



I QC Status in Louvain



Presented by Samia Assouak

- Probe station set-up
- Measurements set-up: experimental conditions and results
- Open questions

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I QC meeting, Karlsruhe, 2002 March 14



Probe station



Karl Süss PA-200

8-inch

Cooled chuck

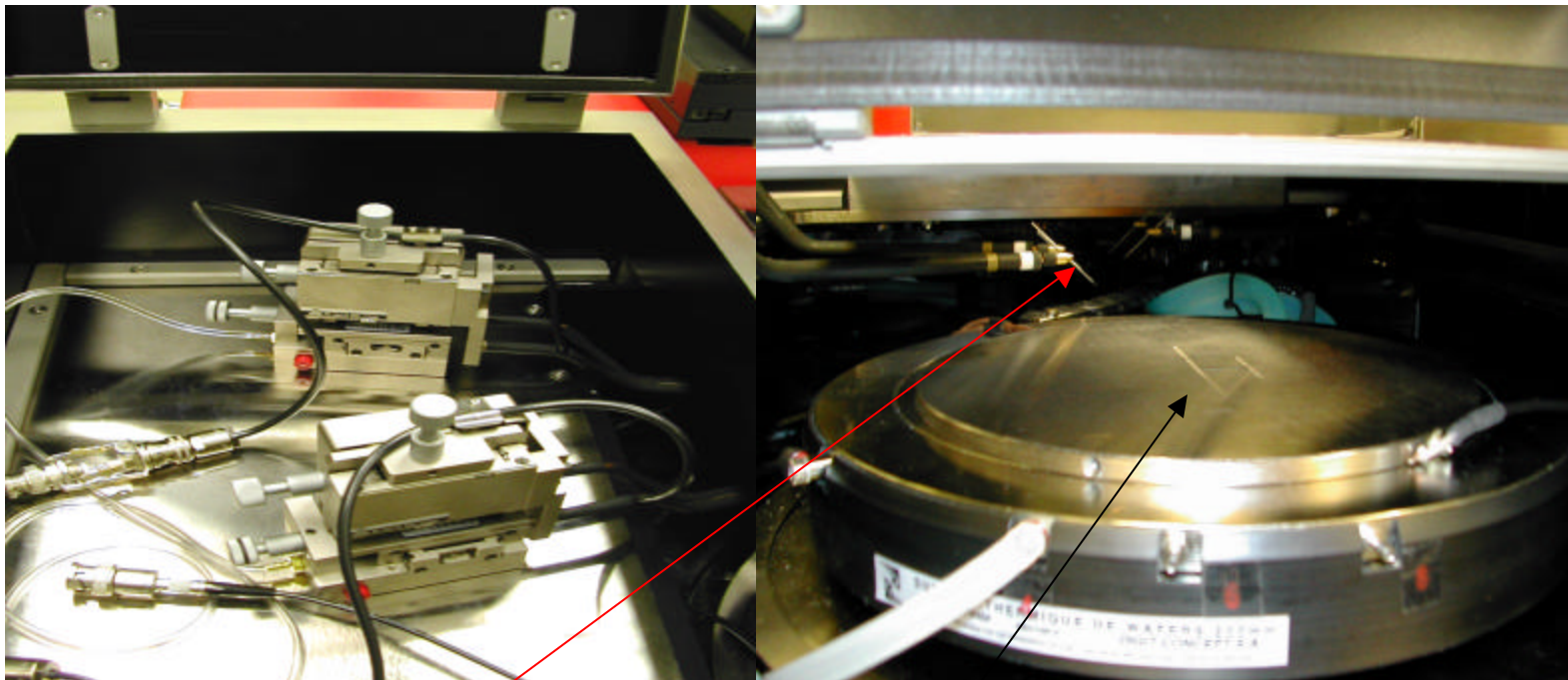
Operating conditions

RH ~ 2%

Temp ~ 20°C



Change it to -10°C?



4 Needle supports

Chuck adapter
(common for all
sensor designs)

