

For : Rigaku DMAX horizontal diffractometers.

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Title : Vertical powder mounting on Rigaku RU200 DMAX.

Problem : The horizontal DMAX powder diffractometer requires that the samples be mounted vertically. This often results in loss of sample.

Solution : Sample can be pressed into a frosted microscope slide. The slide can then be mounted in the normal manner. The powder will adhere to the rough surface of the glass slide without significant loss of sample. An added advantage is a lower occurrence of preferred orientation, due to the roughness of the glass, which randomly orientates the crystallites that adhere to it.

Advantages

- Less sample is needed (roughly only 1/10 of the amount used in standard procedures)
- Preferred orientation is reduced
- Sample adheres to the holder and is not dislodged easily
- Sample and Transparency errors are reduced.

Disadvantages

- Slightly lower intensities
- Sample surface is slightly rougher
- Sample slides are normally used only once.
- Transparent samples will have a slightly higher background (due to the glass)

Procedure :

1. Frost a microscope slide (use a bead blaster or sand blaster)
2. Cut the slide to fit the sample chamber.
3. Place about 10 to 30 mg of sample on the frosted slide
4. Place a clean unfrosted slide on the sample.
5. Press the sample into the frosted slide and pull the unfrosted slide toward one edge of the frosted slide.
6. Repeat if necessary to obtain a clean flat surface.
7. Place into sample chamber in the normal fashion.