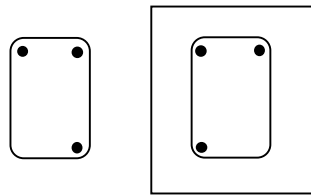


## Unpacking of irradiation stack, mica etching, glass slide preparation for FT analysis

The following instructions apply to both, AFT and ZFT analysis.

### Unpacking of irradiation stack and mica etching:

- The irradiated samples will be sent back after sufficient decay time has passed (takes longer for ZFT than for AFT). You can pick up the package at the radiation safety secretariat (Morgenstelle 24, building F).
- Before unpacking each mount/mica package, pierce small holes into three corners in both mica and mount. Alternatively, you can use the labelling on both the mica and mount to get the correct orientation. This is how you recognize later which way the mica lay on the mount.



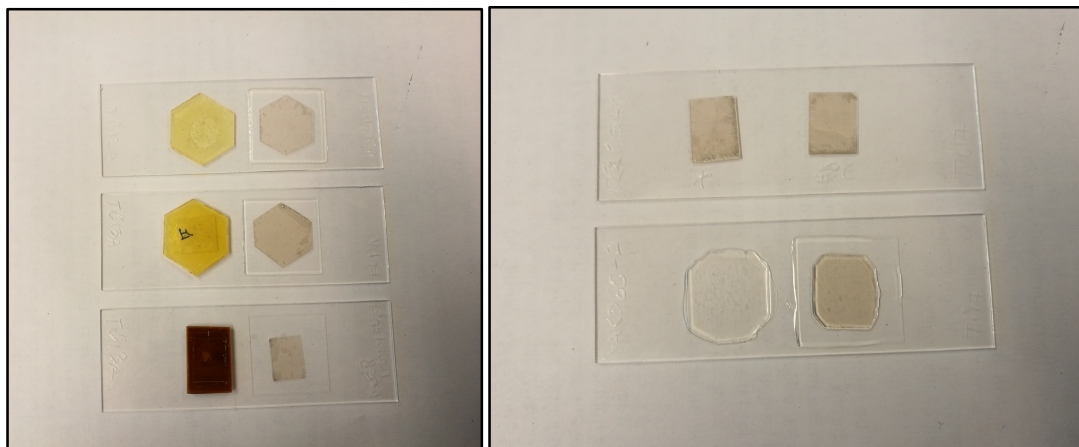
*Schematic of how mount (left) and mica (right; on top of a cover slide) will be arranged side by side as mirrors. The holes help to orientate them.*

- Take packages of dosimeter, standard, samples and micas carefully apart with gloves and tweezers. If they stick together use ethanol drops or even lay them in an ethanol-bath.
- Scratch the sample ID (if not done before irradiation) very small into the back side of the micas (side that did not face the grains during irradiation) and place them into the Teflon sample holders with one of their corner. The sample holder should not cover too much of the mica but the micas should not be able to fall out during etching.
- Use the fume hood in the HF lab for etching of the micas. Micas are etched in 40% HF for 30 minutes (the time can be adjusted if room temperature is departing from  $\sim 20^{\circ}\text{C}$ ). If you are not sure how long to etch, use one of the micas from the dosimeter glass to check if the etching time is adequately chosen. You need HF safety instructions, an "HF Pass", and full HF protection gear when working in the HF lab. Let someone know that you are working in the HF lab.
- Prepare one Teflon beaker with HF (enough to fully submerge the sample holder with the micas). If you have several sample holders that do not fit into one Teflon beaker, use two or three. Place two more Teflon beakers containing VE water beside the beaker(s) containing HF.
- Use a timer to measure 30 minutes after submerging the sample holder(s) in the HF beaker(s) using plastic tweezers.
- When taking out the sample holder(s) with the micas, rinse them in the first VE water beaker for a few seconds before dropping them into the second beaker with VE water. Make sure that all micas are in the water and none fell off in the HF. In case one or several micas are still in the HF, carefully and calmly remove them with the tweezers. Rinse them in the first beaker with water and then drop them into the second one with water.
- Dispose of the used HF and the rinse water in a specified HF waste container.
- Take the micas from the sample holder and rinse micas, sample holders, beakers, and tweezers under water for a long time.

- Put micas in some ethanol and place them on a lab wipe for drying. Do not touch them with your hand. Use gloves and tweezers.

**Preparing glass slides for FT analysis:**

- Clean mounts with ethanol from remaining sticky tape and assort mounts with their corresponding mica.
- Prepare as many glass slides as you have samples with irradiation number and sample ID (there is a specific scratching tool for glass). Put the corresponding sample (mount + mica) next to the glass slide.
- Glue cover slides onto the right side of the glass slide with epoxy. Glue the mica on top of the cover slide with a single, small drop of epoxy. You only need a very small amount of epoxy; do not submerge the mica in the epoxy. Make sure that the side that faced the grains during irradiation is up.
- The sample mounts (epoxy AFT mounts or Teflon ZFT mounts) may be glued onto the glass slide with epoxy, too, or may be taped onto the slide with double-sided tape. Specifically, the standard mounts must only be taped (not glued) to the glass slide as they can be reused in another irradiation. Make sure that the orientation of the mount is mirrored to that of the mica (check orientation of pinholes or labelling on mica and mount).
- The micas that covered the mounts with the dosimeter glasses can be glued onto one glass slide. Make sure that the side that faced the grains during irradiation is up. The dosimeter glasses themselves are not needed for the analysis.



*Left: AFT epoxy mount and mica on the upper glass slide (glued to the slide), AFT standard (taped to the slide) and mica on the middle slide, and mount with dosimeter glass beside mica on the lower slide. Right: Micas of dosimeter glasses on the upper slide and ZFT Teflon mount beside mica on the lower slide.*