MD10 X-RAY MINI DIFFRACTOMETER

Instructions for Quick Test

MTI requests you to run a quick test by following the instruction as shown below upon arrival of the shipment. It will assure you that MD-10 machine works OK and there is no damage caused during shipping. If any problem is found, please don't hesitate to contact MTI immediately.

1. Plug in the power cords from both MD10 and the Laptop Computer to AC power outlet (110VAC–240AC). Make sure all connections are solid and not loose.
2. Connect the Laptop Computer to MD-10 using the provided cable as the picture shown below (Fig 1 and Fig. 2)
3.

Fig.1

Fig2. (Must plug USB connector into socket on the back of Laptop)

Fig. 3. Please push two buttons on the bottom to open the door

Fig. 4: Please keep the reference sample (Alumina) in flat position on the sample holder

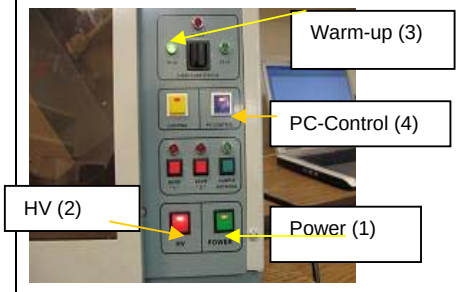

Fig. 5. Must not switch to 25kV until "Warm up" or W-up light is stable

Warning: Must **not** operate the equipment until 25kV green LED light is stable

4. Please open the door of MD-10 as shown in Fig 3 and remove the protection cover on the sample holder, and then make sure the reference sample (Alumina) is in flat position on the sample holder as in Fig. 4
5. Make sure the "X-Ray Tube Status" switch on the front panel is in "Warm-Up" position. Turn the "POWER" and then the "HV" buttons On. (Fig. 5)
6. The **green LED** "W-up" in the section "X-RAY TUBE STATUS" will begin to blink. Please don't move the switch of the "X-RAY Tube Status" to the position "25 kV" **until** the warn-up light becomes stable, i.e.; no blinking is seen.
7. Move the switch of the "X-RAY Tube Status" to the position "25 kV". Wait for 10~20 minutes until the "25 kV" **green LED light** becomes stable (Fig. 6), then Push the "PC-Control " button ON (Fig. 5) , then, click and open "MD-10" software on Laptop.
8. "Measurement" Interface will appear as in Fig. 6. Please set an Exposure Time to 800 sec, a measurement Range to "First" , and scale (scale type) to " 2 theta", and always keep Wavelength on Cu-Ka.

