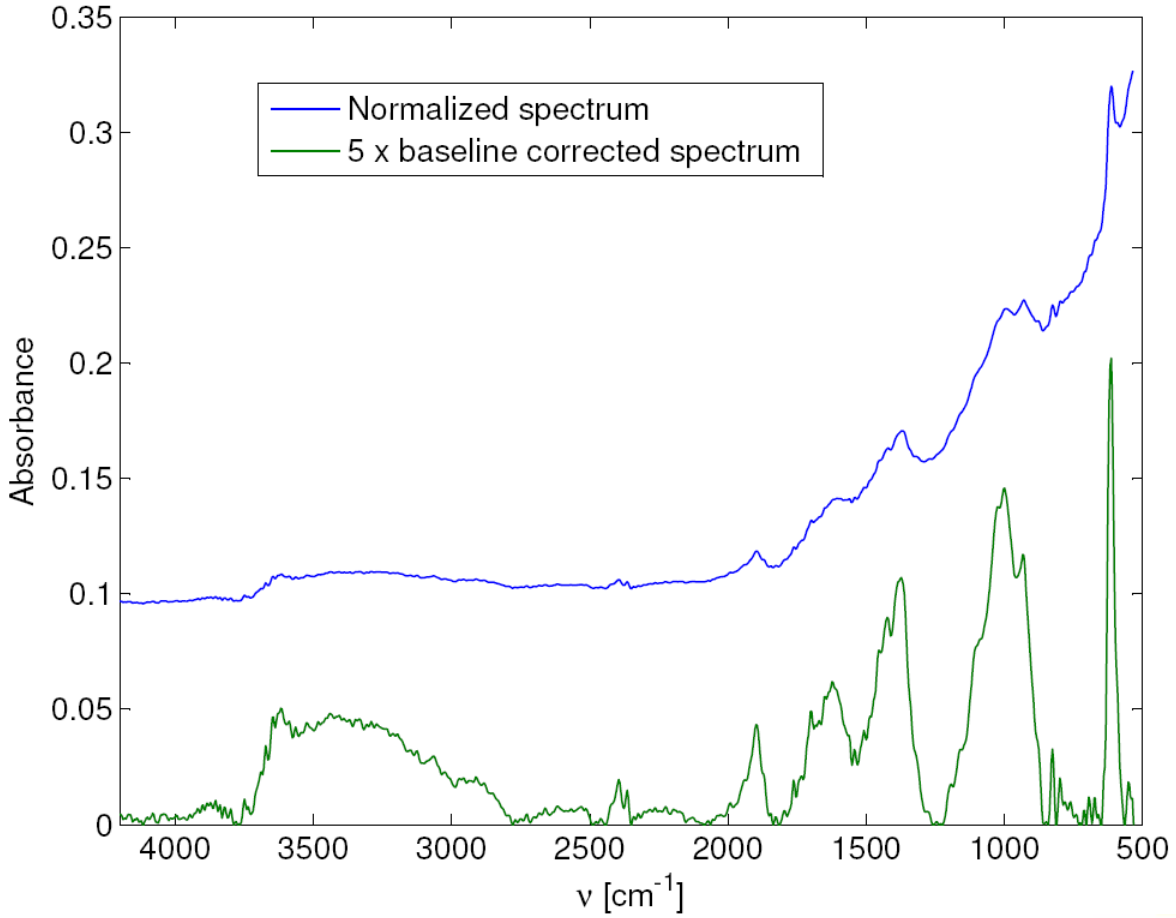
FTIR device: Thermo Antaris

Resolution: 8 cm^{-1}

HeNe laser frequency: 2.5 kHz

Atmosphere: Helium

Pressure: 1 atm



Dust from process

Parameters:

