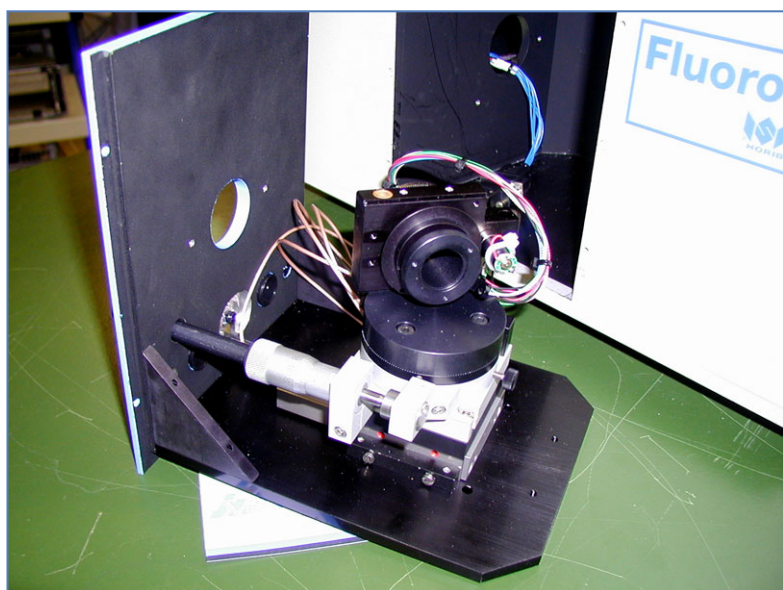


# Special Sample Holders For The Jobin Yvon-Spex Fluorolog3 Spectrofluorometers



- Special sample holders for thin film
- Automated devices
- Marketing special integrated in standard systems
- Controlled by *DataMax™*
- No added hardware

Figure 1: « Rotating » sample holder for the *JY-SPEX Fluorolog3* spectrofluorometer

For many applications in the Fluorescence Spectroscopy field, it is useful to automate sample handling. This is the reason why *JOBIN YVON-SPEX* Fluorescence Division offers several accessories such as the 2- or 4-position sample changers and the Microwell Plate Reader (*MicroMax-384®*). The main purpose of these accessories is to automatically change samples in the analyzing area. For many users, this added option is enough. However, in some specific applications something else is needed.

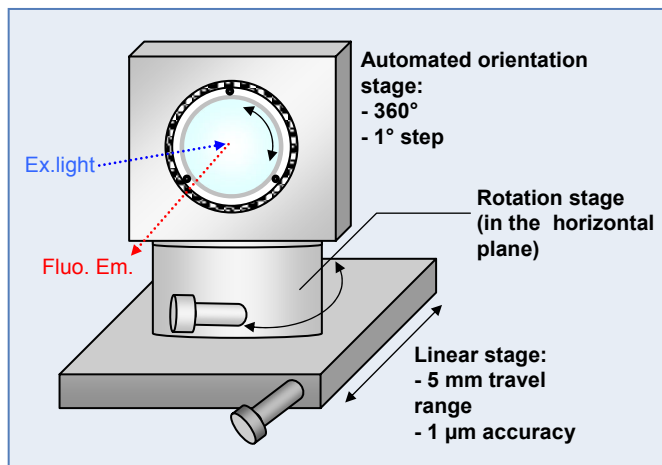
The aim of this technical note is to show the possibility of developing and controlling special automated sample holders for our spectrofluorometers. It will introduce two special devices developed by *JOBIN YVON GmbH* for the *Federal Institute for Material Research and Testing* in Berlin (Germany):

- A “rotating” sample holder for thin films.
- A “linear” positioning sample holder for the analysis of solid samples.

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## The "Rotating" Sample Holder



The customer's samples consist of thin films placed between two circular quartz plates. The application is to obtain fluorescence spectra corresponding to various orientations of the sample.

A special sample holder has been designed to produce an automated rotating movement of the sample in the perpendicular plane of the excitation light. A "rotating scan function" has also been developed.

Figure 2: "Rotating" sample holder for the *JY-SPEX Fluorolog3* spectrofluorometer: schematic

The special kinematic sample holder fits the standard mount of the sample compartment in the instrument.

The optimum positioning of the sample holder is obtained by a linear and a rotational nano stage, which allows the sample to be focussed by manual adjustments.

With regard to the automated rotational movement of the sample, the connections on the electronic board of the sample compartment originally dedicated to the third polarizer are used: power, sensors, etc. Some mechanical and hardware parts of the polarizer mount are also used. Figure 3: Installation of the "Rotating" sample holder in the *Fluorolog3*

The special holder works with the same components as the polarizer mount. So, the rotation step is 1° and the orientation of the sample is adjustable through 360°.