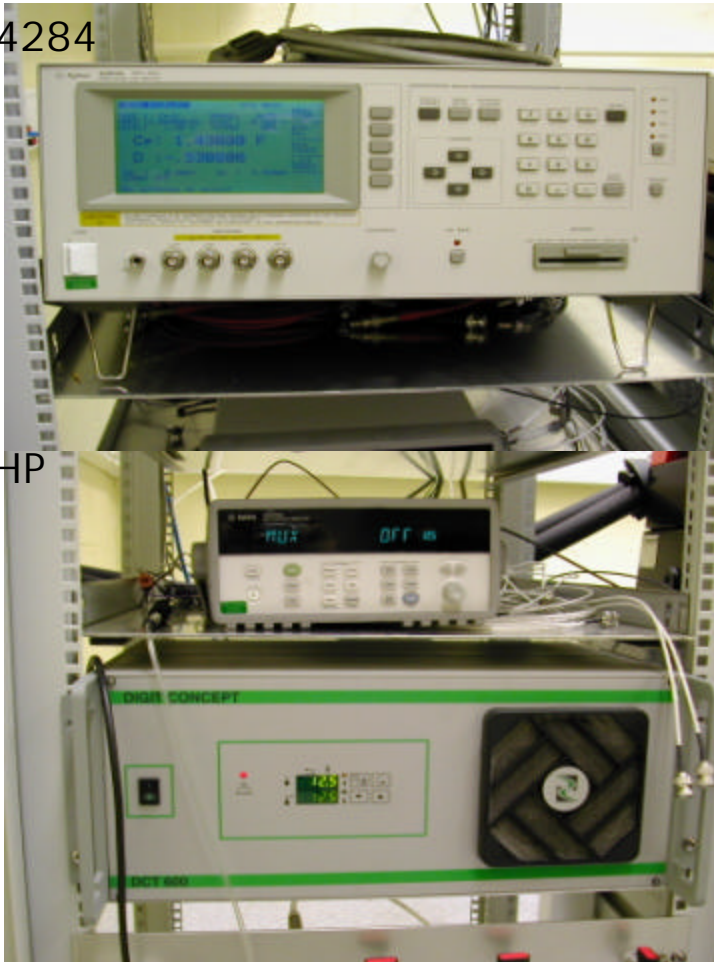
Grooves for
the vacuum



Electrical measurements

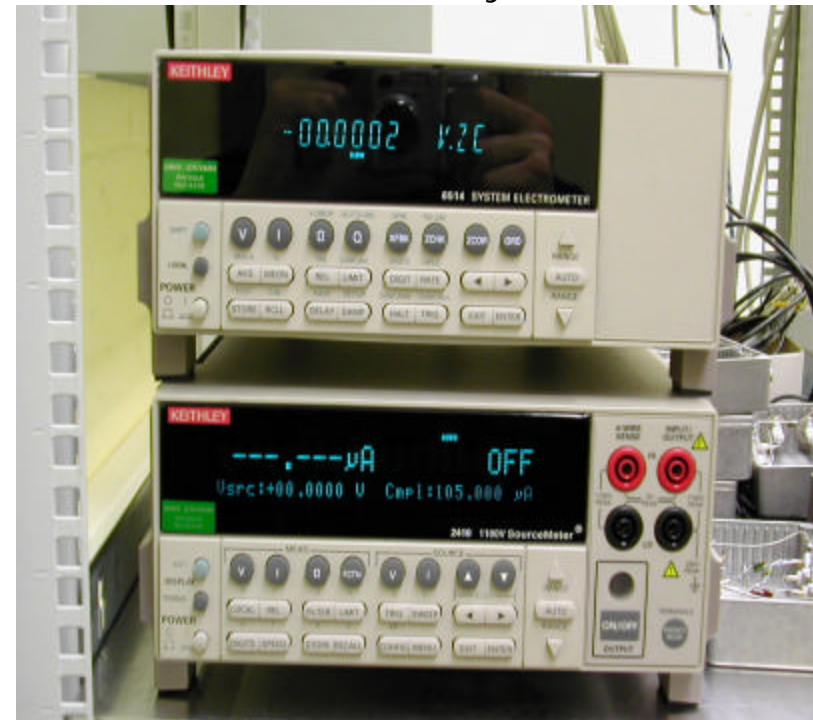


LCR HP 4284



Matrix HP
34970

Electrometer Keithley 6514



Source-meter Keithley 2410

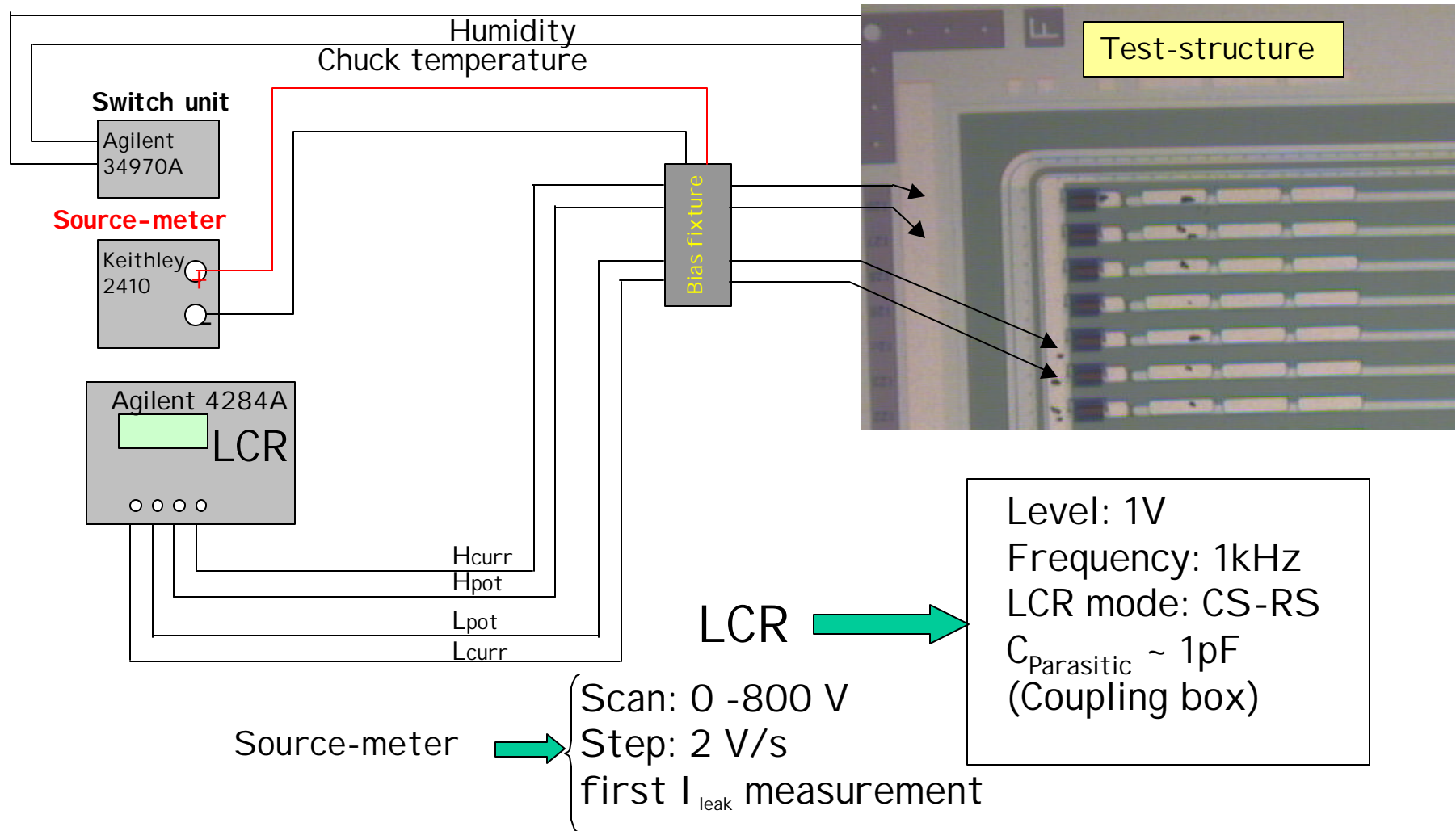
All are controlled via GPI B
bus with Labview software



