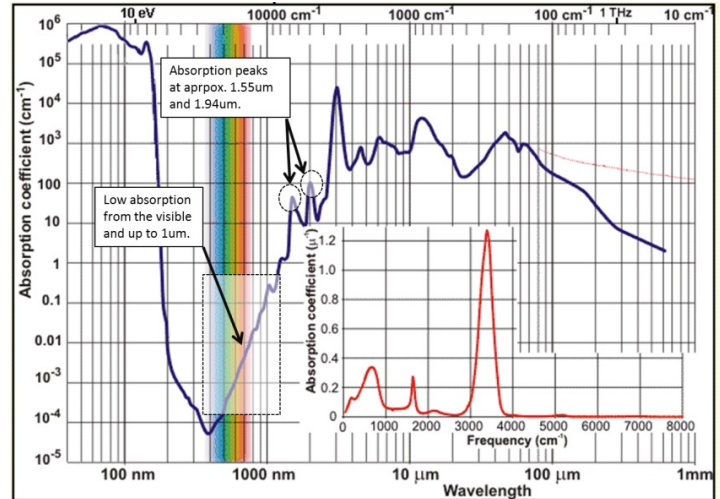


Application Brief

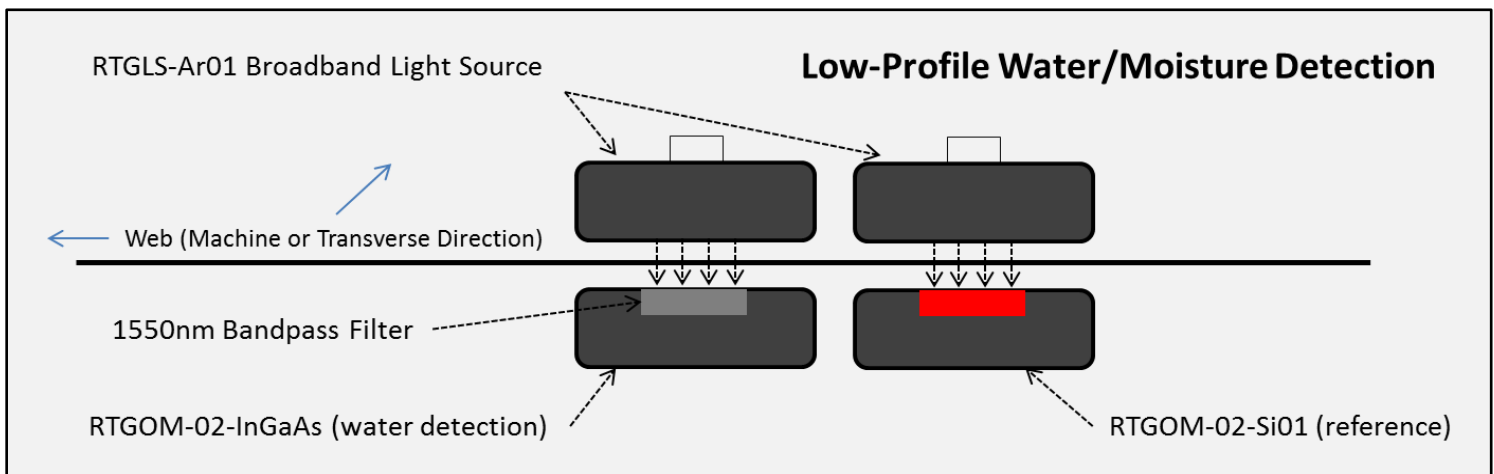
In-Situ, Water-Based Coating Monitor



Coating processes rely on accurate monitoring and control of coating uniformity. Where the coating is water-based, the visible and near-infrared absorption properties of the water molecule can be used to help detect and manage the coating process. As shown in the graph at the right, water has fairly low absorption in the visible light spectrum, but has significant spectral absorption bands in the areas of 1.5 μm and 1.9 μm . Because these bands are easily illuminated and sensed with modern optoelectronics, coating weights that correlate to absorption in these bands can be monitored with cost-effective, robust, low-profile instrumentation.



From: www1.lsbu.ac.uk/water/water_vibrational_spectrum.html



The diagram above depicts a simple water detection instrument using the L&M Instruments RTGLS-Ar01 broadband light source and RTGOM-02 light detection devices. The unit on the left incorporates a 1550nm bandpass filter (see ThorLabs FB1550 1" filter as an example), which detects the water absorption band, whereas the unit on the right serves as a reference, utilizing a red filter, which is relatively transparent to water. The RTGOM-02 model provides 8 decades of dynamic range, allowing it to confidently measure both the narrow 1550nm absorption band and the broader red/visible reference band. This transmittance configuration works where the substrate itself is relatively transparent to the 1550nm water absorption band. Where the substrate is more opaque in this region, many papers for example, a reflection setup could be employed so long as the water-based coating layer being monitored is between the sensors and a reflective surface. The RTGOM-02 provides a low-profile solution with many interface options (USB, RS485, DC Voltage, 4-20mA). For more information, contact:

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