Figure 3: Installation of the "Rotating" sample holder in the *Fluorolog3*

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The special sample holder is fully controlled by *DataMax™* software so users can easily and automatically analyse the sample. An additional *Array Basic* program called *ANGLE.AB* is used where the sample holder works like a filter wheel.

Under the *Real Time Display* mode, the user can select any orientation of the sample and after that, it is possible to run any experiment in the normal way.

For automatic acquisitions corresponding to several orientations, using this program is the same as using the *Matrix Scan*. The customer saves the parameters of the acquisition in an experiment file. He selects the orientation range of the sample and the degree increment. The experiment is run for each orientation and the result is a 3-D plot.

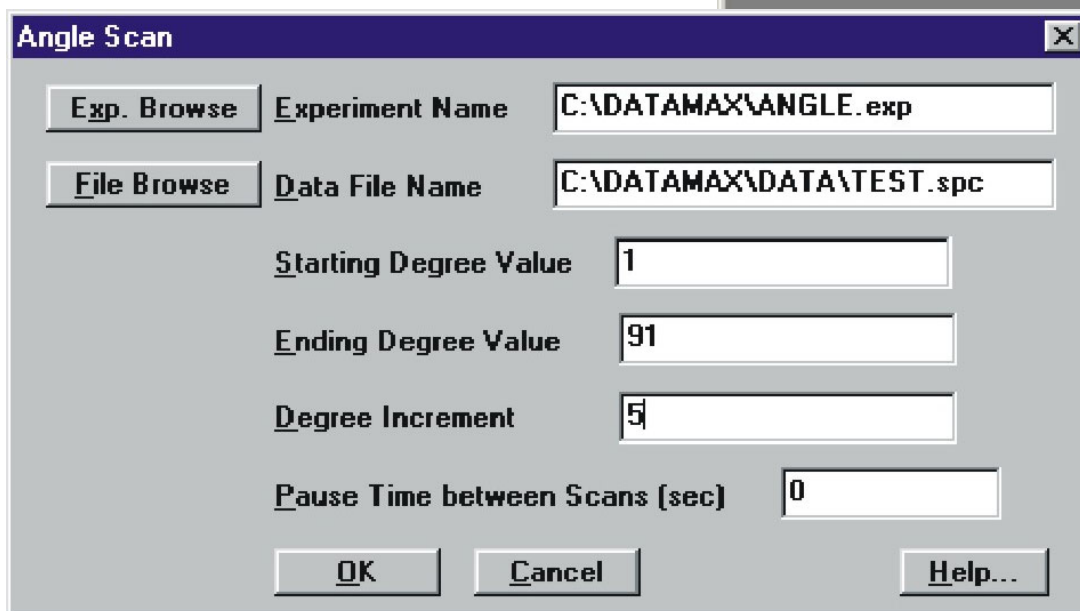
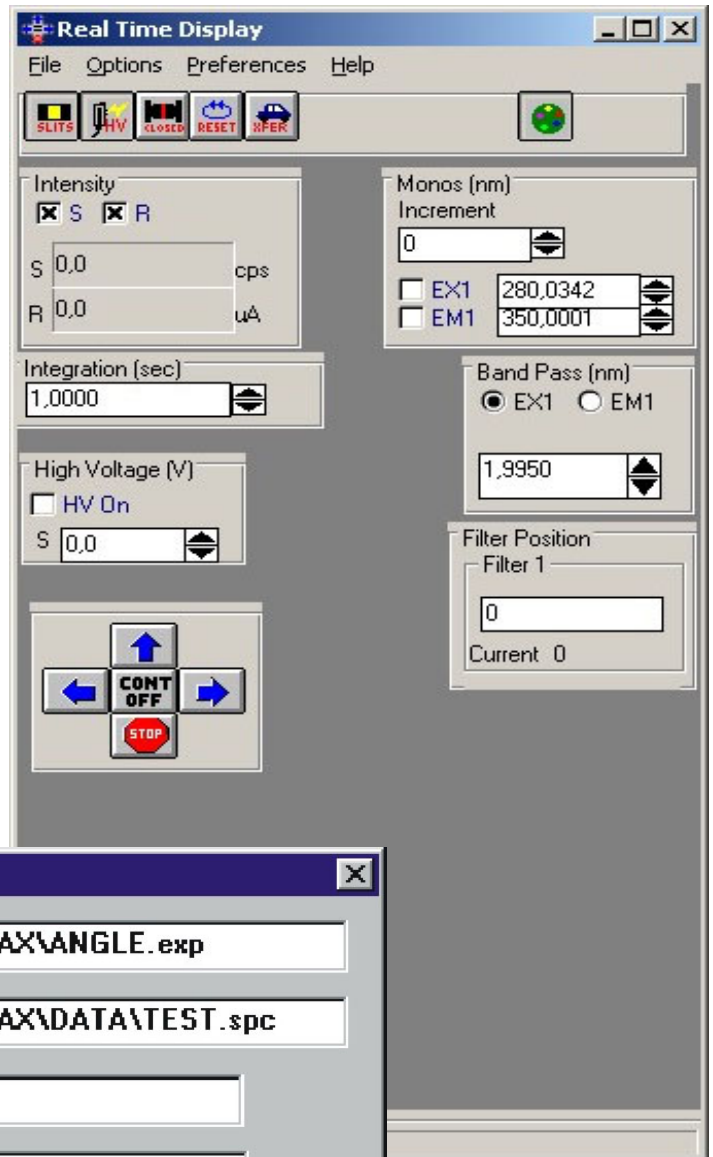