C_V measurements

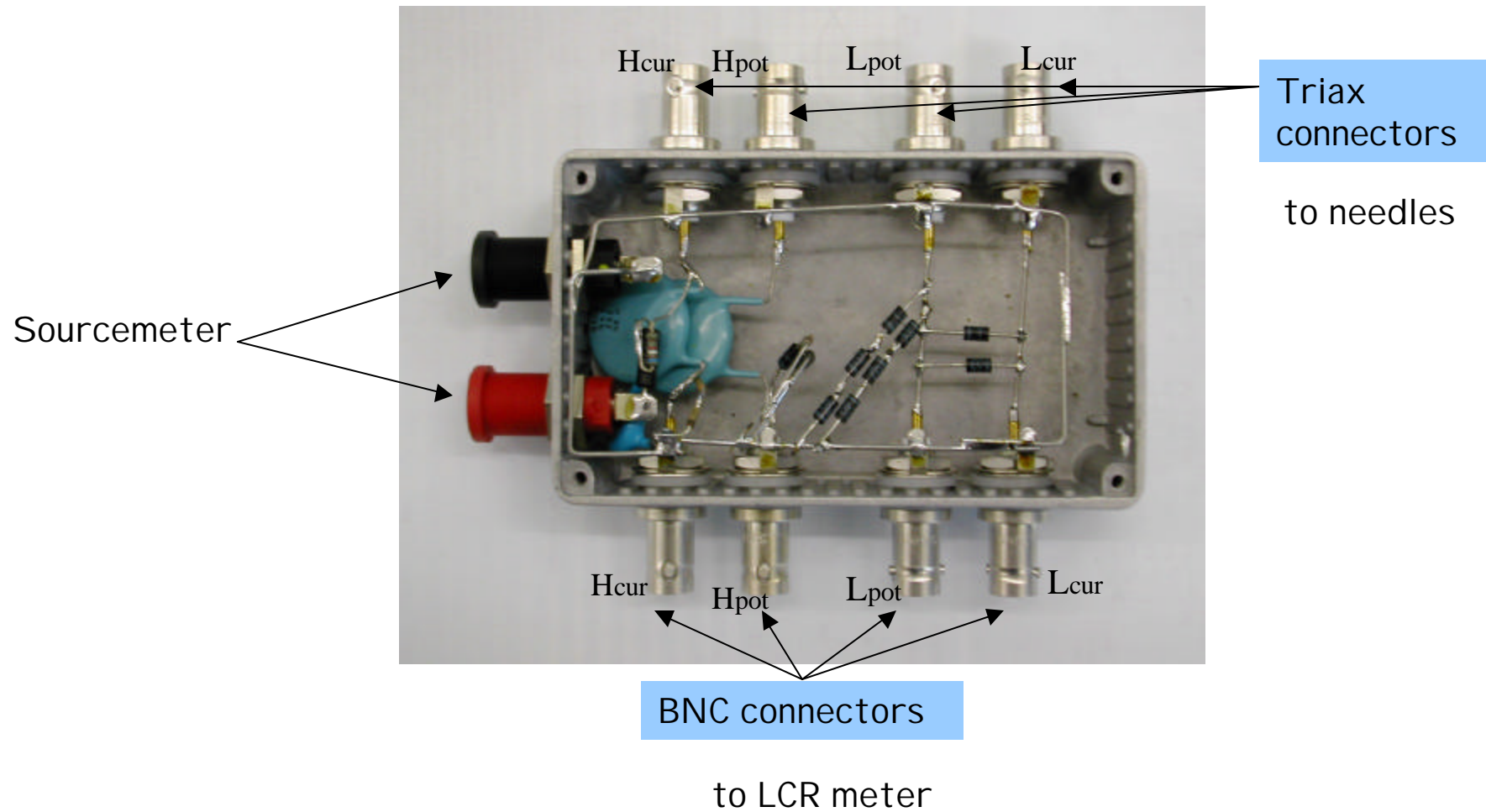


Setup and Experimental conditions





Bias Fixture for C-V

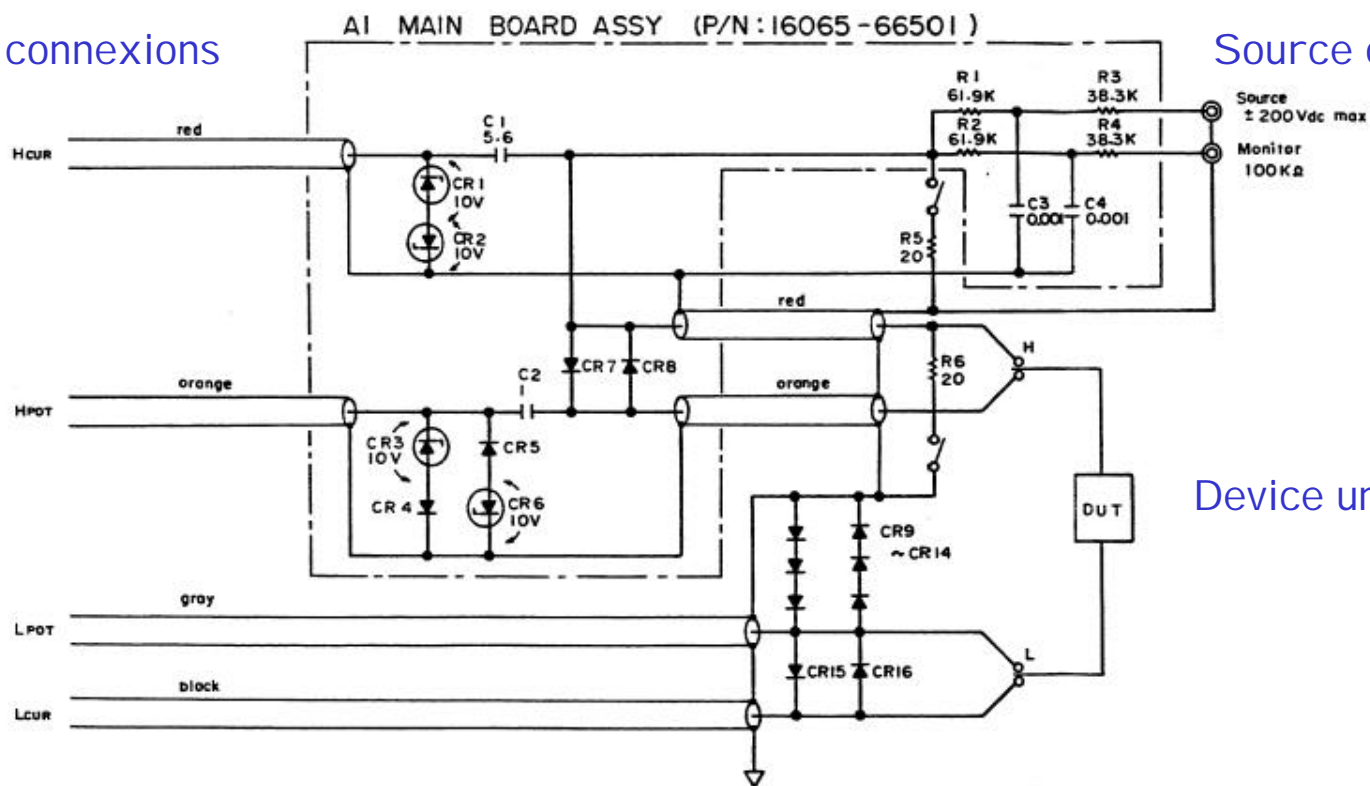




Biasing scheme



LCR connexions



