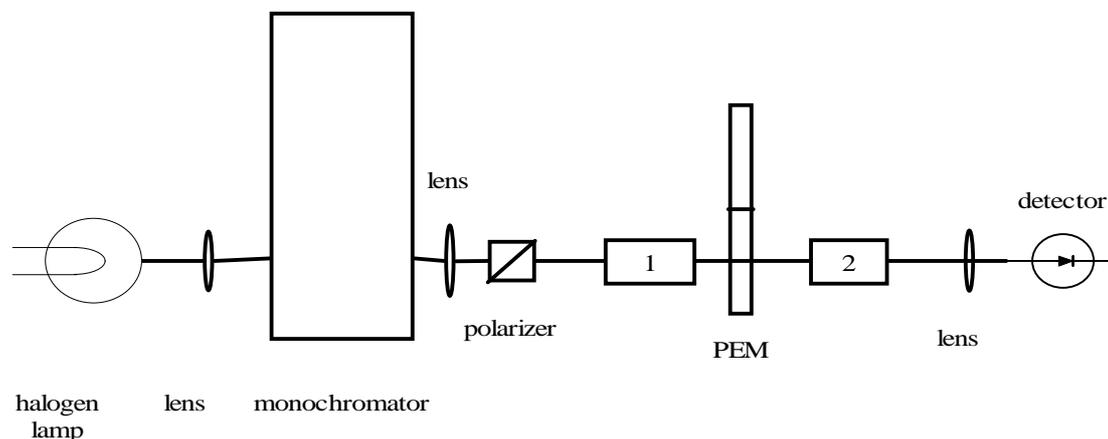


NIR VCD SPECTROMETER

In Sept 2000 we reported about this *new* instrument, first paper on it is being published¹, but in the meantime improvements have been fitted and we want to report them now.



Main improvements:

-a TC series photodiode/receiver module with built in 2mm InGaAs in a Peltier cooled housing and with built in preamplifier (still from EOS) replaced the original room temperature detector
 Furthermore a new detector mount allows rotation in order to reduce baseline curvature.

-two sample positions have been created:

- 1- before the PEM
- 2- after the PEM

The normal position is of course 2, but first position is very important to collect absorption baselines (the so called ABL position) as sample absorption is the most serious source of artifacts².

So, particularly when no racemic samples is available, we found a good practice to collect baseline keeping the sample in pos 1 and CD spectra with sample in pos 2.

-the PEM is now permanently heated above room temperature (as in the original Jasco J-500 design), while at the beginning no heating was applied.

How to build a better system? this would be easy, but expensive.

-The limited light source power, the small size (in any respect) of the Optometrics monochromator, the well-used (and aged) 2nd hand PEM and related lock-in amplification system are all by sure not the state of the art.

-We do need to make separate runs to collect both AC (lock-in amplifier output) and DC signal, in order to get normalized CD spectra by their ratio, since we are limited by the existing single channel IF-500II PC interface. Nevertheless data measured are by sure better than what achieved in the past on a dedicated commercial NIR-CD (Jasco J-200D) which was one order of magnitude more expensive.

Any interest in duplicating the set-up or in assembling a new, revised one?

Basically not, while with a different budget it'd be possible to create a superior unit, this particular one was born on the basis of personal relationship with Sergio Abbate and his wife Giovanna Longhi. This was probably the most appealing part of the all project: to create an instrument putting together our different competencies. So no commercial interest behind: only a way to live a friendship relationship and to try to produce scientifically consistent data.

¹ Castiglioni E., Lebon F., Longhi G., Abbate S., *Enantiomer*, 7, 4-5, 2002, 161

² Chabay I., *PHD Thesis*, Univ. of Chicago, 1972