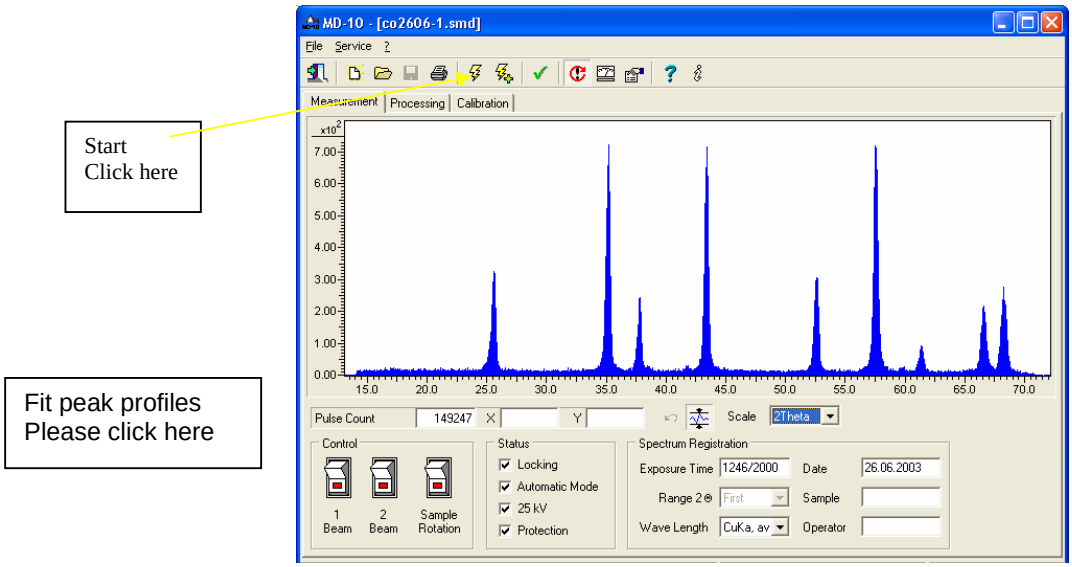

Fig. 6 MD-10 Diffractometer Main Window – Measurement page.

9. Press the "START" button on the toolbar of the Processing. Then MD-10 starts collecting X-Ray diffraction data from the sample and the diffraction spectrum keeps appearing at the same time. Measurement will be stopped automatically upon the completion of the Exposure Time.

10. Spectrum Processing
    - Process a measured spectrum by pressing the button “Fit Peak Profiles” on the control panel of a “Measurement” page. Then program will be automatically switched to the “Processing” window as in Fig. 7

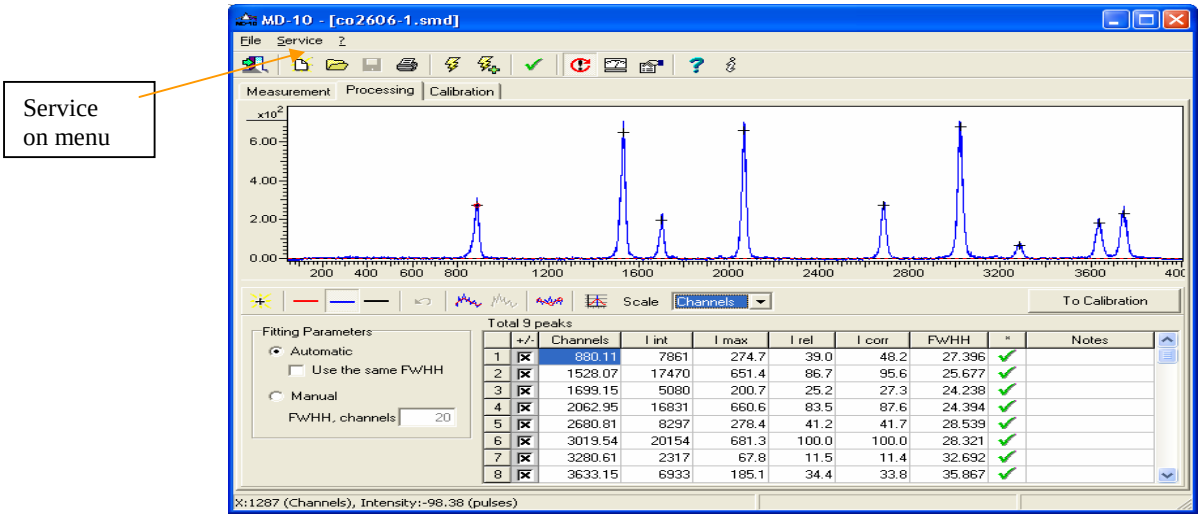

Fig.7 MD-10 Diffractometer Main Window – Processing page.

- Save the file with **.txt.** Please make note that the search/match program only accepts **.txt** document file.

11. Search/Match program (Look PDF)
    - To analyze the data, you shall click “Service” on Menu, then click “Phase Analysis (Look PDF)” under “Service”. Then go to MD-10 main window to open the Powder Diffraction Database Search Program,

