

An Inexpensive Method to Eliminate Bleed-Out of Etchants from Crevices Caused by Separation at the Mount-Specimen Interface

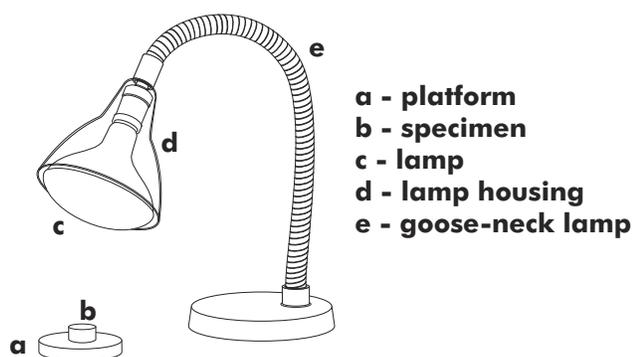
There is nothing more frustrating to a metallographer than to be plagued by etchant bleed-out (water and/or alcohol, trapped in crevices, that smears across the surface of a specimen when it is dried in an air stream). If a stain or bleed-out occurs, it will always occur at the place of interest or where one wants to take a photomicrograph. And, of course, this always occurs after the final polish.

The following procedure for eliminating bleed-out is performed after the intermediate diamond polish but before the final alumina polish.

Requirements

- Heat lamp
- Lamp housing
- Canning paraffin

The heat lamp is placed into a lamp housing with a flexible arm. The flexible arm can be attached to a solid base or have a scissor-action clamp that can be clamped to a table top or on a wall-mounted cabinet. The flexible arm is for positioning the lamp. The lamp is arched over a thick base, such as a 6-inch x 6-inch thick glass plate, a thick piece of aluminum, or a thick piece of bakelite. These three examples are cited because they do not conduct heat as rapidly as other materials. The distance from the lamp to the base should be between six and eight inches. The lamp is turned on and the dried specimen is placed under the lamp.



Several small shavings of paraffin are placed on the specimen, and, as the heat melts the paraffin, more shavings are added. Softened paraffin can be molded into a stylus by hand, and the tip rubbed over the heated sample. Enough paraffin should be added until the entire surface of the mount has a layer of melted paraffin. The specimen is removed and set aside to cool. As the top layer starts to cool, it causes a suction action which sucks the under layer of liquid paraffin into crevices, voids, or separations between the mounting medium and specimen. Let cool naturally; if the specimen is cooled in water after the surface starts to solidify, the suction action is lost.

After the specimen has completely cooled (approximately fifteen minutes), it is taken to a stationary diamond wheel and lightly stroked across the wheel in straight strokes, not a rotary action, until the paraffin is removed from the surface of the mount. This step should be fairly short, usually about six or seven strokes are required, and the wheel should not be saturated with oil as the oil has a tendency to dissolve paraffin. The specimen is rinsed in alcohol, dried, and polished in a normal manner using gamma alumina and water.

If the material being polished is one that requires a longer than usual final polishing step, final polishing can be done before the paraffin treatments. The fine diamond scratches can be removed with a few turns on the final polishing wheel. Long polishing times after the paraffin treatment will eventually cause the long cloth fibers to polish out the paraffin.

This paraffin treatment can be used with any mounting media, and the paraffin is impervious to etchants. If a re-preparation requiring grinding is necessary, the paraffin treatment must be done again.

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