



LAMP REPLACEMENT PROCEDURES

Hardware Manual of your Jasco CD spectropolarimeters is giving full information on lamp replacement. Pls refer to the manual and follow instructions, we do not want to duplicate information.

We want here to give more suggestions about the alignment.

Jasco instruments are different from the old Cary (60 and 61) and probably current Aviv staff. In the Cary you had to align the lamp in respect to the lamp mirrors that were fixed, in the Jasco instruments the lamp itself is fixed and you must align the lamp mirrors. The second approach drastically reduces microphonicity of the system, since the lamp is properly fixed in a rigid way.

In all the models two mirrors* are involved:

M1 toroidal or elliptical, this mirror collects the light emitted by the source and focuses it on the entrance slit of the monochromator

M0 spherical mirror behind the lamp, this collects part of the radiation emitted in the opposite direction

* J-600 and J-720 have also a flat mirror (Mp) after M1 simply to divert the light toward the entrance slit

Mirrors alignment is easy since there is a lot of space to work around. Procedure from the manual suggests simply adjusting first M1 and later on M0 in order to get minimum H.T. applied on the photomultiplier tube.

This is very true, but occasionally (often to be sincere) not so effective. The point is that M0 and M1 create two separate images and proper alignment is achieved only if both fill properly the entrance slit. This is often impossible if you do not see the actual images.

To see the actual images the only way is to open the monochromator cover (a trivial operation with J-700 and J-800 a bit boring with J-40/500/600). This is the only way to be sure of your alignment, but please use safety goggles since the UV radiation is very strong.

You can now adjust M1 to get minimum H.T. at any wavelength (I normally prefer 540 nm since you can follow clearly the green image after the monochromator ...). Mirror can be moved in horizontal and vertical position, both adjustments somehow interact so it's better to tune both adjustments a few times. You can monitor the beam on the entrance slit and on the first monochromator collimator with a white piece of paper. After M1 adjustment you can do the same with M0 since with the system open it's easy to visualise its separate contribution.

Now move your piece of paper on the 4 spherical collimators of the double monochromator, you can verify proper mirrors illumination, than on the exit slit you will see the two images* corresponding to the different polarization and finally, just before the PEM modulator box: the green rectangular image (at 540 nm) should be uniform

* not on J-40/500C which linearly polarize the light after monochromator

Since your system is open, if you want to do something more, you can also open the lamp mirrors cover (not present in J-40/500) and monitor the status of M0 and M1 mirrors. A visual inspection, while irradiated by strong white light, may give you a feeling of their ageing process.

Need of replacement should however rely only on the fact that the H.T. in the low UV is far higher than normal.

At last close the system and flow it with a good Nitrogen purge!