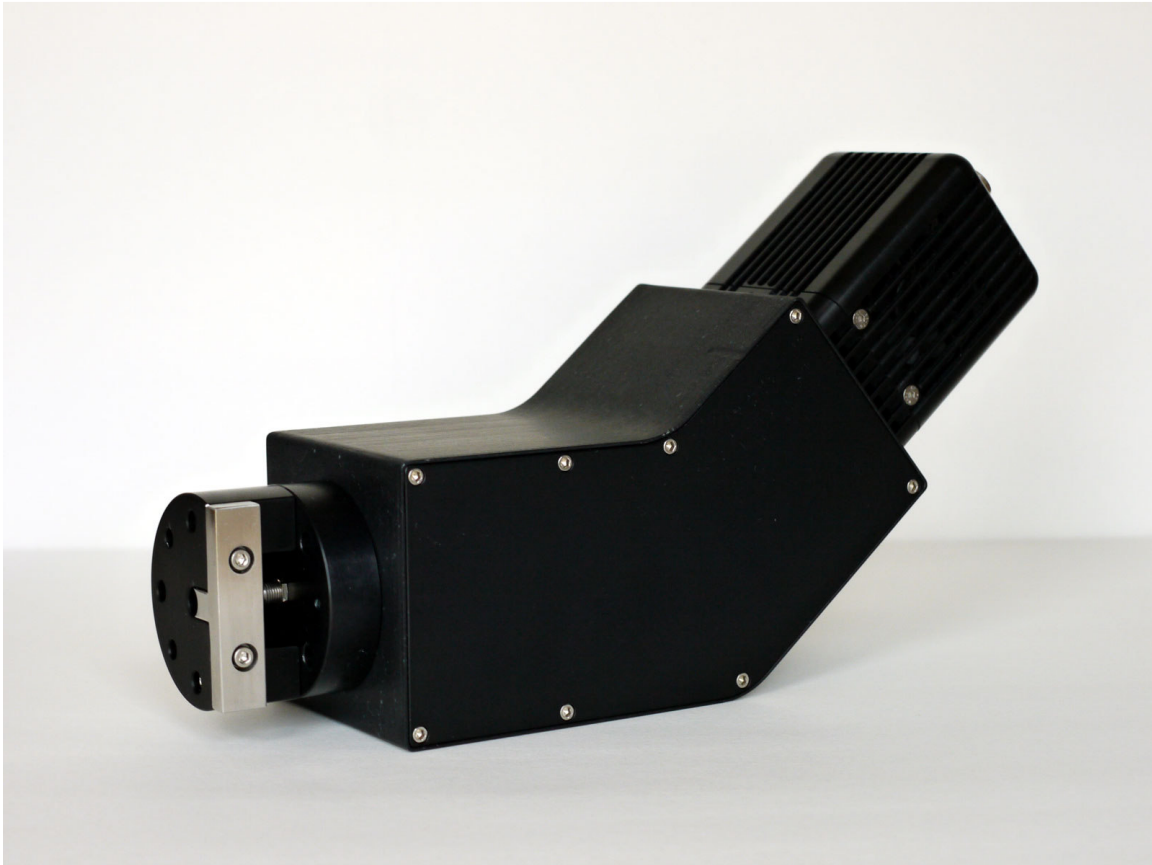


RFA Systems, LLC
Model R3 Compact and Rugged
Raman Spectrograph



For more information, contact us at
info@rfasystems.com

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Focal Length	35 mm
Spectral Range	540 nm to 700 nm (278 cm^{-1} to 4510 cm^{-1} Raman shift with 532 nm excitation laser). Optional Rayleigh filter to allow 535 nm to 695 nm (90 cm^{-1} to 4322 cm^{-1}) available.
Optical Throughput	f/1.7 (at detector plane – no vignetting)
Spectral resolution	0.5 nm with 20 micron slit (1.5 nm with 60 micron fiber - 40 cm^{-1} resolution @ 607 nm)
Slit Width	20 microns (same as input fiber dia.)
Input Accessories	SMA fiber optic input with exclusive fiber clamping system to preserve fiber array alignment. Accepts all Thorlabs SM 30 mm cage system and SM-1 lens tube accessories for unparalleled flexibility of input options (lenses, filters, shutters, fibers, slits, etc.)
Slit Height	Typical 3 mm high slit (height of SMA fiber ferrule); 5 mm max (detector height limited)
Grating Efficiency	> 92%
Rayleigh Rejection	10^{-6}
Stray Light	10^{-4}
Size	175 mm x 115 mm x 80 mm
Weight	approx. 1.4 kg with typical accessories (camera included)
Environmental	-10 °C to 45 °C, non-condensing