Sample: **Dust from process**

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

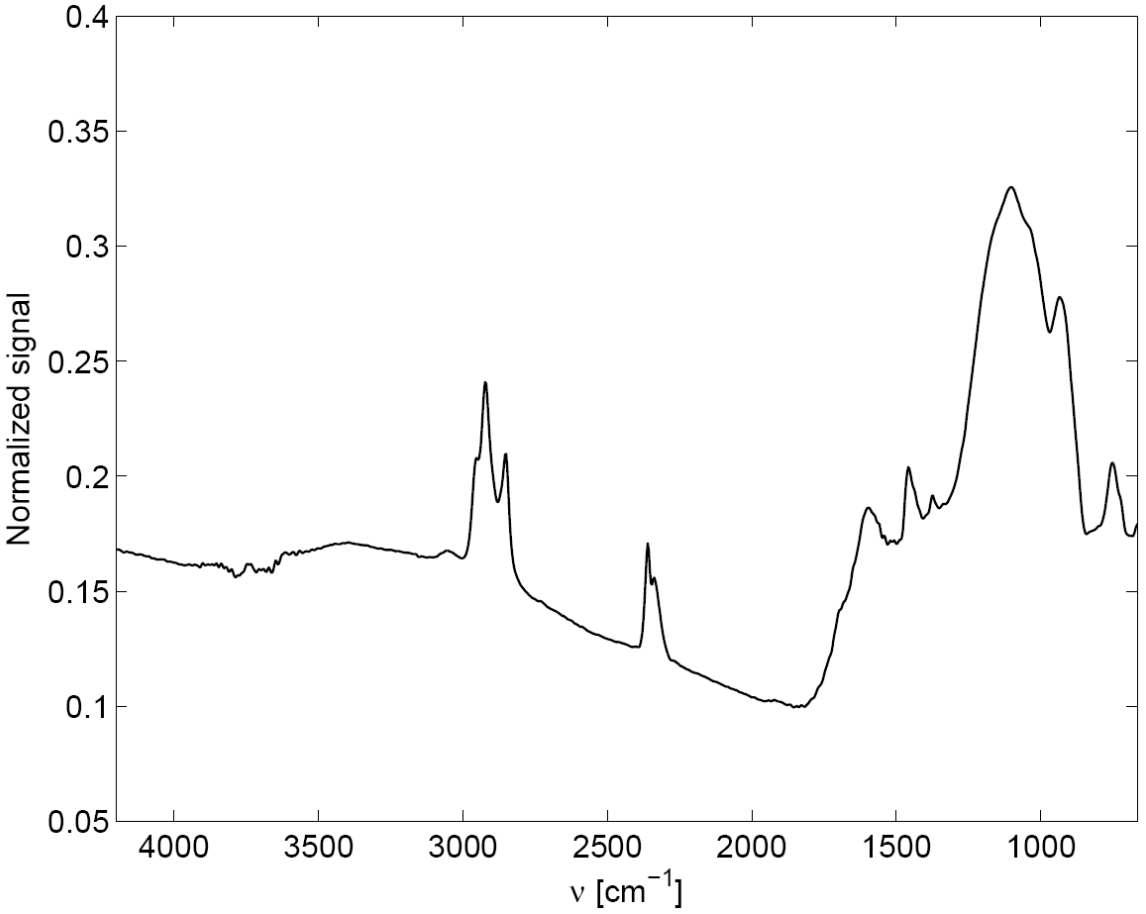
FTIR device: Thermo Antaris

Resolution: 8 cm^{-1}

HeNe laser frequency: 2.5 kHz

Atmosphere: Helium

Pressure: 1 atm



PEB-asphaltene

Parameters:

Sample: **PEB asphaltene**

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

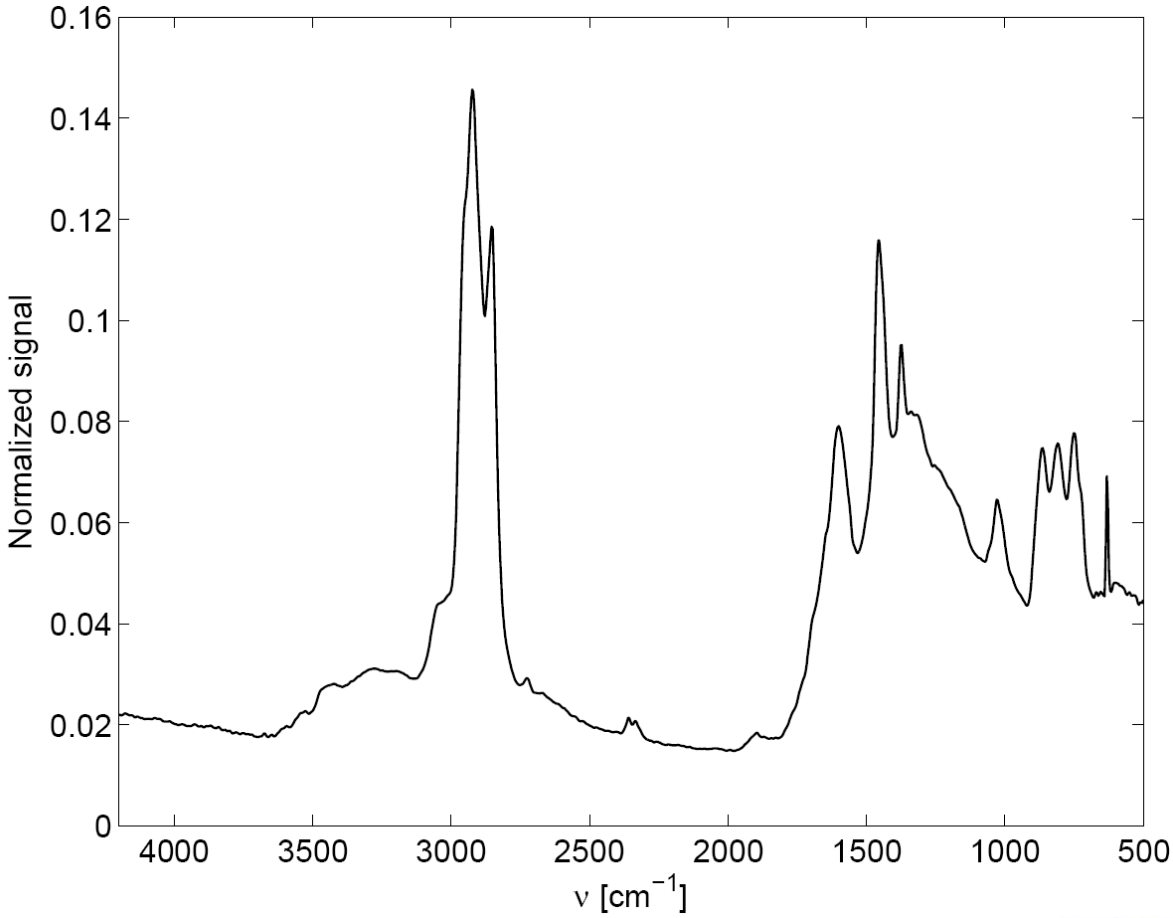
FTIR device: Thermo Antaris

Resolution: 8 cm^{-1}

HeNe laser frequency: 2.5 kHz

Atmosphere: Helium

Pressure: 1 atm



Sediment from condenser

Parameters:

Sample: **Sediment from condenser**

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

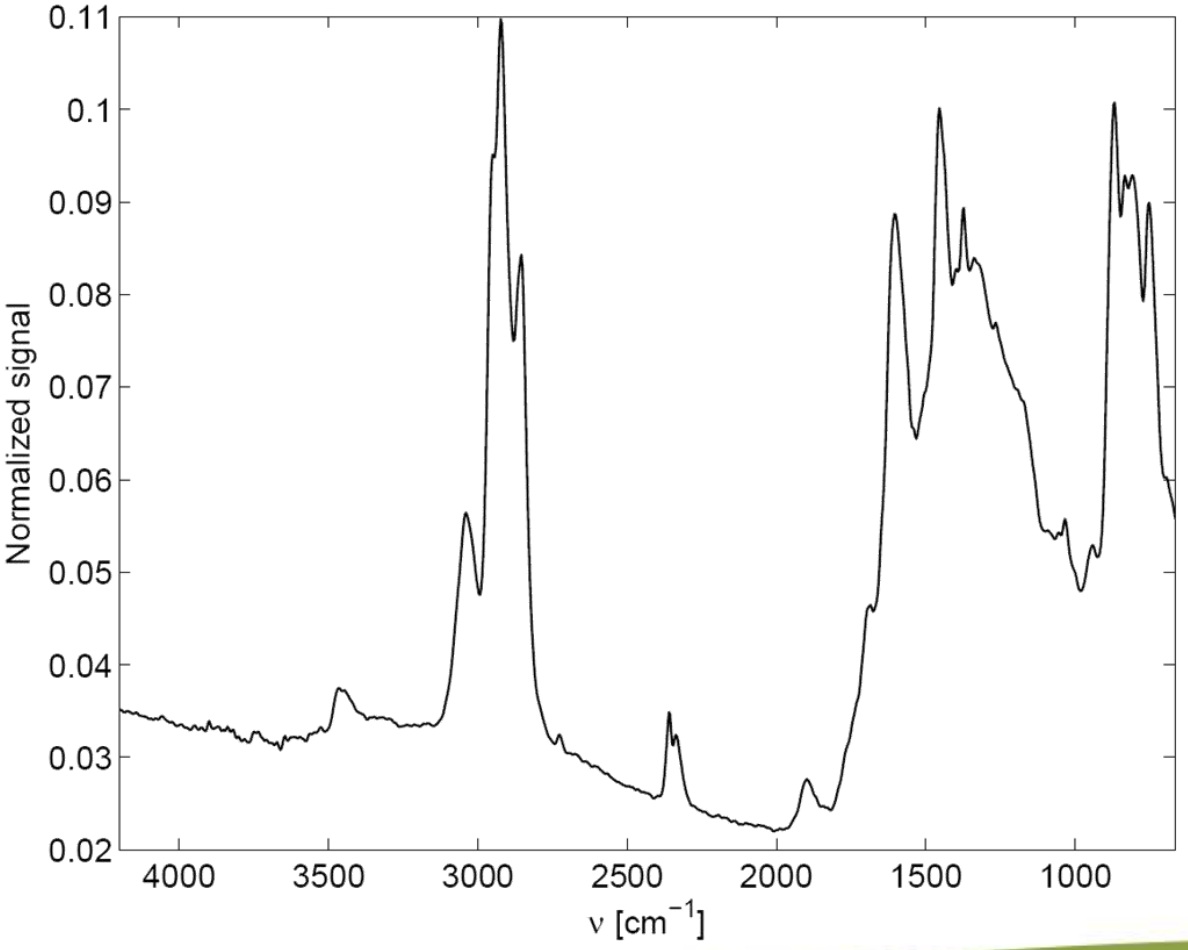
FTIR device: Thermo Antaris

Resolution: 8 cm^{-1}

HeNe laser frequency: 2.5 kHz

Atmosphere: Helium

Pressure: 1 atm



Sediment from the mixer

Parameters:

