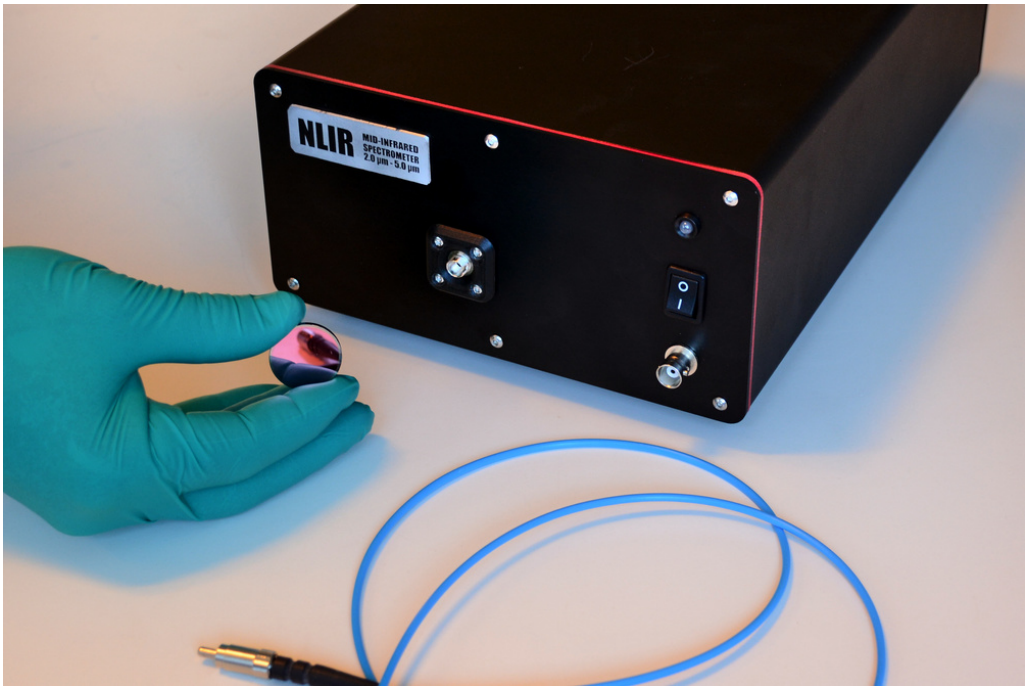
Coating Transmission Measurement

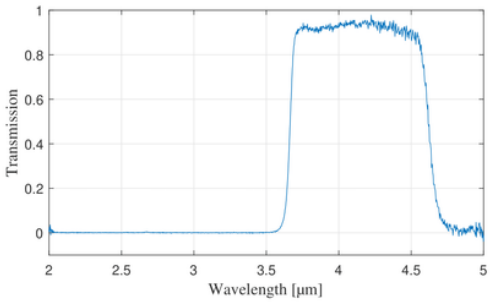
We carried out a simple transmission measurement sending MIR light through different coated samples. The spectrometer captures single-shot data with 20 ms exposure time.

The setup is: light source → sample → **NLIR** spectrometer.

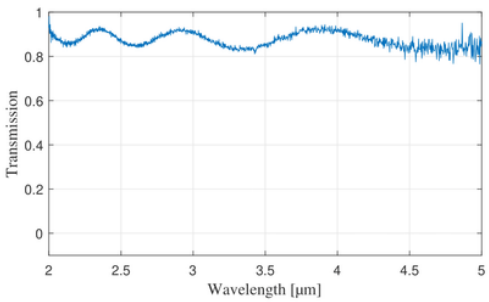
The light source is a 30 W globar; higher power or higher brightness sources can be used to reduce exposure time. At 20 ms exposure time the spectrometer reads out at almost 50 Hz. In the standard configuration, the spectrometer reads out full spectra with max. 400 Hz. Faster readout than 400 Hz is possible with different electronics (ultimately tens of kHz is possible). The setup can readily be fiber coupled such that the light source can be removed from the vicinity of the sample if necessary.

The IR transmission in the bandwidth 2.0–5.0 µm of a number of IR windows (a)–(f) and two plastics (g)–(h) are shown below. The coating specifications are from the suppliers.

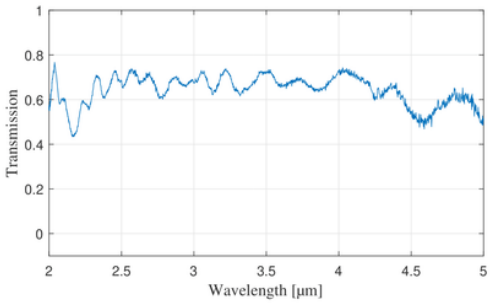




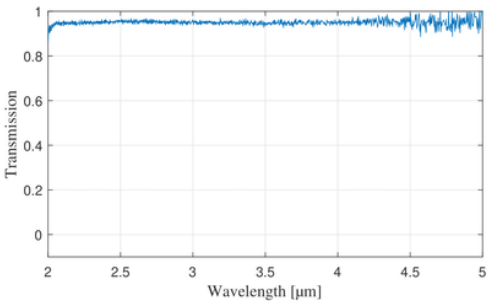
(a) 3.7–4.5 µm band-pass filter



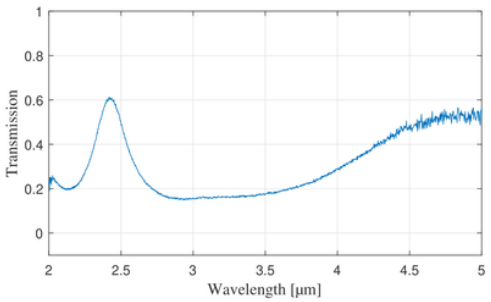
(b) HR1064 and HT1400–4400 CaF_2



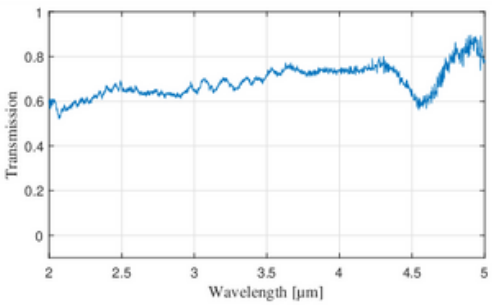
(c) HR1064 and AR2100-4000 YAG



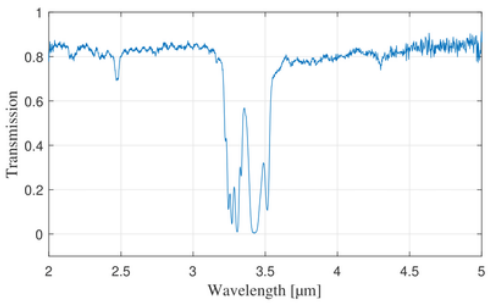
(d) AR2000–5000 CaF_2



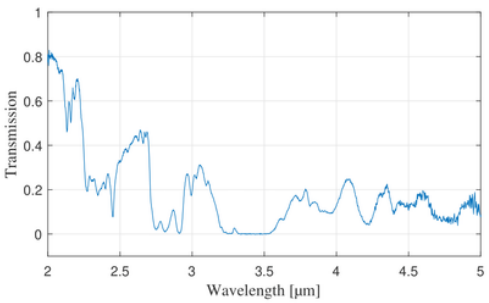
(e) AR6000–12000 Ge



(f) HR1064 and AR1500–10000 ZnSe



(g) 50 µm polystyrene



(h) 0.8 mm polyethylene terephthalate