Table 1: Specifications for Model R3 Spectrograph (U.S. Pat. 7,548,313)

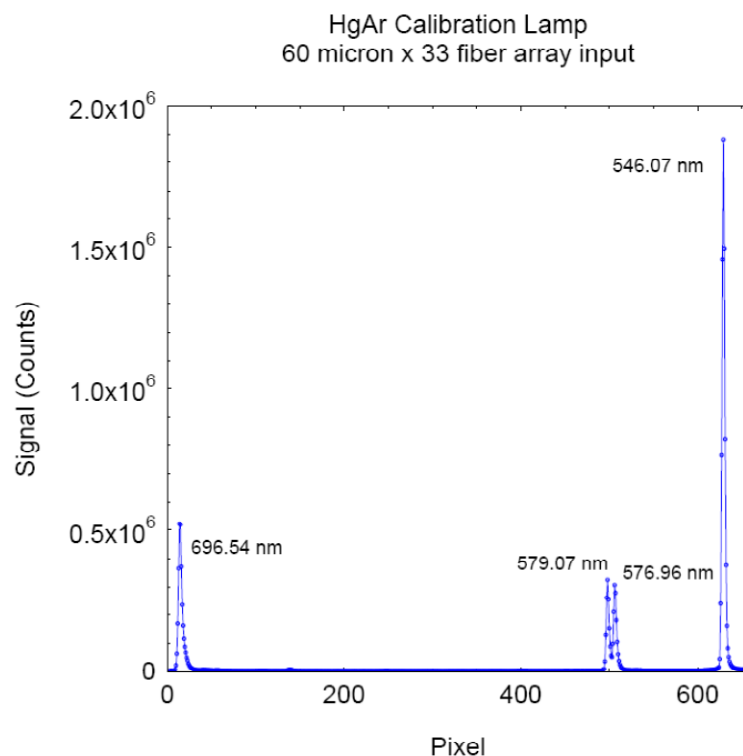
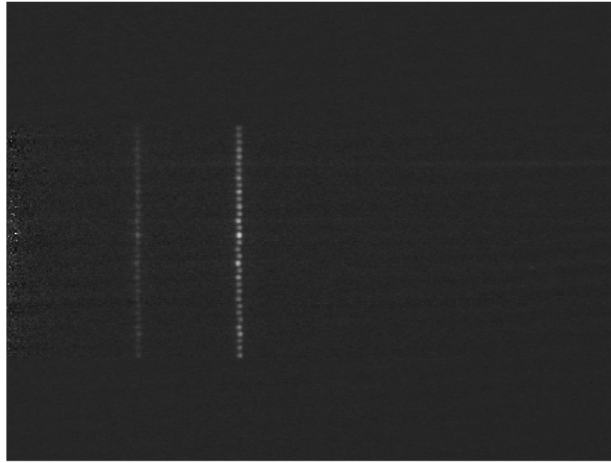
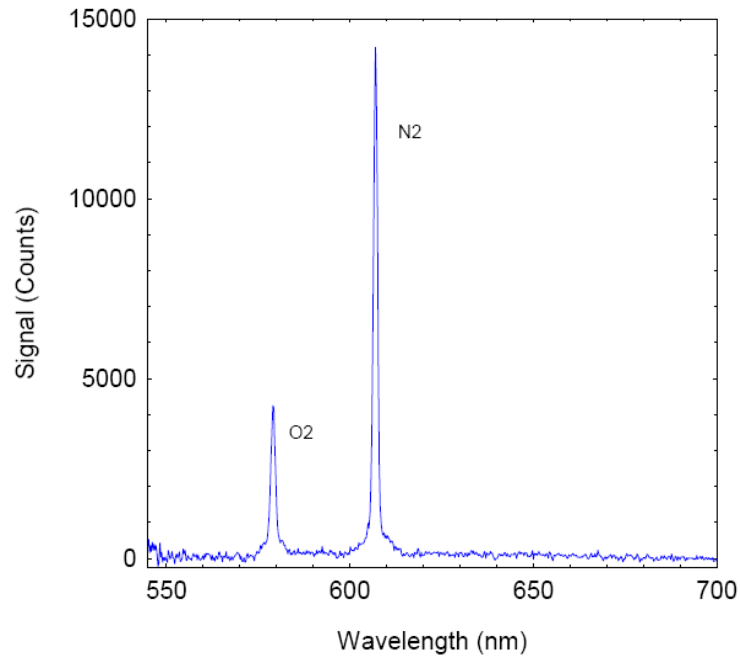