Sample: **Sediment from mixer**

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

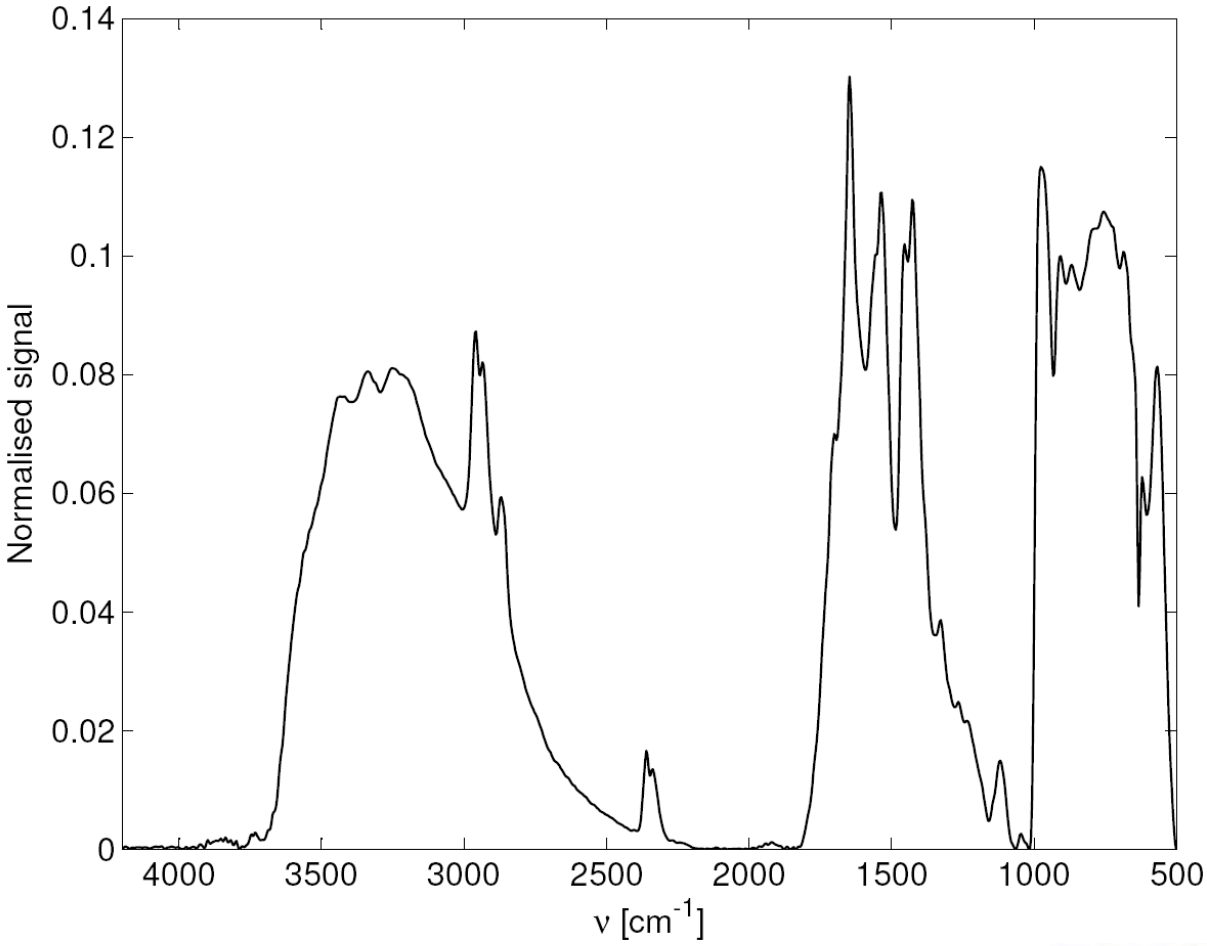
FTIR device: Thermo Antaris

Resolution: 8 cm^{-1}

HeNe laser frequency: 2.5 kHz

Atmosphere: Helium

Pressure: 1 atm



Carbonaceous mesophase

Parameters:

Sample: **Carbonaceous mesophase from condenser**

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

FTIR device: Thermo Antaris

Resolution: 8 cm^{-1}

HeNe laser frequency: 2.5 kHz

Atmosphere: Helium

Pressure: 1 atm