

DEDICATED SOLID STATE CD SPECTROMETER

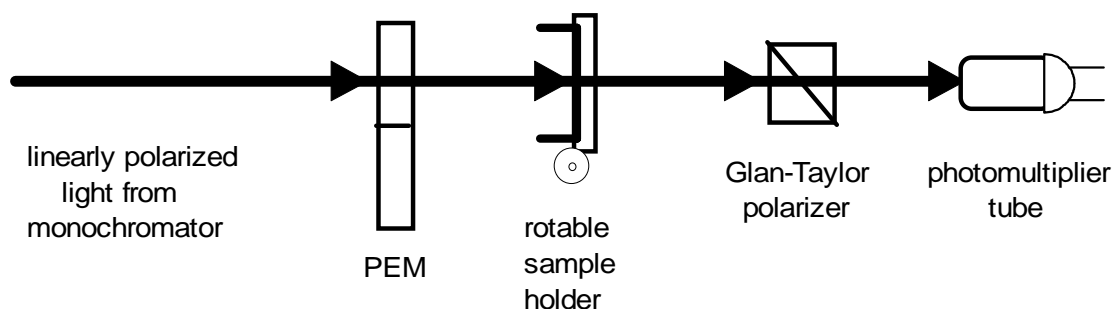
Description of the solid-state CD spectrometer presented in a lecture and in poster at CD2001 (see T.R. N° 50) has been published¹.

Article itself is somehow disappointing in the experimental part since it includes only two examples (PVA film dyed with Congo Red, a well known example of potential artifacts and an α -Ni(H₂O)₆•SO₄ single crystal), but it's expected that further data will be published in the future.

As told before this instrument (J-800KCM) was assembled recently to provide artifact free (or minimized) CD spectra of solids samples with macroscopic anisotropies. The unit incorporates many of the ideas dreamed and promoted by Prof. Shindo since several years.

Basically the unit can be seen as a rather normal CD spectrometer with the addition of:

- a double frequency lock-in amplifier (i.e. a Linear Dichroism accessory)
 - a sample rotator stage (to measure sequentially both sides of same sample)
 - a Glan-Taylor polarizer which may be inserted in the path, to allow simultaneous measurements of LB, LD and CD
- All these facilities together allow to arrange a proper measuring strategy to compensate at the best the nonideal characteristics of commercial polarization-modulation instruments.



Much care has been put in the selection of the best quality components and a more sophisticated phases-locked loop (PLL) PEM drive has been adopted to reduce voltage applied while improving stability.

Since it looks like that this instrument will have no commercial future the point to know is if it's possible to duplicate it in a normal environment.

The answer is basically positive since a good, modern commercial instrument equipped with LD option and slightly modified according to T.R. N° 38 would be the proper starting stage.

The design and the addition of the sample rotator and of the polarizer support should be no problem with a decently tooled workshop.

Finely tuning the apparatus calls for some specific experience and good willing, but these too should be available in many places.

With the growing interest of chirality measurements in materials science this article may really open new interesting possibilities.

¹ Kuroda R., Harada T., Shindo Y., *Rev. Sci. Instrum.*, Vol. 72, No. 10, Oct 2001, 3802-3810