Figure 1: typical wavelength of HgAr calibration lamp using 33 fiber array input (60 micron core dia fibers).



(a)



(b)

Figure 2 (a) & (b): (a) Raman signal of dry air acquired using 450 mW 532 nm DPSS laser and custom made 33 fiber (60 micron core dia) Raman probe, -19 deg CCD detector temperature, and 50 second collection time; (b) plot shows vertically-binned Raman signal from above image.

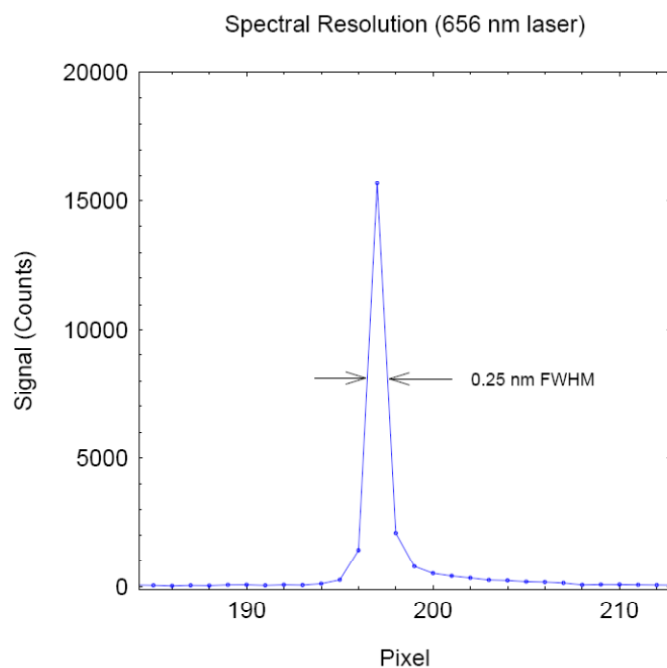


Figure 3: Plot showing ultimate spectral resolution using 8 micron diameter core fiber and diode laser light source.

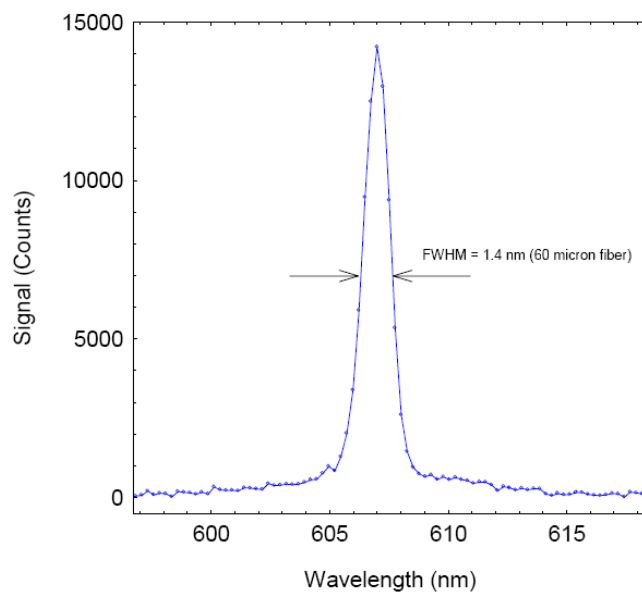


Figure 4: Plot showing spectral resolution when using 60 micron core dia fiber input array. Data is magnified from Figure 2(b).