Source connexion

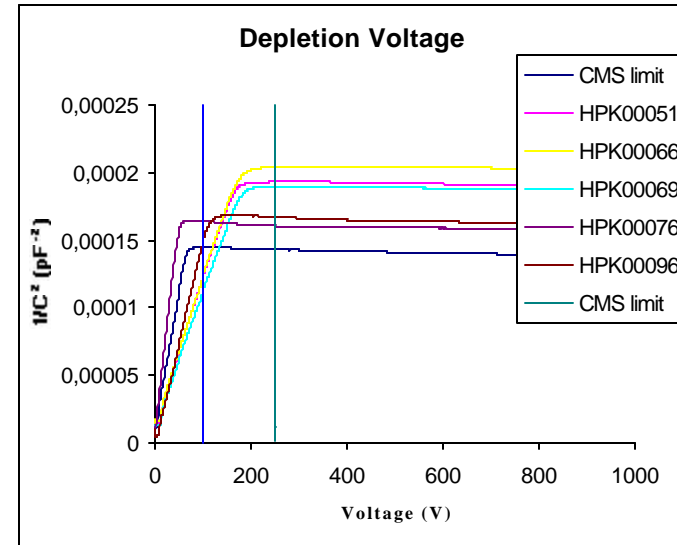
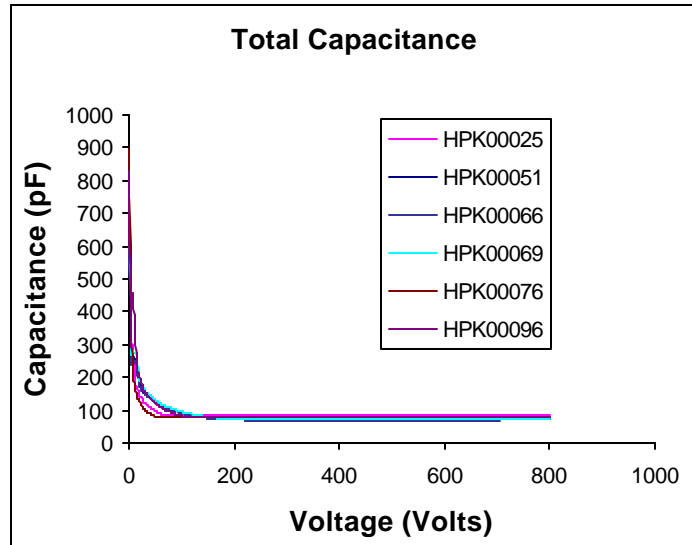
Device under test



C_V measurements



Results



PQC limits: $100 < V_{dep} < 250$ (Before irradiation)

