

MONOCHROMATOR TRACKING

We discuss here about a relatively frequent, but often not recognised trouble: low *energy* in the VIS/NIR range. Many CD users operate their instrument in the UV range only, from 300 nm down, so no trouble will ever appear. When range is extended over 500 nm some instruments may show *low energy*. This is caused by the fact that the two monochromators are not perfectly matched: in the UV range slits are large and no problem will show up, while in the VIS and NIR the slits (in the usual constant bandpass mode) are narrow and the problem may be evident.

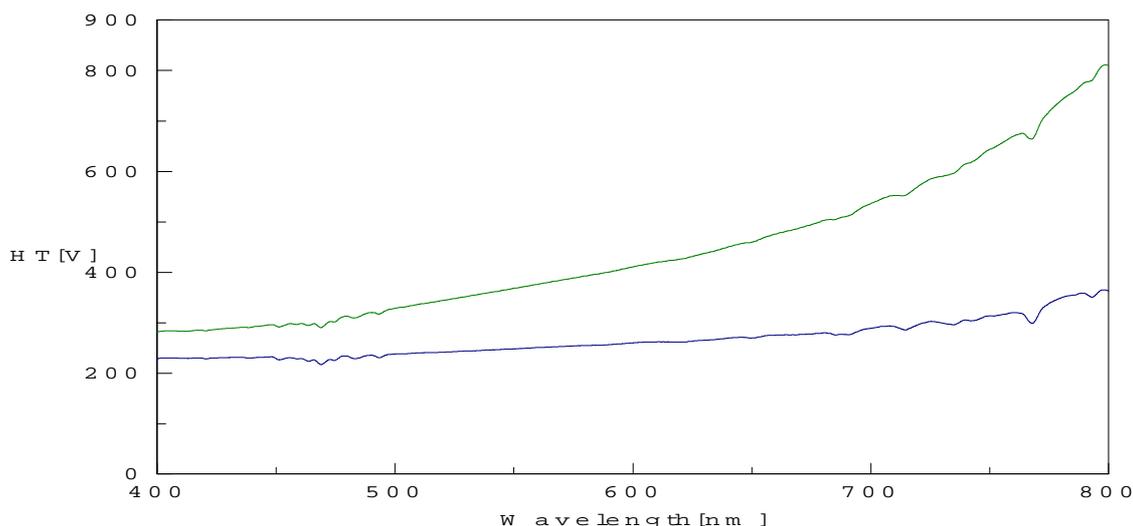
Causes:

-improper alignment during installation

-release of the casting of the monochromator block

It's important to note that this problem will show up with units featuring a real double monochromator, i.e. with variable intermediate slit, matched to the entrance and the exit ones. Jasco J-40C and 500C version as well as all Aviv based on Cary 61 and 118 monochromators will not give this trouble since the intermediate slit is fixed (at a large amplitude) since the double mount is used only to decrease stray-light and not to improve resolution.

Next picture shows the photomultiplier tube high voltage (HT) plot versus wavelength run on a normal and on a poorly aligned instrument.



When such a trouble appears the simplest way to correct is to finely tune the horizontal adjustment of the last collimator mirror in order to get proper alignment (we recommend to do it at 630 nm with 1 nm SBW in order to see clearly the red beam path). In some instruments (Jasco J-40, 500, 600, 700) operation calls for the opening of the monochromator cover, Cary based monochromators and J.Y. units should have this adjustment accessible from the side. At last Jasco J-810 has this facility easy to reach since a dedicated hole is predrilled in the casting.

Important:

-every time you adjust the last collimator to get best energy (i.e. minimum photomultiplier tube high voltage in the automatic mode) you must perform later on wavelength recalibration with a suitable standard.

-check once a year (even when not using VIS-NIR range) your instrument up to 800-900 nm and confirm that operation is still normal

Remark:

-some units may not show up clearly the problem (Jasco J-800 for example) since in the ini.file a rather large minimum slitwidth is imposed.