

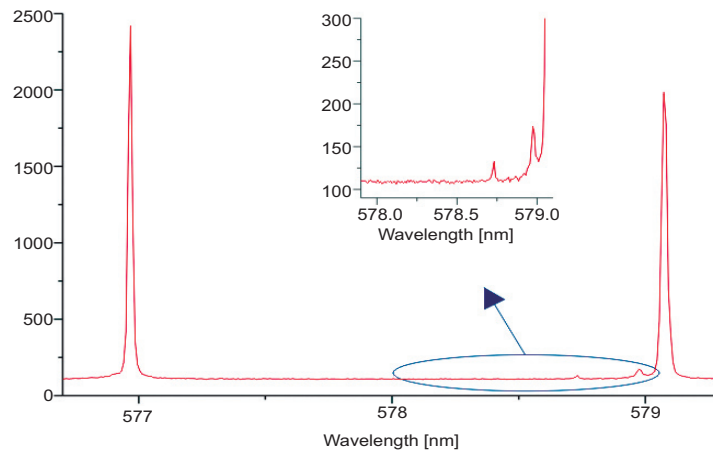
TriVista™ Triple Spectrometer

Additive/Subtractive | Triple | Double | Single Configurations

The TriVista™ triple spectrometer has undergone extensive testing in real world applications. Several standard spectra have been acquired and presented below to demonstrate the performance specifications such as resolution, stray light rejection.

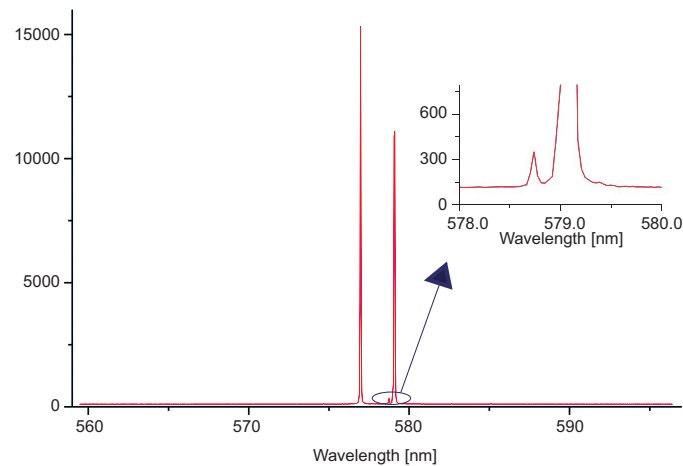
Note: All measurements are taken with TriVista™ 555.

Spectrum 1: Resolution in additive mode with CCD.



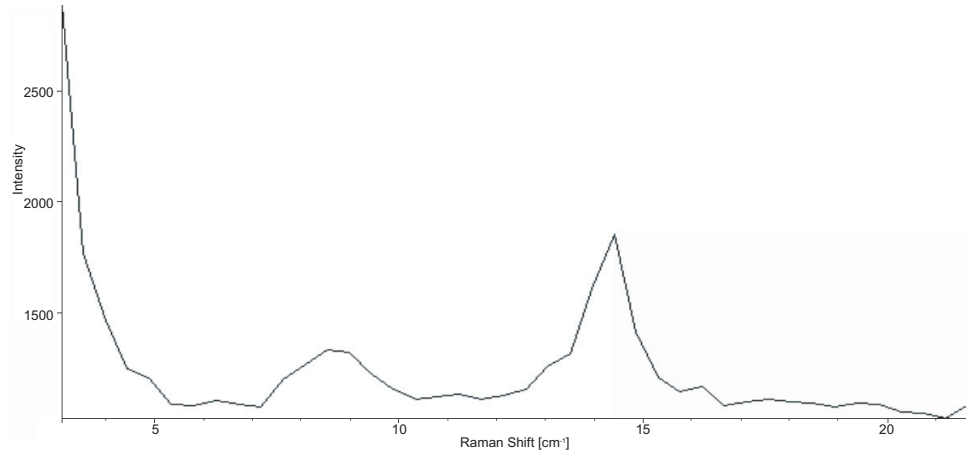
Resolution test on Hg line at 579.1 nm in additive mode with 900 g/mm gratings in the double monochromator (1st and 2nd) 1800 g/mm at the spectrograph stage (3rd). 26 μm CCD pixel width. HWFM < 2 CCD pixel (shows that 13 μm CCD pixel could be also useful). Resolution = 0.45 cm⁻¹ (0.011 nm) per 26 μm CCD pixel.

