Rigaku MiniFlex 600
OPERATION NOTES

Standby Condition

- Power and cooling water on (Haskris chiller).
- XG ON (indicator lamp = ON) and tube set to **20kV** and **2.0mA**.
- Exit software and log off PC.

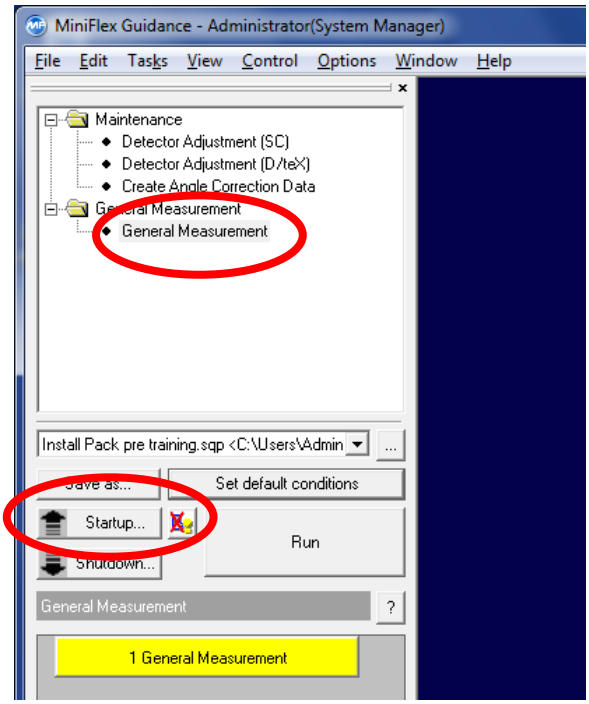
Startup

- Sign in on the FOM.
- Log into PC and start Rigaku Guidance software..
- Load your sample in the sample holder. Ensure that the sample is on the rotation center.
- Press Door Button and open door. Slip sample holder into clip.

The unit is fully interlocked for X-ray safety. The door cannot be opened when the X-ray shutter is open. Do not force the door. To open, press the door button and wait for it to respond.

