

Introduction of sample angular rotation device (ES-12010)

Product used : Electron Spin Resonance (ESR)

■ Sample angular rotation device (ES-12010)

Here we introduce a sample angular rotation device that can perform ESR measurements while changing the angle of a single crystal sample automatically. This device, controlled by ESR spectrometer, can set the sample placed in the cavity at any angle. It can be used in combination with a variable temperature controller (ES-13060DVT5) or a variable liquid helium temperature system (ES-CT470).

■ Main specifications

- Rotation angle : 0 to 360 °
- Minimum angle resolution : 0.06°

■ Applicable cavities

- Universal cavity (ES-UCX2)
- Transmission cavity (ES-MCX3B)

■ Configuration

- Control program
- Sample rod (O.D. 3 mm / O.D. 4.75 mm)
- Sample holder (for O.D. 3 mm / O.D. 4.75 mm)

■ Example of ESR measurement

Figures 1 and 2 show ESR spectra using a ruby single crystal at room temperature while rotating the angle in 1° increments. It is known that ruby is a crystal composed of Al_2O_3 as a main component, and a small amount of Cr_2O_3 where Cr^{3+} is substituted to Al^{3+} . Therefore, in the ESR measurement of ruby, Cr^{3+} is observed. From the angular dependence of the Cr^{3+} signal, information about the electronic state and crystal field around Cr^{3+} is estimated.

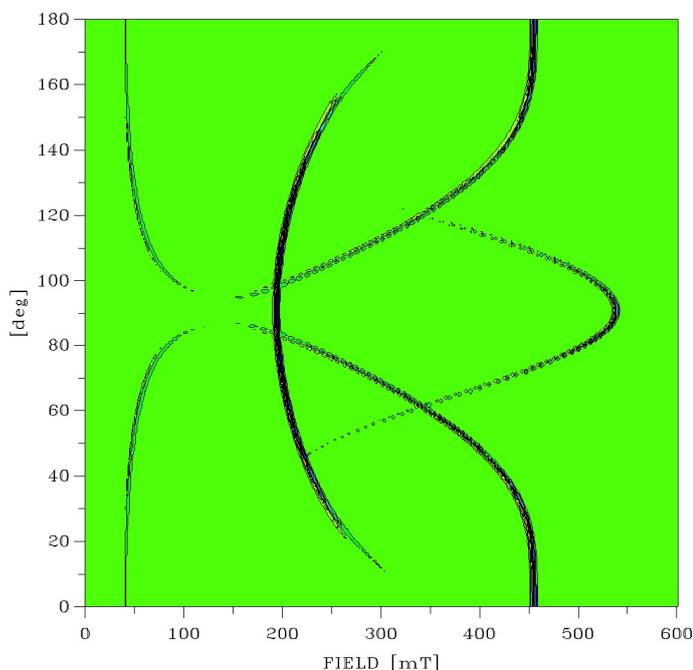


Figure 1. Angular rotation ESR spectra of ruby in 1° increments from 0° to 180°.

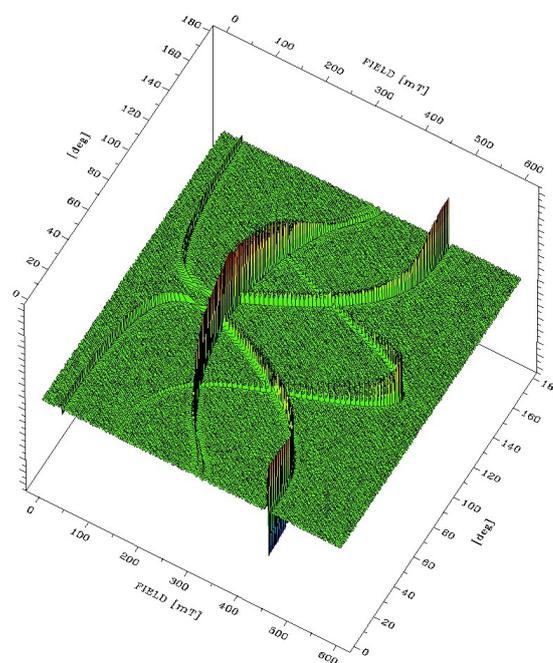


Figure 2. Angular rotation ESR spectra of ruby in 1° increments from 0° to 180°.

Copyright © 2021 JEOL Ltd.

Certain products in this brochure are controlled under the "Foreign Exchange and Foreign Trade Law" of Japan in compliance with international security export control. JEOL Ltd. must provide the Japanese Government with "End-user's Statement of Assurance" and "End-use Certificate" in order to obtain the export license needed for export from Japan. If the product to be exported is in this category, the end user will be asked to fill in these certificate forms.