Spectrum 2: Resolution in subtractive mode with CCD



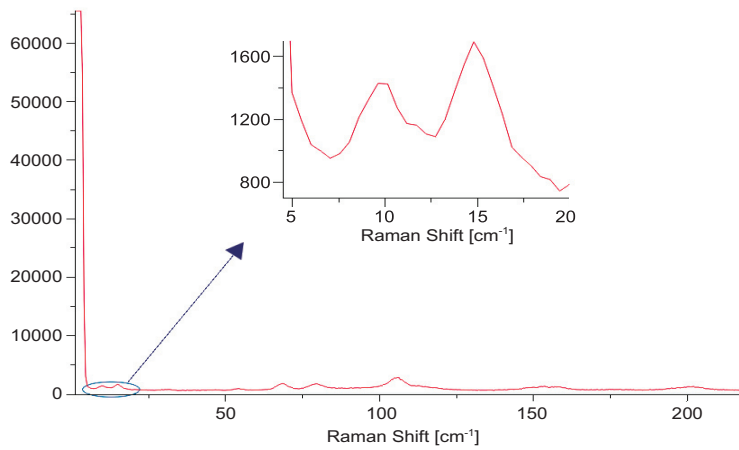
Resolution Test on Hg lines at 577 and 579 nm for TriVista A&S in Subtractive Mode and 900 gr/mm Gratings in all Stages (26 μm CCD pixel width). FWHM < 2 CCD pixel (shows that 13 μm CCD pixels are quite useful). Resolution < 2 cm⁻¹ (0.05 nm) per 26 μm CCD pixel.

Spectrum 3: Stray Light Rejection in Additive Mode with PMT



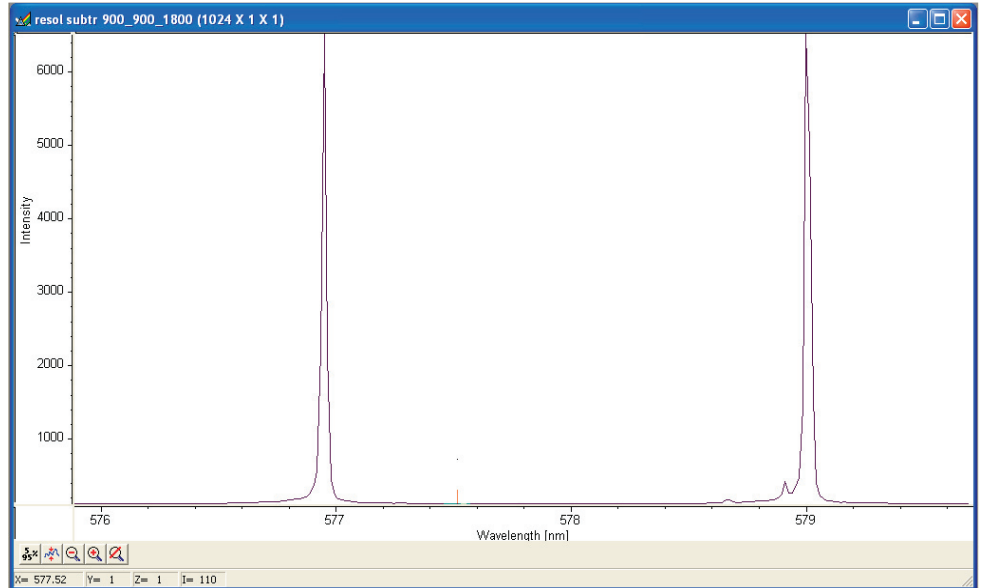
Stray Light Rejection test with L-Cystine in Additive Mode. 1800 g/mm gratings in the double monochromator (1st and 2nd stage) and 2400 g/mm at the spectrograph (3rd) stage. 50 μm slit width spectrum starts at 3 cm^{-1} (0.075nm) from the Rayleigh line.

Spectrum 4: Stray light rejection in Subtractive mode with CCD.