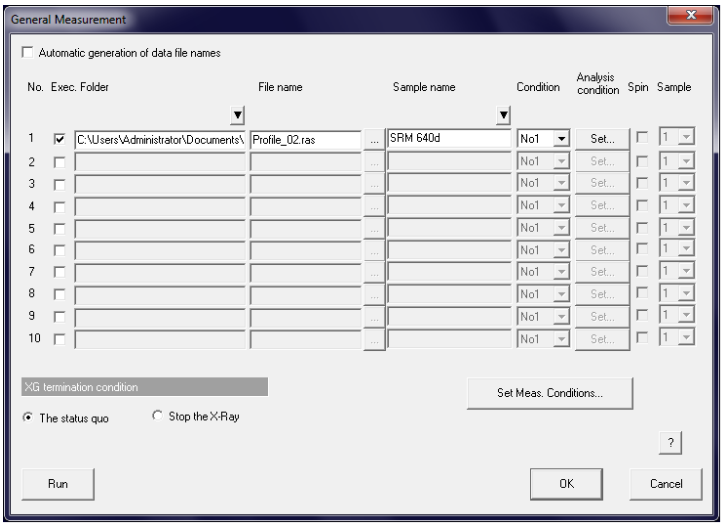
Getting a Diffraction Pattern

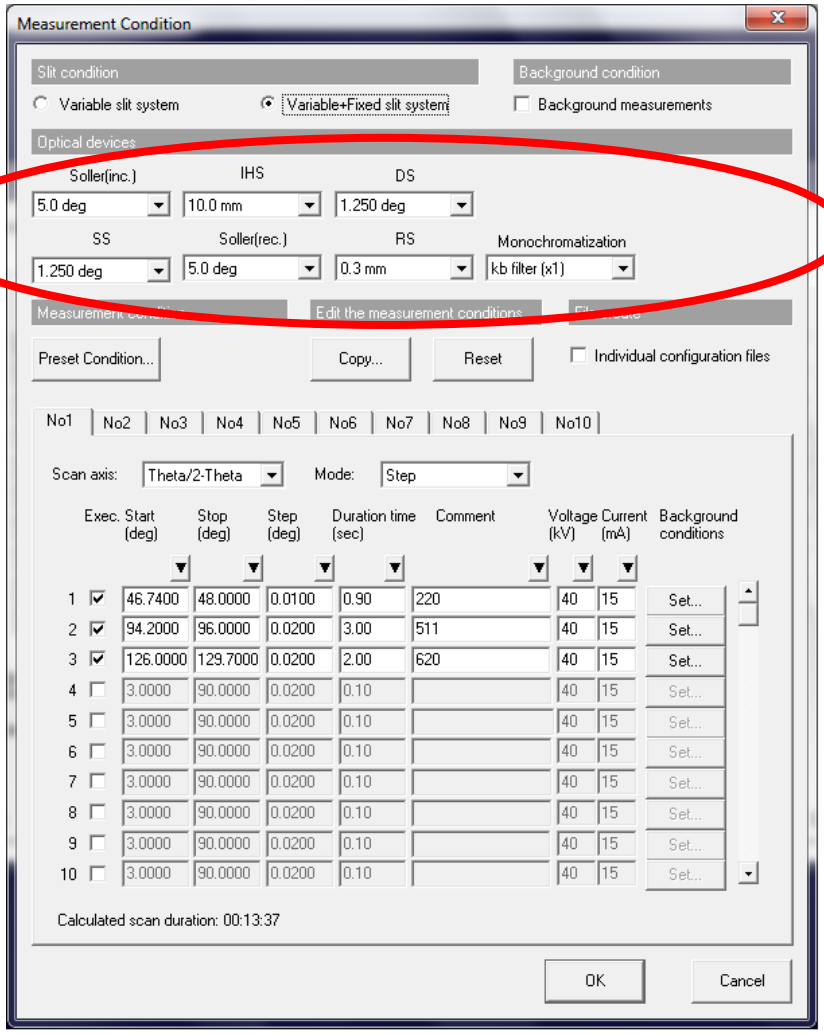
- Start the **MiniFlex Guidance** software
- Press the **Startup** button and warm up the X-ray tube
- Select General Measurement from the menu.



- From the Flowchart, select **General Measurement**

- Choose folder and filename (check box) and set acquisition conditions if not using a predefined recipe.





Note acquisition conditions!

Finishing Up

- Remove your sample and close door
- Select Shutdown and Set to Minimum
- Log off the Guidance software and Windows

Final Notes:

If something happens to the machine that isn't normal, you need to report the problem. NOT REPORTING equipment failures is a serious offense and will not be taken lightly. After encountering a problem, make detailed observations of what went wrong so that we will have something to go on when repairs/programming changes are to be made.

Note: If your sample is not exactly on the rotation axis, you will get a shift in your peak positions. The shift in the 2Θ value (to a very good approx.) is = $(2h/R)\cos\Theta$, where h is the shift in the sample position (+ is forward) and R is the diffractometer radius (250mm). If your sample is too tall, you will find that your peaks are shifted to higher values.

(X-ray) Producing Device
Safe Operating Procedure

1. Radiation Producing Device
   Manufacturer Rigaku Inc.
   Model: MiniFlex 600 Serial Number: JD203011
   Location: 126 CEMAS

2. Principle Investigator:
   Name: Hendrik O. Colijn
   Telephone: 614/643-3458
   Office (Bldg & Room): 141 CEMAS

   Additional Contact Person:
   Name: Ashley Swartz
   Telephone: 614/643-3467
   Office (Bldg & Room): 105 CEMAS

3. Names of Individual Users Date Trained on Safe Operating Procedure
   cf. FOM user list

4. Possession and use of radiation producing devices at The Ohio State University (OSU) are authorized by the provisions of the Ohio Department of Health (ODH), the Ohio Administrative Code (OAC) Chapter 3701:1-68, and the Radiation Safety Procedures Manual For Radiation-Producing Devices (Non-Human Use).