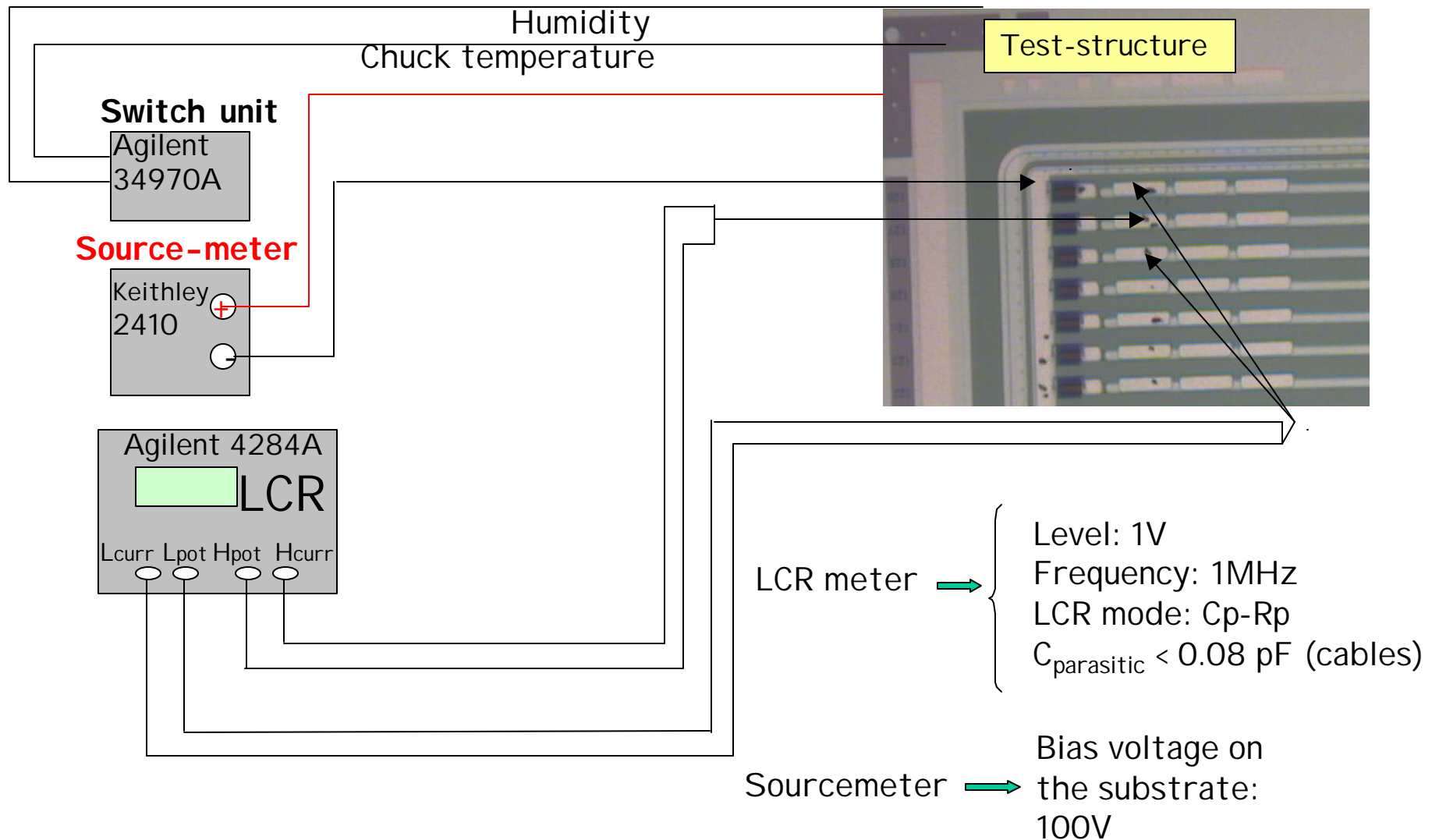
IQC limits: $V_{dep} < 250$ for structures and $V_{dep} < 300V$ for full sensors.
(after irradiation and annealing)



Question: do we have to irradiate all structures or eliminate already on the basis of « PQC » V_{dep} criterion ?

