Resistivity probe (physical properties measurement system)

Resistivity probe

- Sample should be at room temperature
- Remove VSM probe using "unload sample" procedure
- Remove the airlock from VSM probe stick and attach with DCR probe

Sample preparation

- Sample could be a thin bulk slab or a thin film. In both cases cut the sample in appropriate size (max 10X5mm). Be sure to clean or polish the sample. Put a double sided tape on sample holder and gently place the sample on it making sure the tape does not cover the side pins. Now sample is firmly stick with the surface

- Prepare the silver epoxy by mixing equal amounts of two samples provided. Mix for couple of minutes. Then attach the surface of the sample with the contacts provided on the sample platform using the prepared epoxy.

- Reliable contacts can only be made with this epoxy. No other silver paste is useful!

- Let the sample be cured under lamp for two hours. After the contacts are perfect, check the resistance between contacts using volt meter. If everything goes fine, its time to test sample on Break out box

Bench test on break out box

- Break out box has 19 terminals which are connected to 19 pin connectors on both sides. Attach the sample platform with break out box and check the connectivity of contacts with each terminal of break out box.
- Terminals of break out box are labeled and details are given in log book KAPITZA 1. On making sure which sample lead is connected to which terminal of break out box, one can attach the current leads and voltage leads to the terminals of break out box. Make sure to measure resistance between current and voltage terminals as well.
- The other side of the break out box is exactly the same as the testing platform side.

(A nineteen pin BNC cable is used to attach that side to the top of the resistivity probe with a 19 pin female connector and down to the resistivity probe all the way to the sample platform).

- You can also check the IV characteristics of the sample attached with break out box using DCR option in measurement panel of labview program and setting a current value as independent variable

Sample platform with resistivity probe

- After testing everything, attach sample with resistivity probe, and load the sample in exactly the same way as one would do for VSM.
- After the sample loading attach 19 pin wire from break out box to the top of the DCR probe.
- It is important to use the temperature sensor and heater already installed in the sample platform so a six pin connector will be used from the top of the probe to the back of the temperature controller. A cable labeled as input B is designated for this purpose. Attach cable B to the input B of the controller by removing the input cable used for VSM sample temperature measurement.

- Sequence editing is beautifully explained in the manual. Also few sequences are saved in the lab computer.
- Use minimum amount of current while cooling/warming up the sample in constant current mode.
-