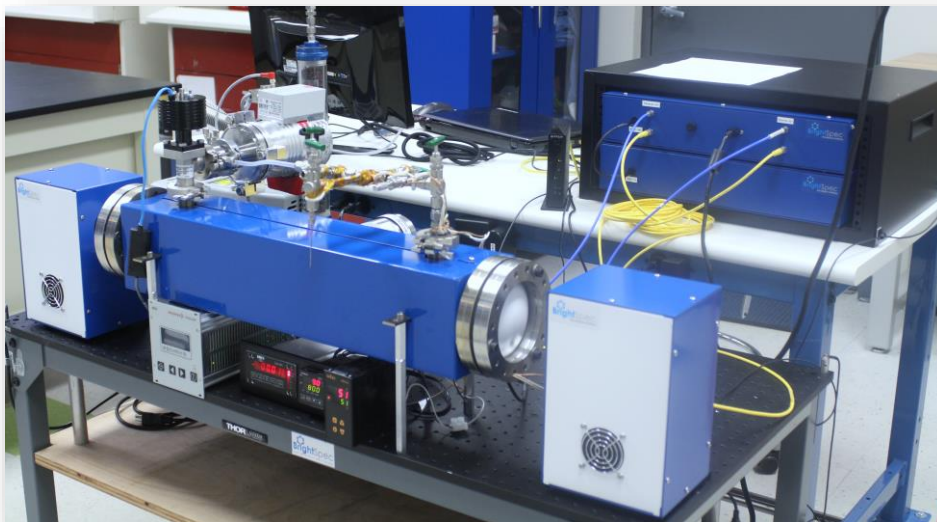


BrightSpec *Discovery* **K-Band FT-MRR Spectrometer**



The BrightSpec Discovery K-Band (18 - 26.5 GHz) spectrometer is designed for both fundamental research and educational applications. The reconfigurable form factor allows customers to integrate custom sample chambers, including pulsed and CW jet flows, for studies of complexes and transient species. The instrument can be operated by standard configuration laptop or desktop computers, and includes BrightSpec Edgar software for experiment setup, data visualization and processing, and spectral library comparison. The instrument usability, capabilities, and cost make it suitable for incorporation into undergraduate teaching curricula.

- *For academic research and undergraduate teaching laboratories*
- *18 - 26.5 GHz frequency coverage*
- *Easily reconfigured for different sample chamber designs*
- *4 marker channel outputs for synchronization to external devices*
- *Targeted and segmented chirped-pulse acquisition modes*
- *Advanced pulse sequences, including double resonance and echoes (in development)*
- *Expandable spectral library—for experiment data and simulations*
- *Automated composition analysis software for quantitative mixture analysis*
- *Standard 110/220 volt power*

BrightSpec Discovery K-band FT-MRR Spectrometer

Applications	Academic research Educational investigation Industrial and pharmaceutical impurity monitoring
Measurement technique	Fourier Transform Microwave Spectroscopy
Frequency Range	18 – 26.5 GHz
Excitation Source	3 - Color BrightSpec Synthesizer Module
Digitizer	125 MS/s 14 - bit Digitizer with FPGA signal averaging
Repetition Rate	Adjustable, 0 - 98% duty cycle
Number of signal averages	Up to 4 million
Synchronization to external devices	4 CMOS-compatible (3.3 V) configurable marker channels provided
Sampling Options	
BrightSpec Standard Sample Cell	65 cm pathlength transmission cell with turbomolecular pump Compatible with user provided sample cells: static gas, pulsed jet, Balle-Flygare cavity, waveguide
Sampling Module Options	BrightSpec Air/Gas/Headspace Flow BrightSpec Headspace Module Autosampler
Measurement modes	Broadband Scan (using Segmented Chirped Pulse method) Targeted Nutation In development: Double resonance selective excitation, Hahn echo, other advanced pulse sequences
Typical Sensitivity	
(60 s, targeted detection, direct in N ₂)	
Water	1 ppm
Ammonia	1 ppm
Carbonyl Sulfide	8 ppm
Ethylene Oxide	12 ppm
Sulfur Dioxide	20 ppm
Environmental	
Operating temperature	25 +/- 10 °C
Humidity range	20 - 80% relative humidity
Noise	< 70 dB(A)
Electrical	
Power supply	100/240 VAC, 50/60 Hz, single phase