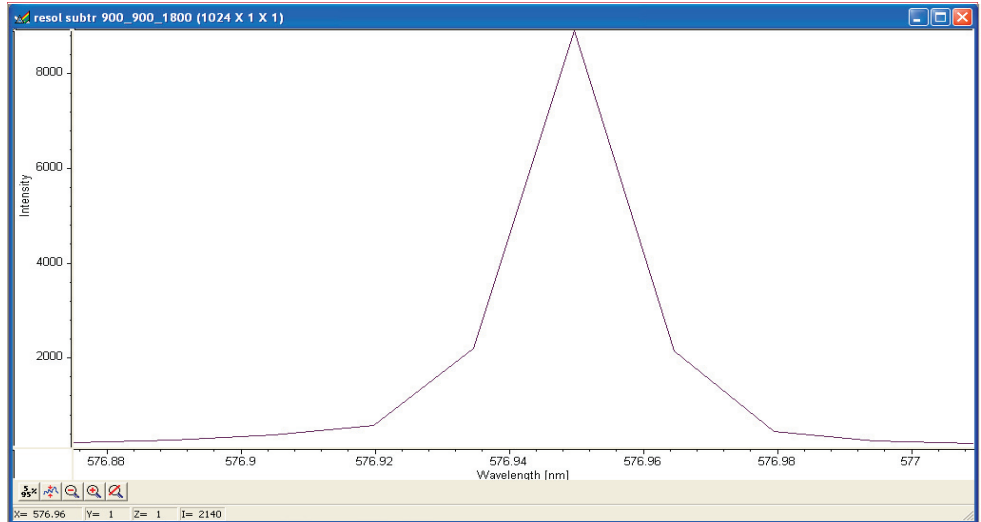
Stray Light Rejection Test with L-Cystine in Subtractive Mode. 1800 g/mm gratings in the double monochromator (1st and 2nd stages) and 2400 g/mm in the spectrograph (3rd stage). 20 μm CCD pixel width. Spectrum starts at < 5 cm^{-1} (0.125 nm) from the Rayleigh line

Spectrum 5: Spectral resolution in subtractive mode with CCD detection.



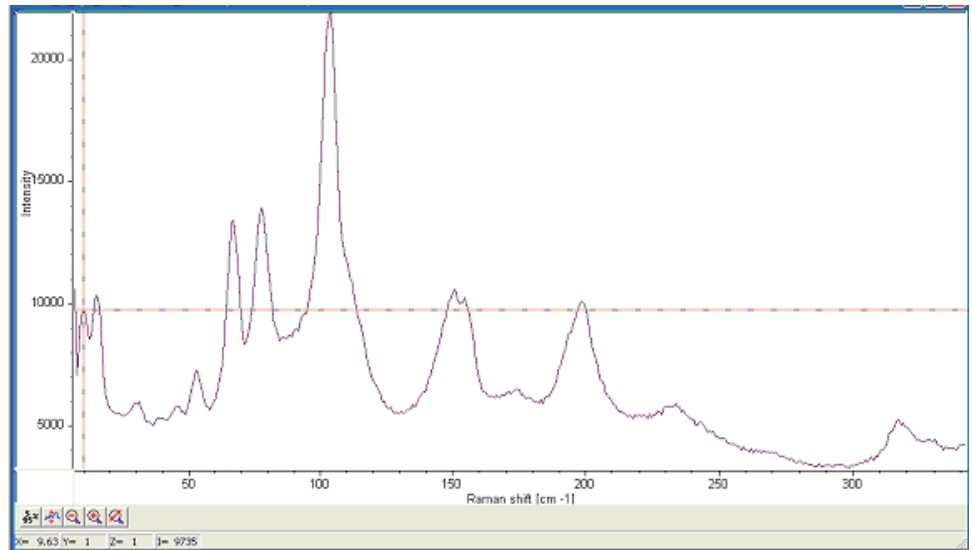
Triple subtractive CCD mode with 900 g/mm gratings in the subtractive double stage (1st and 2nd stages) and 1800 g/mm grating in the spectrograph stage (3rd). CCD pixel width is 26 μ m. The step width per pixel is 0.015nm or 0.45 cm⁻¹.

Spectrum 6: Spectral resolution in subtractive mode with CCD detection (smaller pixels).