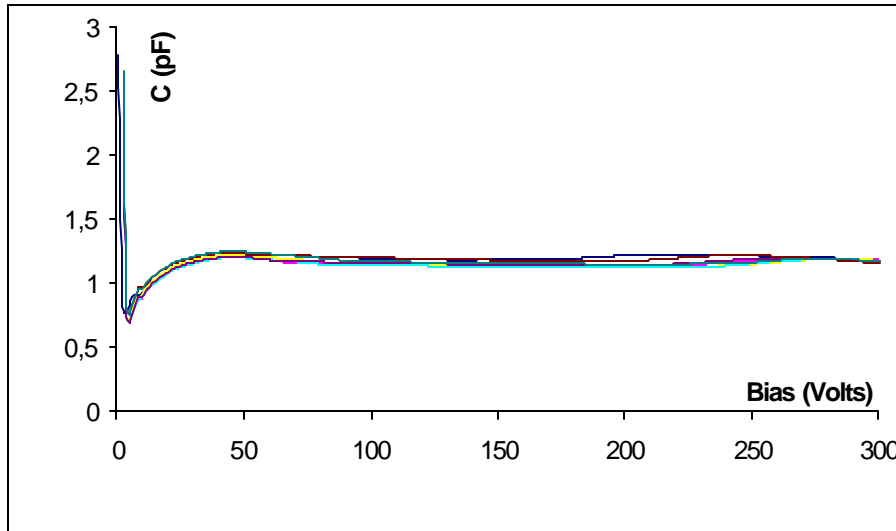


Interstrip Capacitance setup

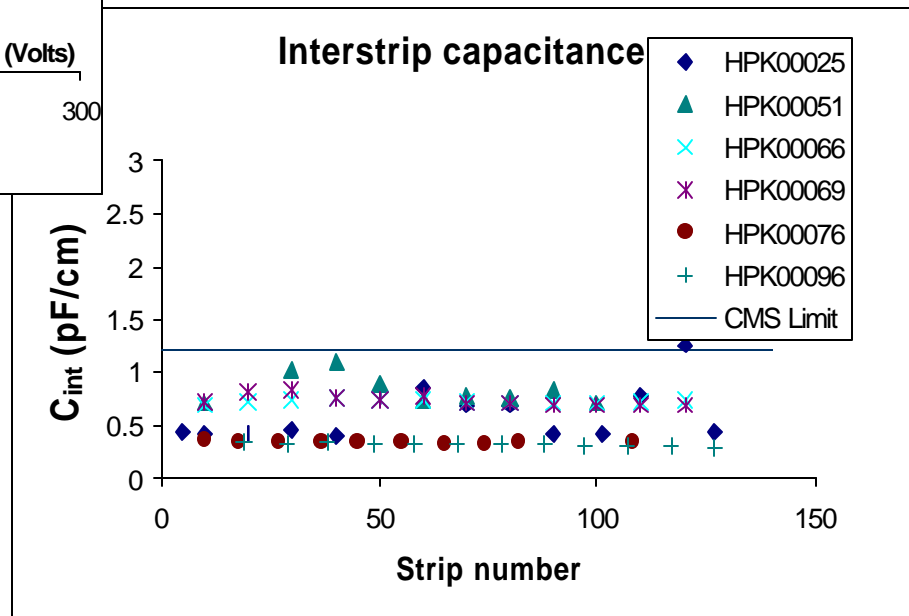




Interstrip Capacitance

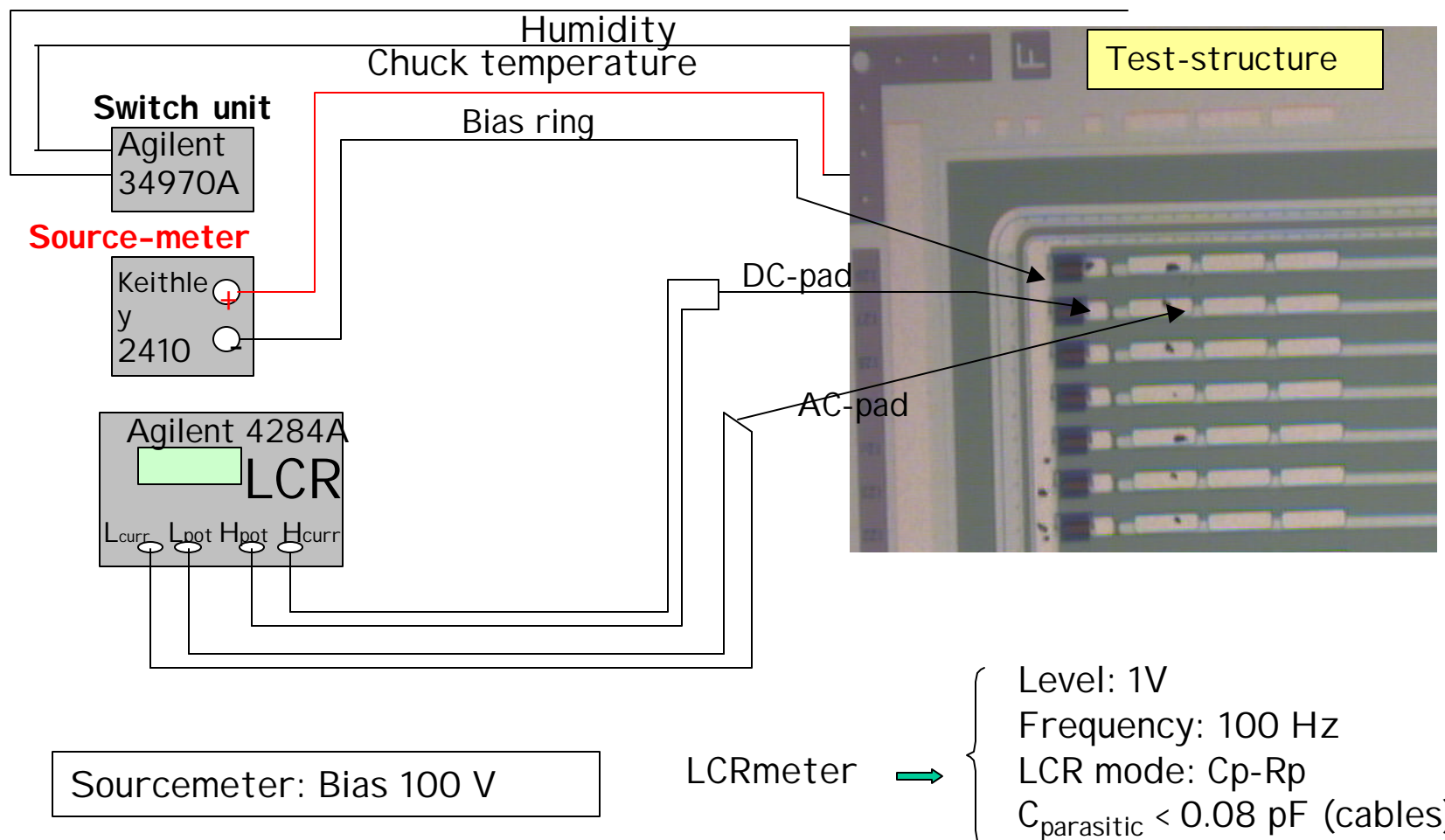


