

Centering of Rotating Microscope Stages

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A difficulty in using polarizing chemical and petrographic microscopes frequently encountered by students and by chemists inexperienced in microscopy is centering the circular rotating stage so that the center of rotation of the stage coincides with the optical axis of the microscope body tube and optical system. Accurate alignment of the center of rotation of the stage with the center of the observed field is necessary for measuring extinction angles, observing the behavior of interference figures, and many other purposes.

The scheme shown in figure 1 has been helpful in enabling students in chemical microscopy readily to align their microscopes. It was originally intended for those instruments having two adjusting screws below the stage facing the observer. The diagram may be conveniently displayed in the laboratory by reproduction on a sheet of white cardboard.

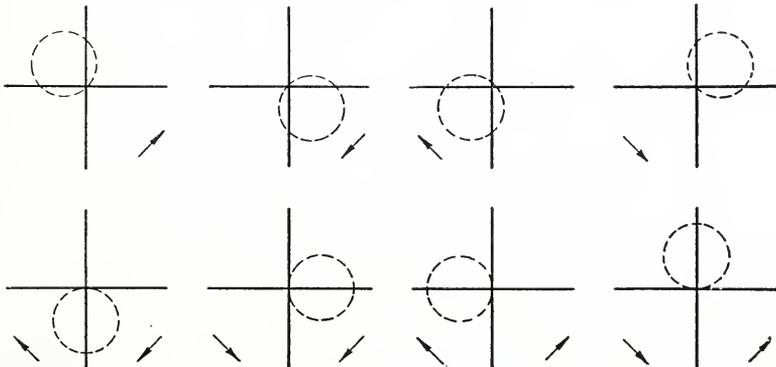


Figure 1. Procedure for Centering Rotating Microscope Stages.

In using the chart, the image of a small crystal or other object on a slide held on the stage is brought into coincidence with the junction of the cross-hairs of the ocular. The stage is then rotated and the circle described by the object relative to the junction of the cross-hairs is noted. This circle is represented on the chart by one of the dashed line circles if the stage is not correctly centered. The necessary adjustment is made by turning one or both thumbscrews according to

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the direction of the arrows. If the center of the circle described does not lie upon one of the cross-hairs, only one of the two conventional stage-centering screws is rotated as indicated in the upper half of figure 1. The position of the screw, left or right, corresponds to the observer being located below the illustration, i.e., facing the figure in the normal reader's position. If the center of the imaginary circle rests on one of the cross-hairs, both centering screws are adjusted as shown in the lower half of figure 1. The adjusting screws should be turned sufficiently to bring the center of the circle described by the object to the cross-hair junction. Usually, after each adjustment of the centering screws, the object is again brought into coincidence with the cross-hairs junction and the process outlined is repeated until the object remains at the cross-hairs junction on 360° rotation of the microscope stage.

Objectives attached to the microscope body tube by an objective centering ring can be centered in an analogous manner. In the usual case where the adjusting screws on the objective centering ring are located in the two quadrants away from the observer, the chart required is similar to that in figure 1 except that the arrows are located in diagonally opposite quadrants; however, the arrows still point in the same direction. For example, in the upper extreme left situation of figure 1, the arrow now in the southeast quadrant would be transferred to the northwest quadrant; it would still point northeast.