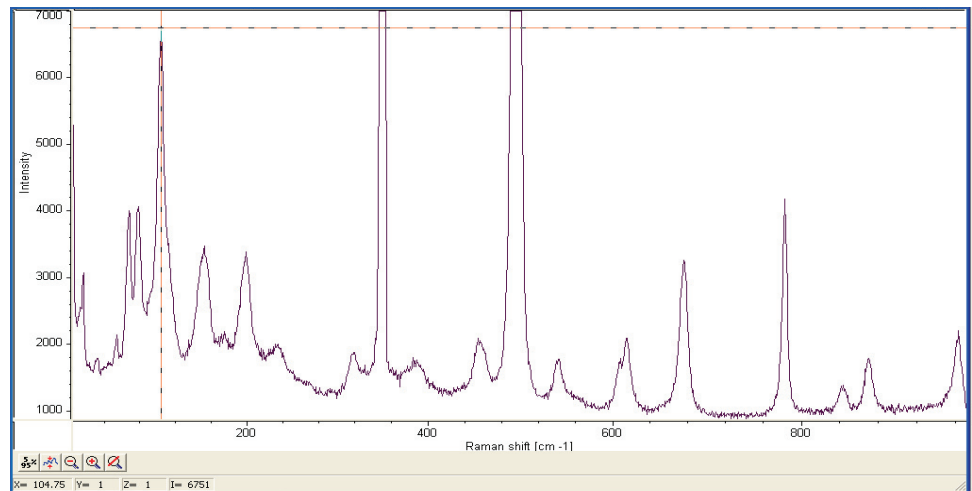
FWHM of a line from Spectrum 5. It is less than two CCD pixels. Shows that CCDs with 13 μ m pixel are also useful if high resolution is requested.

Spectrum 7: Sample spectrum



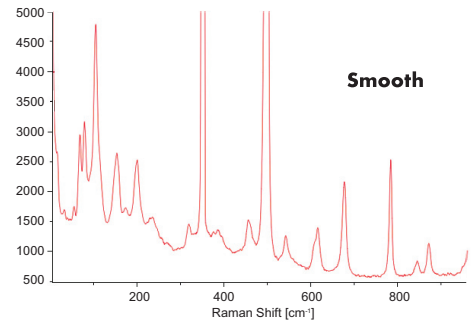
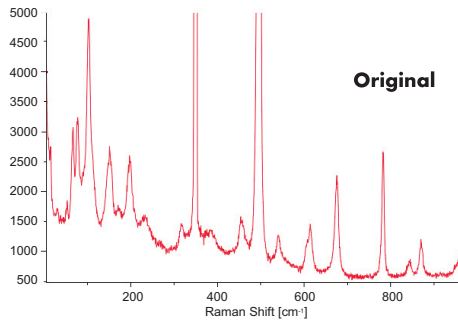
Measurement in standard triple subtractive mode with 1800 g/mm gratings in all 3 stages. The collection is starting close to 0 cm^{-1} . Sample is L-Cystine, excited at 488 nm by 100 mW. The marker is set to 9.6 cm^{-1} .

Spectrum 8: Resolution and coverage



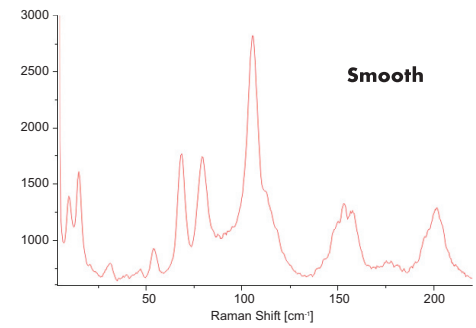
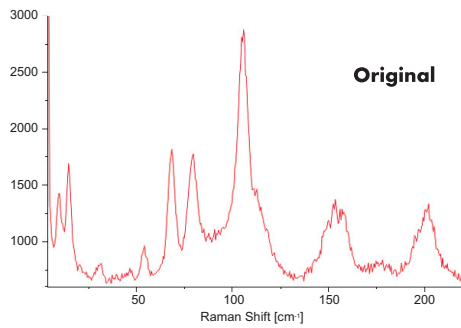
CCD measurement in standard triple subtractive mode with 900 g/mm gratings in subtractive stages (1st and 2nd stage) and 1800 g/mm in the 3rd stage. All other conditions are the same as in Spectrum 7. Compare Spectra 7 and 8 and note the change in resolution and coverage.

Spectrum 9: Software Smoothing



DO_K_Cys_sub_900_1800_488nm_1

Spectrum 10: Software Smoothing



DO_K_Cys_sub_1800_2400_488nm_1