C_{int} stabilized for bias > 50V



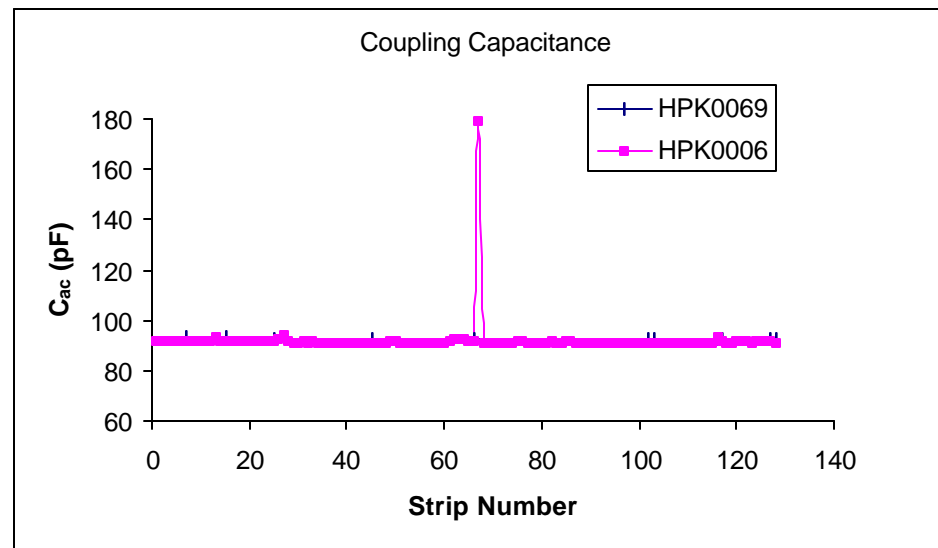


Coupling Capacitance Setup





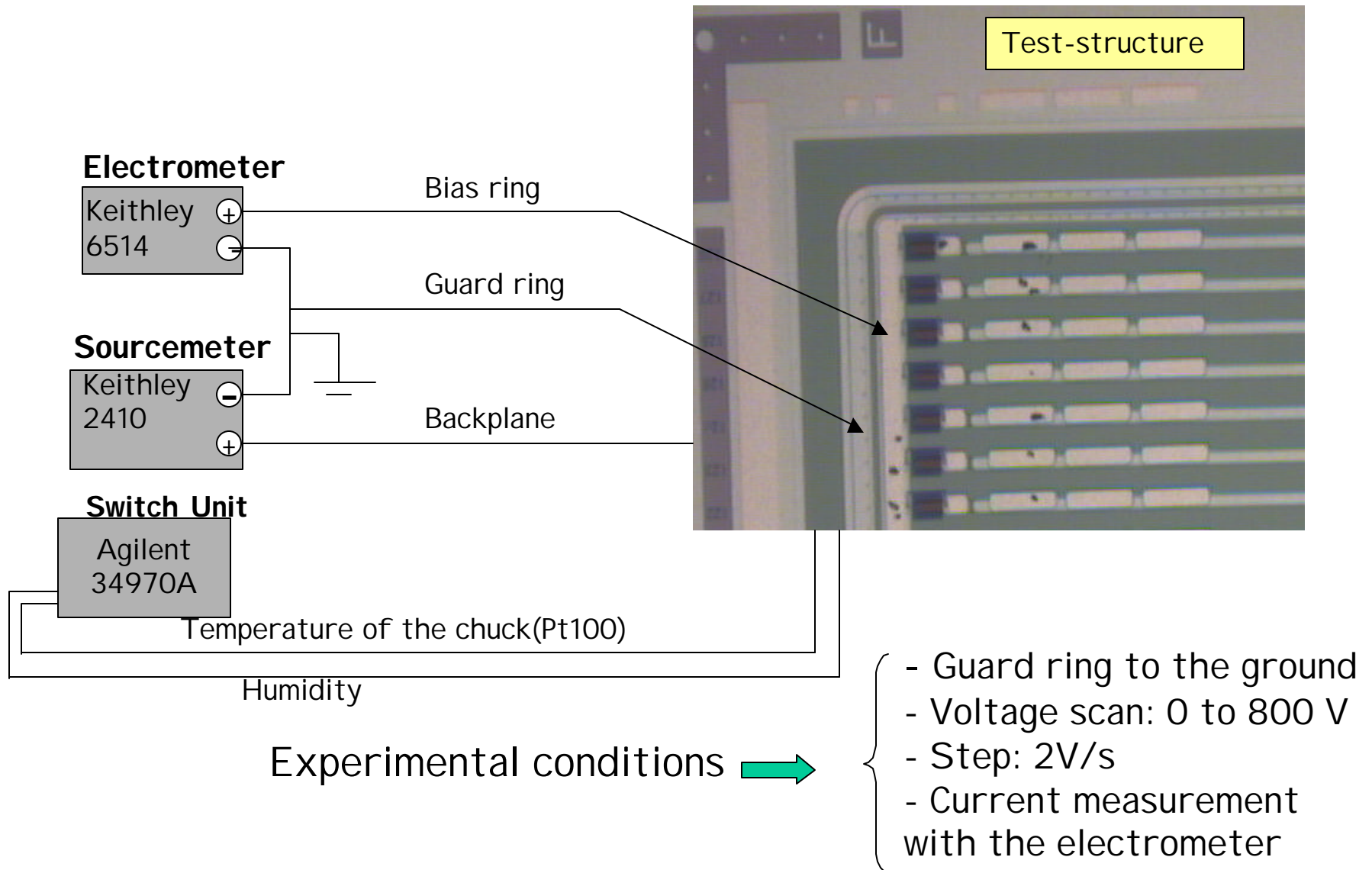
Coupling Capacitance



