

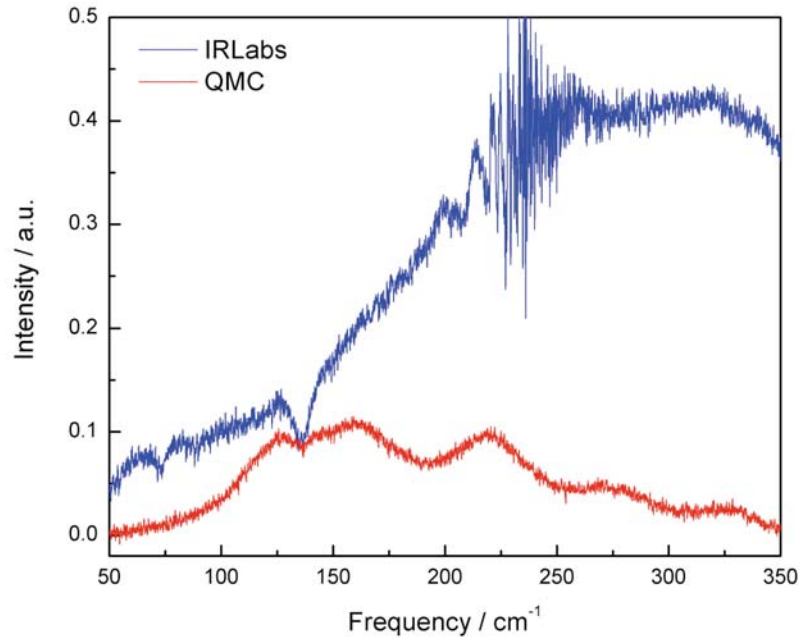
QMC QGeGa/X photodetector and Infrared laboratories

vs.

⁴He bolometer sensitivity comparison

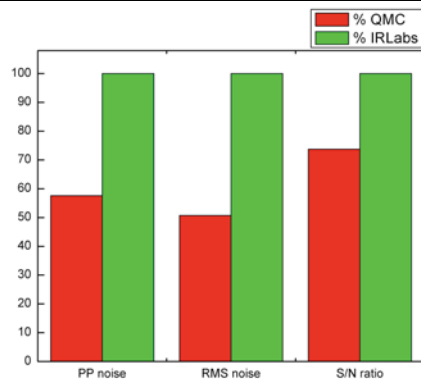
The RMS noise, PP noise and SN ratio are calculated in the range of 150-200 cm⁻¹.

