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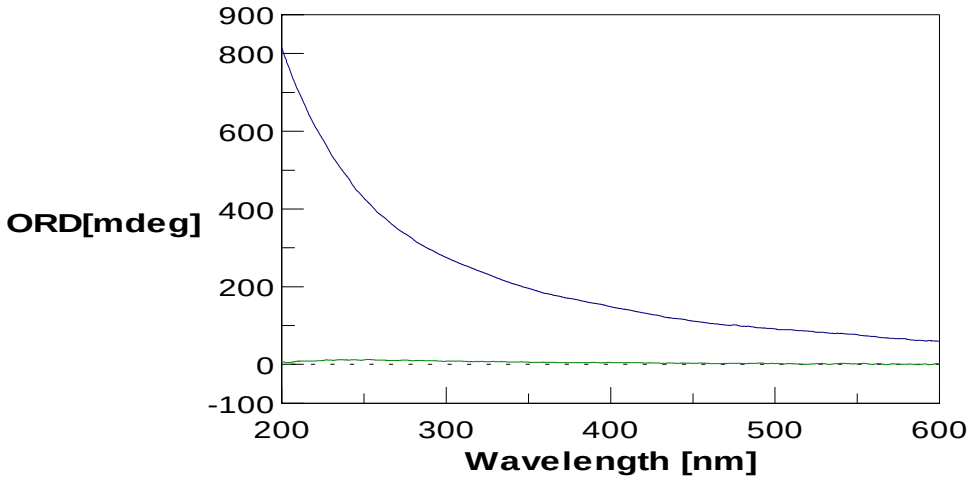
CD CELLS

Many years ago CD measurements were carried on only with cylindrical cells, nobody would ever consider regular spectrophotometer's rectangular cells for CD spectra.
More than that grades were available from a few suppliers to discriminate between ORD, CD and regular absorption cuvettes.
Years have gone, many users now take advantage of Peltier thermostatting for rectangular cells …. , problem is not raised anymore.
Since rules from physics didn't change, it'd be obvious, even today, that quality of sampling cells has a concern.

A pertinent/recent indicative example:
We installed an ORDE accessory on a J-715 originally equipped with Peltier cell holder.
All fine, but resulting baselines were:



The nice *sugar alike* spectra was obtained with Peltier windows fitted as they were.
The second, much flatter one, was obtained unscrewing a bit the three screws holding the Peltier quartz windows.
If you consider the fact that these windows are kept in place by Teflon washers, you may feel how easily spurious birefringence may affect ORD measurements. Well CD is less critical in this respect, but cautions are necessary.

A few cell manufacturers are supplying *cuvettes* dedicated to CD:

Starna *…. cell manufactured for Circular Dichroism must have strain-free oriented windows and the complete cell carefully annealed. This process incurs an additional charge for each cell …*

Hellma *…. For some applications, e.g. in polarimetry and for circular dichroism measurements, it is important to check cells for lack of strain birefringence…. Cells polarimetrically checked are marked with >P< and are delivered with a* certificate *confirming that rotary angle of 0.01° is not exceeded.*

While only Hellma seems to positively check selected cells by a polarimeter, Starna checking is performed only under a strain gauge; in both cases practical results seem consistent. Users should however take the habit to perform solvent baseline tests for *internal* selection of cells to be used in sensitive experiments.

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