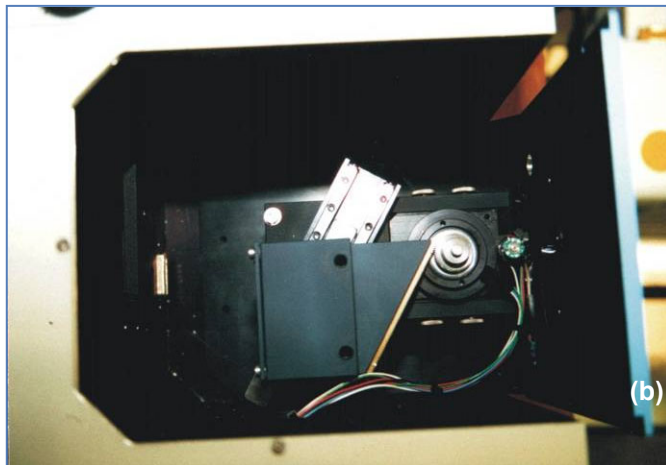
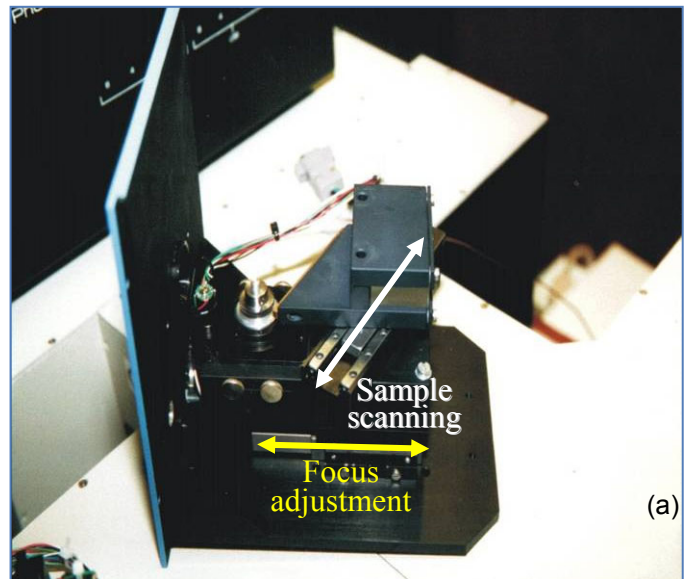
Figure 4: "Rotating Scan Function" setup dialog box from *Datamax™*

## The "Linear" Sample Holder

For a second application, the rotating movement is transformed into a linear movement of the sample. As in the previous application, samples consist of thin films. They are placed between two quartz prisms. The customer's goal is to study the heterogeneity of the film surface. The sample surface is scanned using a linear stage controlled by *DataMax™*.

Again, the connections on the electronic board of the sample compartment originally dedicated to the third polarizer are used: power, sensors, etc.

From the software point of view, the same setup dialog boxes can be used.



A piezo device is incorporated to compensate for small differences between sample thicknesses. The piezo device will optimise the signal level by adjusting the focus between samples.

Figures 5a & 5b: Automated "Linear" sample holder for the *Fluorolog3*

"Need more information on these devices?  
Contact us!"

In France :  
Jobin Yvon S.A.  
16-18, rue du Canal  
91165 Longjumeau cedex  
Tel: +33 (0)1 64 54 13 00  
Fax: +33 (0)1 69 09 93 19  
Email: fluorescence@jyhoriba.fr

In the USA :  
Jobin Yvon Inc.  
3880 Park Avenue  
Edison, NJ 08820  
Tel: +1 732 494 8660  
Fax: +1 732 549 5157  
Email: fluorescence@jyhoriba.com

China: +86 10 6836 6542  
Germany: +49 89 46 23 17 0  
Italy : +39 2 57 60 30 50  
Japan: +81 35667 7351  
U.K. : +44 20 8204 81 42

