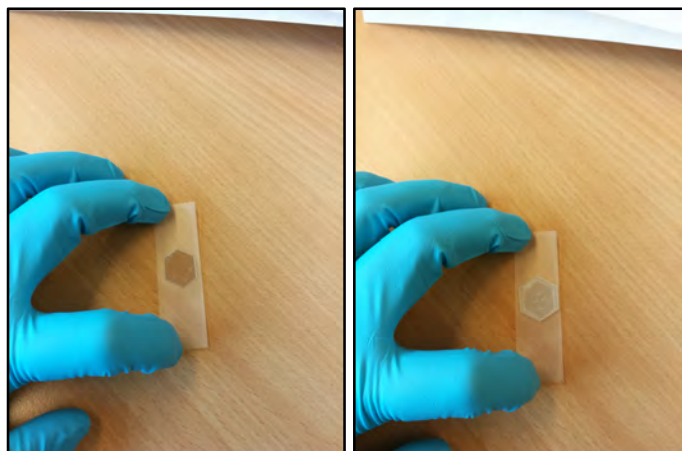


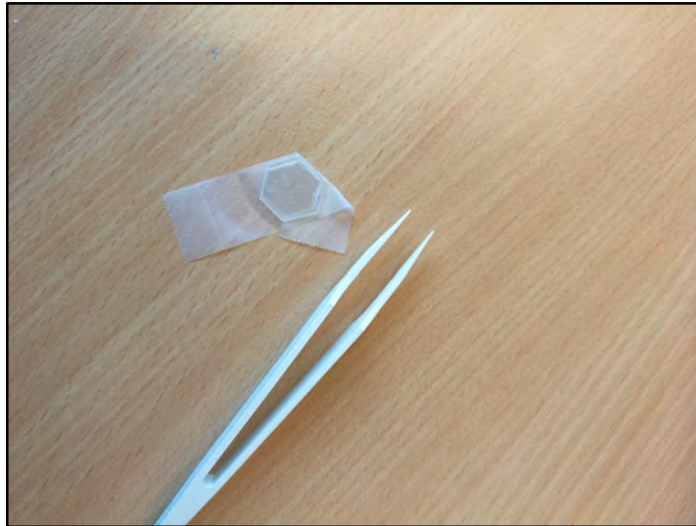
Packing apatite fission-track mounts for irradiation

External detector muscovite sheets need to be packed with the apatite mounts. Larger sheets of muscovite need to be cut to fit the apatite mounts, or rather be a bit smaller than the mounts to leave a rim for sticky tape when taping the detector on the mount. As our hexagonal mounts have a diameter of 20 mm, we cut hexagonal mica detectors of 18 mm diameter.

- Use a template of the form you want to cut and draw it on the mica sheet.
- Cut the mica sheet with cleaned (with ethanol) scissors or a scalpel.
- Write the sample name on one side of the mica.
- Stick uranium-free tape (Scotch) with one end under a table so that you have the sticky side up. Place the cut mica on the tape and carefully remove it in a way that one sheet sticks to the tape. The side of the mica where the sheet was removed is now fresh and clean (make sure you do not remove the labeled side). This is the side that will be placed on the apatite mount. Do this for every mica detector.
- Take a stripe of tape with the sticky side up and place the mica with the clean side up in the middle (left picture below). Then put the apatite mount with the grains-side down on top of the mica (right picture below). Make sure that the label on both the mica and the mount is oriented in the same way, this helps to orientate them after irradiation and etching of the micas. Make sure that the mount goes over the edge of the mica and that the tape sticks to the mount. Wrap the tape around the mount and mica, and press them tightly together at the edges. Do not press on the middle of the mica, this could produce scratches from protruding grains. There should not be air between mount and mica to avoid a wide spreading of the induced tracks in the mica.
- Cut off the protruding tape and write the sample ID on the tape on the back of the mount.
- The same package with mica external detectors must be prepared for apatite standard material (e.g., Durango and Fish Canyon Tuff), and for dosimeter glasses (IRMM-540 available in the lab) that will monitor the neutron flux during irradiation. Since the dosimeter glasses are essential for dating, it is recommended to place a mica on both sides of the dosimeter glasses. In case one is not tightly connected or damaged/lost after irradiation the second one can be etched and used instead.



Left: Scotch tape with the sticky side up and a mica detector cut into a hexagonal shape. Its clean side (with one sheet of mica removed) is up. Right: An apatite mount with the grains facing down is placed on top of the mica. Photos: S. Falkowski.



The tape must be wrapped around the mount and mica to press and hold them together during irradiation. Photo: S. Falkowski.



Package of apatite mount and mica external detector ready to be stacked with other mounts for irradiation. The sample ID is written on the back for easy handling (the sample ID is also scratched into the back of the mount but may be hard to read through the tape). Photo: S. Falkowski.

Stacking of packages of dosimeter glasses/micas, standards/micas, and sample mounts/micas:

- The stack should have dosimeter glasses packaged with micas on the top and the bottom. Place the standards next to the dosimeters and then the sample mounts.
- Tape the stack together with Scotch tape and/or Parafilm.
- Make a list of the positions of the dosimeters, standards, and samples. If sample thickness is varying significantly among samples, measure the position of all samples from one end of the package.



Stacked packages (total of 44) of dosimeters/micas, sample mounts/micas, and standard mounts/micas; held together by Parafilm and Scotch tape and ready to be send for irradiation. Photo: S. Falkowski.

Sending the stack for irradiation:

- Fill in the irradiation form. You need the weight of the stack and the chemical composition of the sample (epoxy, mica, apatites). Use the excel-spreadsheet (“Chemical-composition-for-irradiation_CG”) for the estimation of the chemical composition. You need a signature from the responsible person at the “Isotopenlabor & Strahlenschutz” Department (radiation safety; Auf der Morgenstelle 24, 72076 Tübingen, ph: 07071/29-74185) on the form. You send this form together with the mount stack for irradiation to:

FRM II
TU München
Lichtenbergstr. 1
85748 Garching

- and let Herr Heiko Gerstenberg know that you will send a package. The return address will be the “Isotopenlabor & Strahlenschutz” Department (mention this again in the E-mail to Herr Gerstenberg), where you can pick it up.