Pre-Job Briefing for Tape Assembly

The purpose of this project is to assemble dummy silicon pixel modules using double-sided epoxy tape. The complete module assembly procedure is documented on the ANL TWiki at the following address: https://atlaswww.hep.anl.gov/asc/wikidoc/doku.php?id=itk:assembly.

This document will outline what materials, equipment, and training will be required in order to begin work, and roughly what the procedure will entail. Once again, the full procedure is described in the above link.

To begin assembly, one will require access and permission to work in a lab with the following equipment, which may potentially require safety clearance (Fig 1):

- (low-vacuum) vacuum pump
- scissors, blades, and thin silicon detectors, which may count as sharps
- isopropyl alcohol (IPA)
- epoxy tape

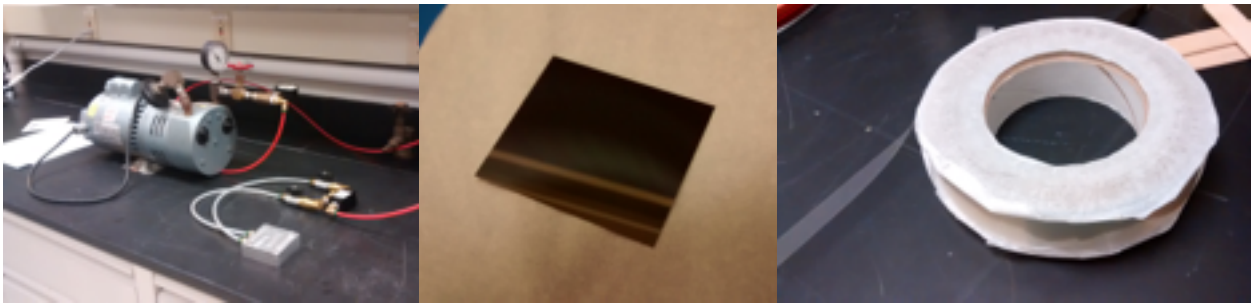

FIG 1: VACUUM PUMP, SILICON DETECTOR, AND EPOXY TAPE.

Assembly of a module will consist of putting together one of the above-mentioned detectors with four front-end chips and one flex cable (Fig 2).

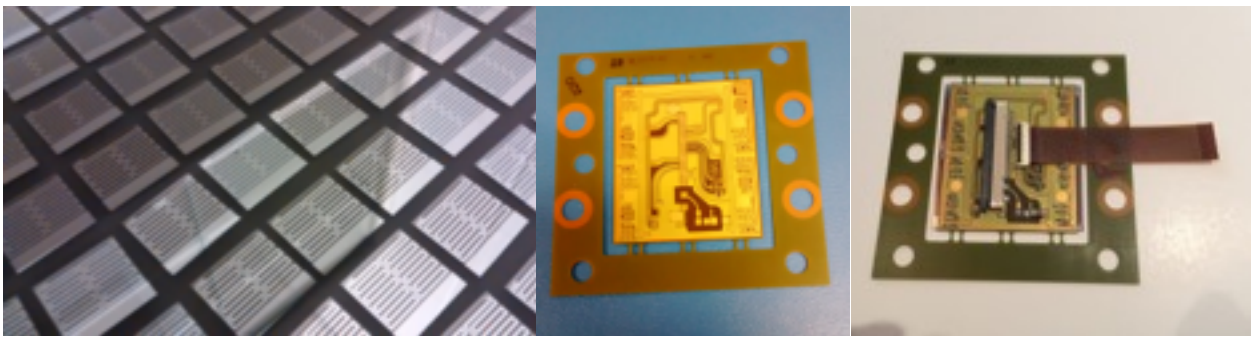

FIG 2: FRONT END CHIPS, FLEX CABLE, AND ASSEMBLED MODULE.

To make a quad-module, four front-end chips will be arranged using a jig and held down via vacuum suction. Double-sided epoxy tape is then cut and applied to one side of the silicon detector, and the detector is positioned and attached to the front-end chips using another jig.

After this, more double-sided epoxy tape is attached to the back of the flex cable, and a third jig is used to position and attach the flex cable to the rest of the assembly. The jigs required are shown in Figure 3.

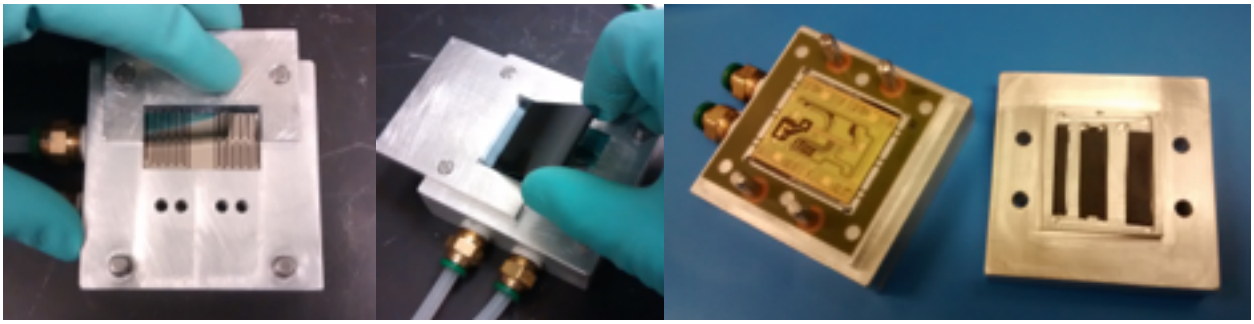

FIG 3: MODULE ASSEMBLY JIGS.

IPA may be used to remove epoxy, if tape ends up being applied poorly. In this case, the user will put on gloves, dip a Kimwipe in IPA, and manually scrub the epoxy off the applied surface.

We are also investigating the use of automatic glue dispension to assemble modules. The user is advised to read the pre-job briefing for this procedure as well.