1. Comparison of the two detectors.



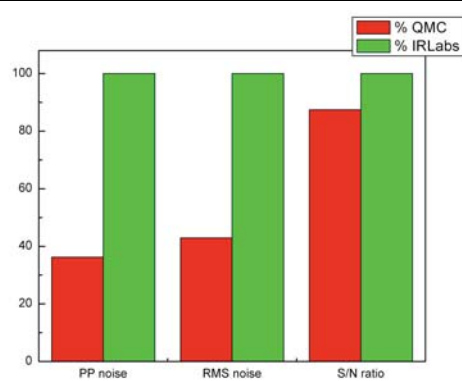
Resolution = 0.14 cm⁻¹,

S/N ratio of QMC is 73.7% of IRLabs



Resolution = 2 cm⁻¹

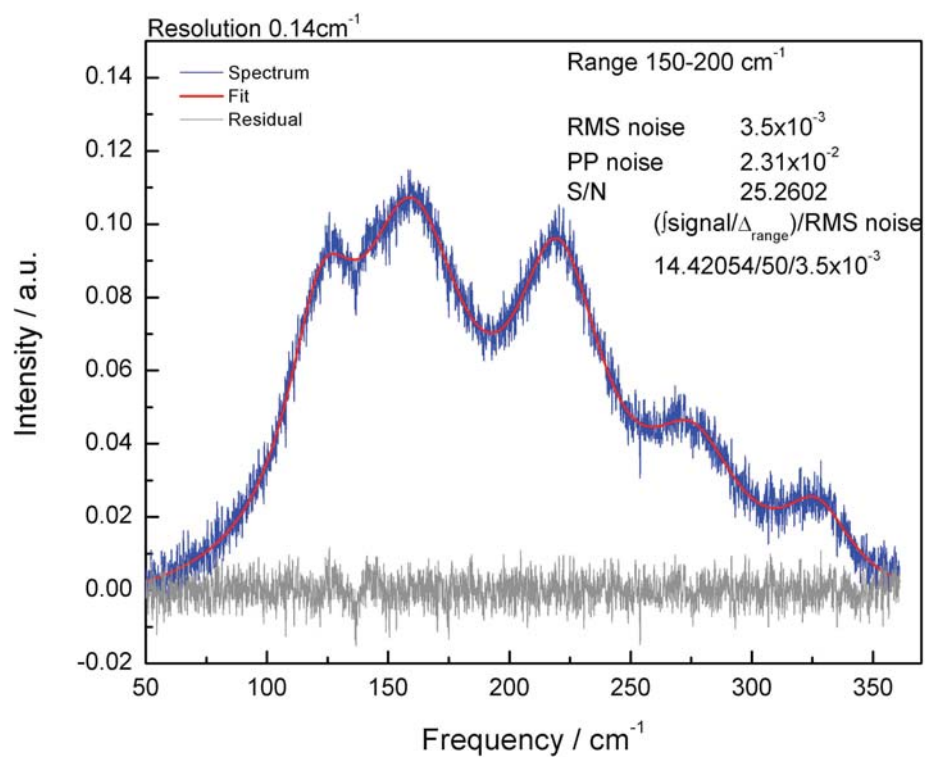
S/N ratio of QMC is 87.4% of IRLabs



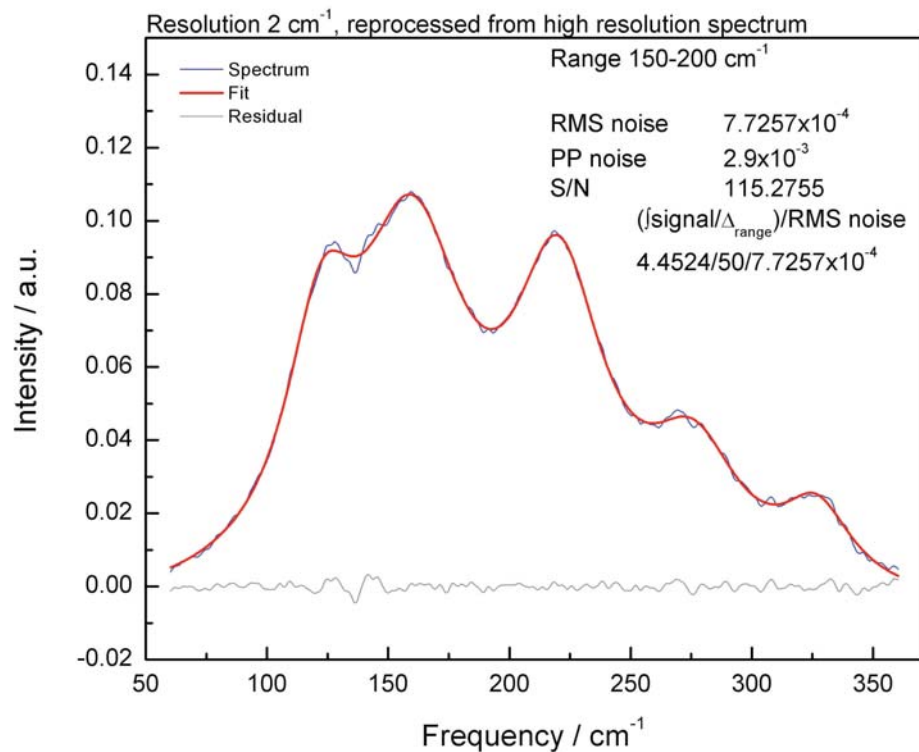
2. QMC QGeGa/X photodetector

Measurement parameters

<i>source</i>	<i>Globar</i>
<i># of scans</i>	<i>100</i>
<i>aperture</i>	<i>1 mm</i>
<i>intensity</i>	<i>250</i>
<i>scanner speed</i>	<i>4.0 KHz</i>
<i>resolution</i>	<i>0.14 cm⁻¹</i>



The 2 cm⁻¹ resolution spectrum was calculated by reprocessing the 0.14 cm⁻¹ high resolution interferogram in OPUS.

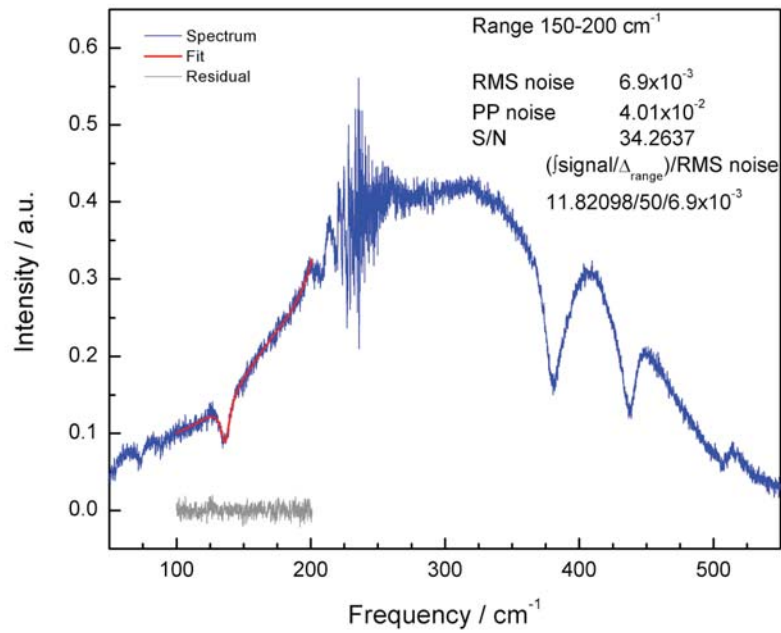


3. Infrared laboratories ⁴He bolometer (brass)

Measurement parameters

<i>source</i>	<i>Globar</i>
<i># of scans</i>	<i>100</i>
<i>aperture</i>	<i>1 mm</i>
<i>intensity</i>	<i>2050 *</i>
<i>scanner speed</i>	<i>4.0 KHz</i>
<i>resolution</i>	<i>0.14 cm⁻¹</i>

* Compare to QMC: the intensity is 10x in the case of the IRLabs (brass) bolometer, but it is calculated by OPUS by integrating the *whole* interferogram, therefore the two data are not really comparable, because of the difference in the sensitivity ranges of the two detectors. On the single beam spectra the difference in the intensities (sensitivity) can be seen. With a filter/amplifier, that we already used for the experiments with the IRLabs bolometer the QMC signal can be amplified.



The electric noise at $\sim 250 \text{ cm}^{-1}$ is coming from the preamp somehow, and can be shifted out from the area of interest by changing the mirror speed of the interferometer.