   Copies of the OAC and the Radiation Safety Procedures Manual For Radiation-Producing Devices (Non-Human Use) are available directly from the Environmental Health and Safety Office, Radiation Safety Section, or from our web site, www.ehs.osu.edu.

5. ALARA

   ALARA is an acronym that stands for As Low As Reasonably Achievable. It is the policy of the University to maintain radiation exposure levels not only below applicable legal levels but to also keep the radiation exposure levels as far below the applicable levels as reasonable.

   ALARA means making every reasonable effort to maintain radiation exposures as far below dose limits as is practical consistent with the purpose for which the activity is undertaken, taking into account the state of technology, the economics of improvements in relation to the benefits to the public health and safety, and other societal and socioeconomic considerations.

6. Occupational Exposure Limits for Employees

For occupationally exposed workers, age 18 years and over, external radiation exposure will be restricted under normal conditions to the limits below

Part of the Body	**Annual Dose Limit**
Whole Body	5.0 Rem
Skin of Whole Body	50.0 Rem
Hands and Forearms, Feet and Ankles	50.0 Rem
Lens of the Eye	15.0 Rem

External personnel monitoring is required whenever an individual enters a controlled area and is likely to receive a dose from radiation exposure in excess of 10% of the applicable limits.

7. Personnel Monitoring (whole body or ring badges) Required? **No**

   If personnel monitoring is not required, go to section 8.

8. Policy regarding occupational exposure of minors

   Individuals under the age of 18 years are not allowed to be exposed to radiation levels in excess of 10% of the applicable adult limits

9. Radiation Safety is responsible for the following:

   - Perform an initial audit and survey of all newly installed equipment or after any modifications to existing equipment.
   - Perform semi-annual inspections.
   - Perform an annual survey.
   - Perform an annual inventory of all inoperable units.
   - Maintain ODH registration of all industrial analytical radiation-producing devices. Copies of radiation surveys and inspections performed by Radiation Safety are on file at room 103 Research Center Bldg, 1314 Kinnear Road, phone: 292-1284.

10. Emergency Contact Information

    The 24-hour Emergency Response Number is 240-0705.

    Any individuals who have non-emergency questions, concerns, or inquiries pertaining to radiation safety may contact the Radiation Safety Section of Environmental Health and Safety during normal working hours at 292-1284.

11. The Radiation Safety Section of EHS shall be notified immediately of any radiation producing device that is stolen, lost, or missing.

12. The Radiation Safety Section of EHS shall be notified immediately of any event that may have caused, or threatens to cause an individual to receive, in a period of 24 hours,

- A total effective dose equivalent exceeding 5 rem,
- A lens of the eye does equivalent exceeding 15 rem, or
- A shallow dose equivalent to the skin or extremities or a total organ dose equivalent exceeding 50 rem.

13. Recognition of symptoms of an acute localized exposure

Most radiation injuries are "local" injuries, frequently involving the hands. These local injuries seldom cause the classical signs and symptoms of the acute radiation syndrome. Symptoms may include a skin lesion, erythema, blistering, dry or wet desquamation, epilation, and/or ulceration. Local injuries to the skin evolve very slowly over time and symptoms may not manifest for days to weeks after exposure.

14. Specific Standard Operating Procedures

Note to recipient of this template. Please attach a description on how to operate your radiation producing device for this section. Basic elements shall include:

- key control
- safety precautions
- hazards associated with the use of the unit
- operating log
- significance of warning lights, labels, and signals
- description of any portable shielding or barriers
- description of interlocks
- description of controlling access to the area / device
- how to operate the unit.