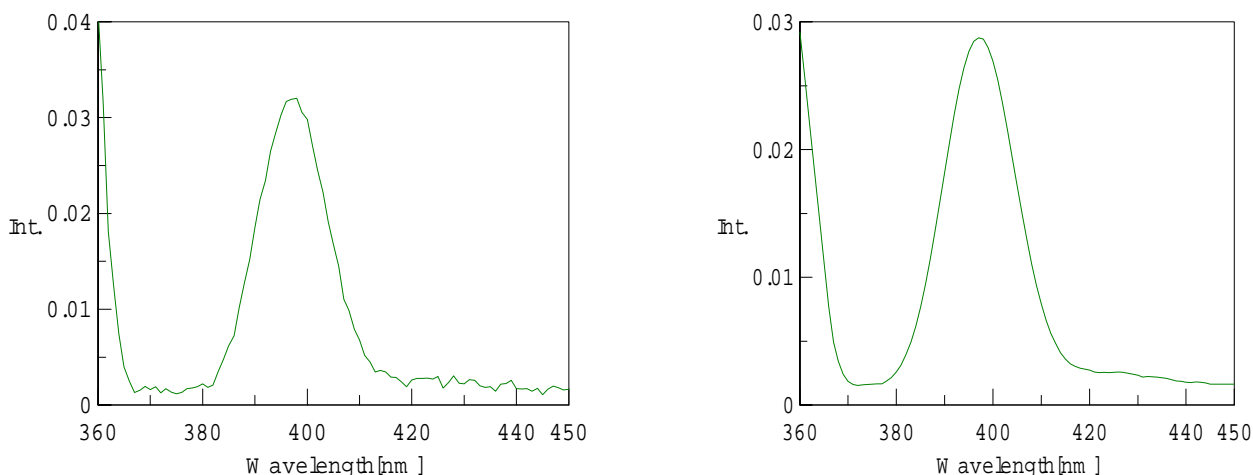


EMISSION MONOCHROMATOR

Over one year ago Jasco introduced the FMO-427 emission monochromator option for their J-800 series CD spectrometers. The device is normally coupled to the CDF-426 Peltier CD/fluorescence attachment. In previous T.R. 25 we shortly described it, but so far no application/performance data have been distributed, so it has been interesting to test first unit arrived in Italy.

This device allows collecting excitation and emission spectra, so it really converts a CD spectrometer into a real spectrofluorometer, much more versatile than usual filter type fluorescence accessories practically dedicated only to melting and FDCD experiments.

For the test we used the classical fluorometry standard: i.e. detection of Raman band of water (at 397nm) when exciting at 350nm.



Spectra above shows raw data (left) and smoothed one (right) collected with following parameters:

Ex SBW = 10 nm

Em SBW = 10 nm*

Response = 0.25 sec

Data pitch = 1 nm

Sensitivity: 600V applied to the photomultiplier tube

*fixed anyway!

First impression is that results are so and so. A modern, normal, Jasco spectrofluorometer such as the FP-6200 will perform much better; but if we take into considerations the numerical aperture of the excitation monochromator, the fact that the J uses a double monochromator mount and, last, the linearly (or circularly) polarized excitation light: a factor of about 80 in excitation lighththrough is expected, this means 9 times worst s/n ratio.

Situation will improve somehow* exciting at lower wavelengths, where the J prisms will give their benefits over conventional gratings, in addition the double mount assure low stray light where needed (i.e. in the excitation).

Another point in favor of low excitation intensity: sample photobleaching is substantially reduced.

**somehow will become impressive when exciting in the far UV, also due to the very low stray-light level, this is however a rather rare application*

So a good accessory, properly fitting the main unit and fully software controlled: a nice (but expensive) expansion, worth to consider for people who uses fluorescence as a side technique or for special applications.