as shown in Fig. 8

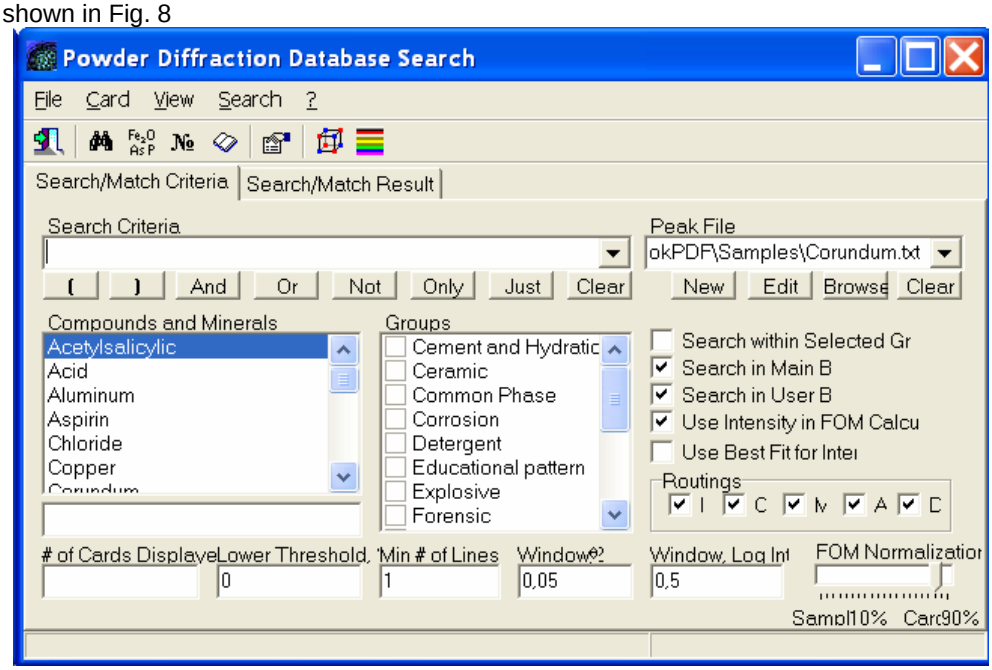

Figure 8: Look PDF Main Window - Search/Match Criteria Tab

- To run the Search/Match program, please click: **View** -- **User Database** on Look PDF main menu.
- In Fig. 9 the Search/Match results page is shown, which contains the list of matches in the lower pane and a graphical window in the upper pane. It displays both the experimental pattern from a peak file and the standard pattern of the lines from the database card selected within the result lists. The result shows the reference sample match with aluminum oxide.

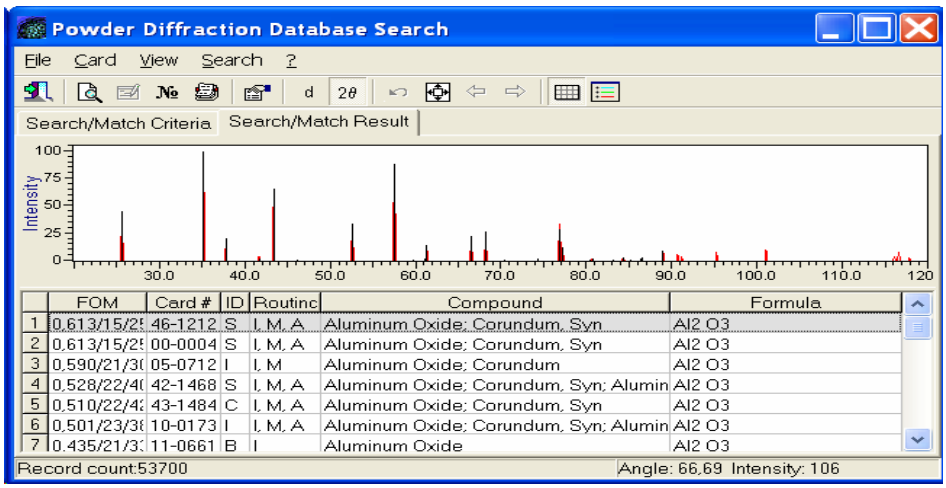

Figure 9: Look PDF Main Window -- Search/Match Result Page

Please report any damage and problem to MTI immediately after quick test

Please read operation manual and learn more about MD-10 prior to any real experiment.

MTI Corporation

Total solution for material research

2700 D Rydin Road, CA 94804, USA

Tel: 510-525-3070 Email: info@mtixtl.com

www.mtixtl.com