C_{ac} average ~ 92 pF



I_V Measurement Setup

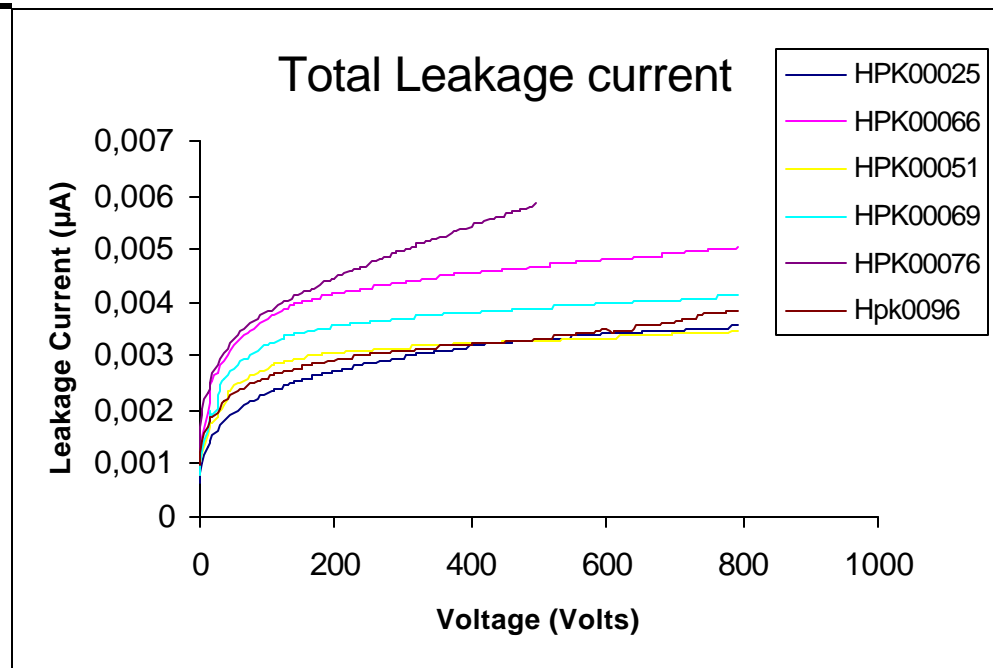




I_V Measurements



Results:

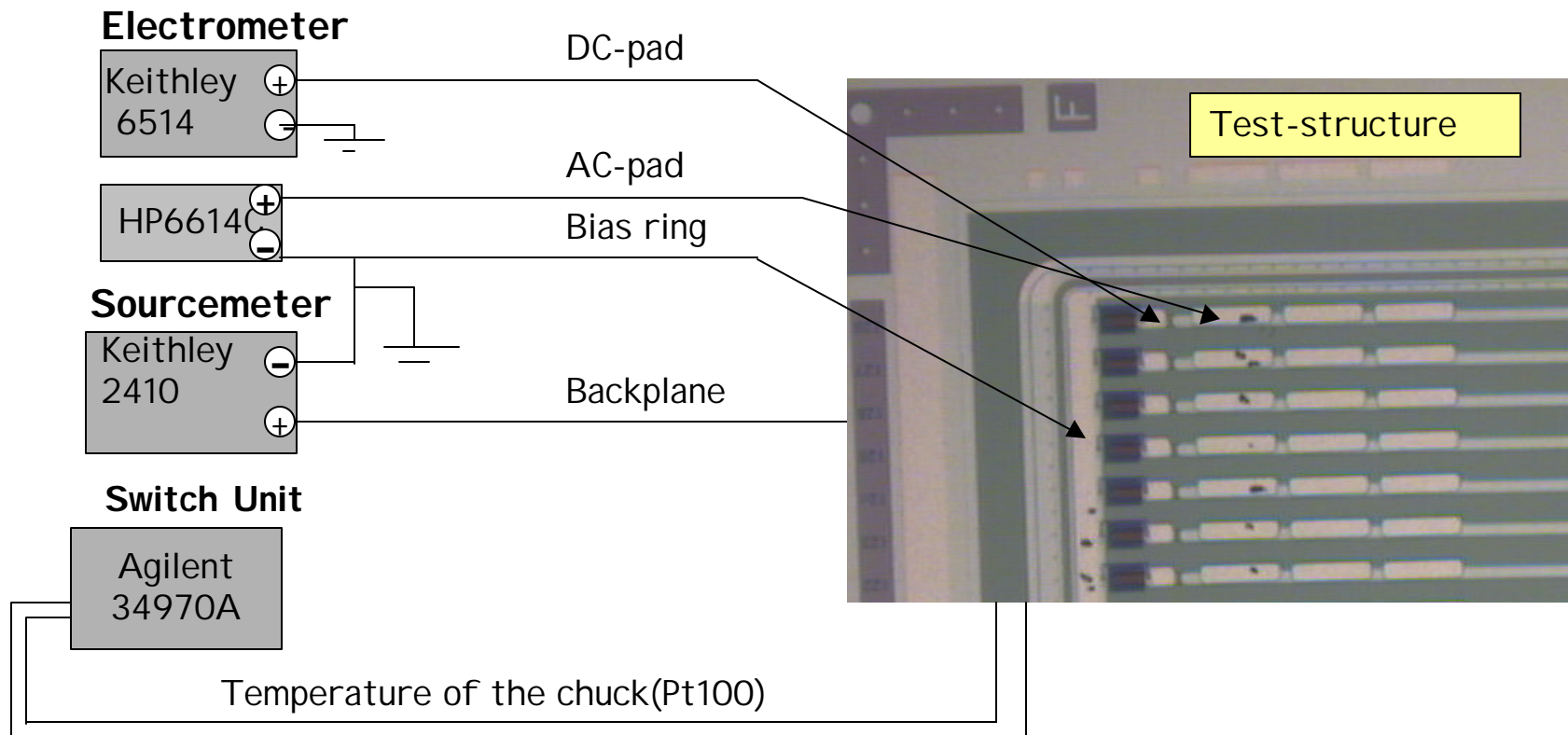




I_{diel} measurement setup

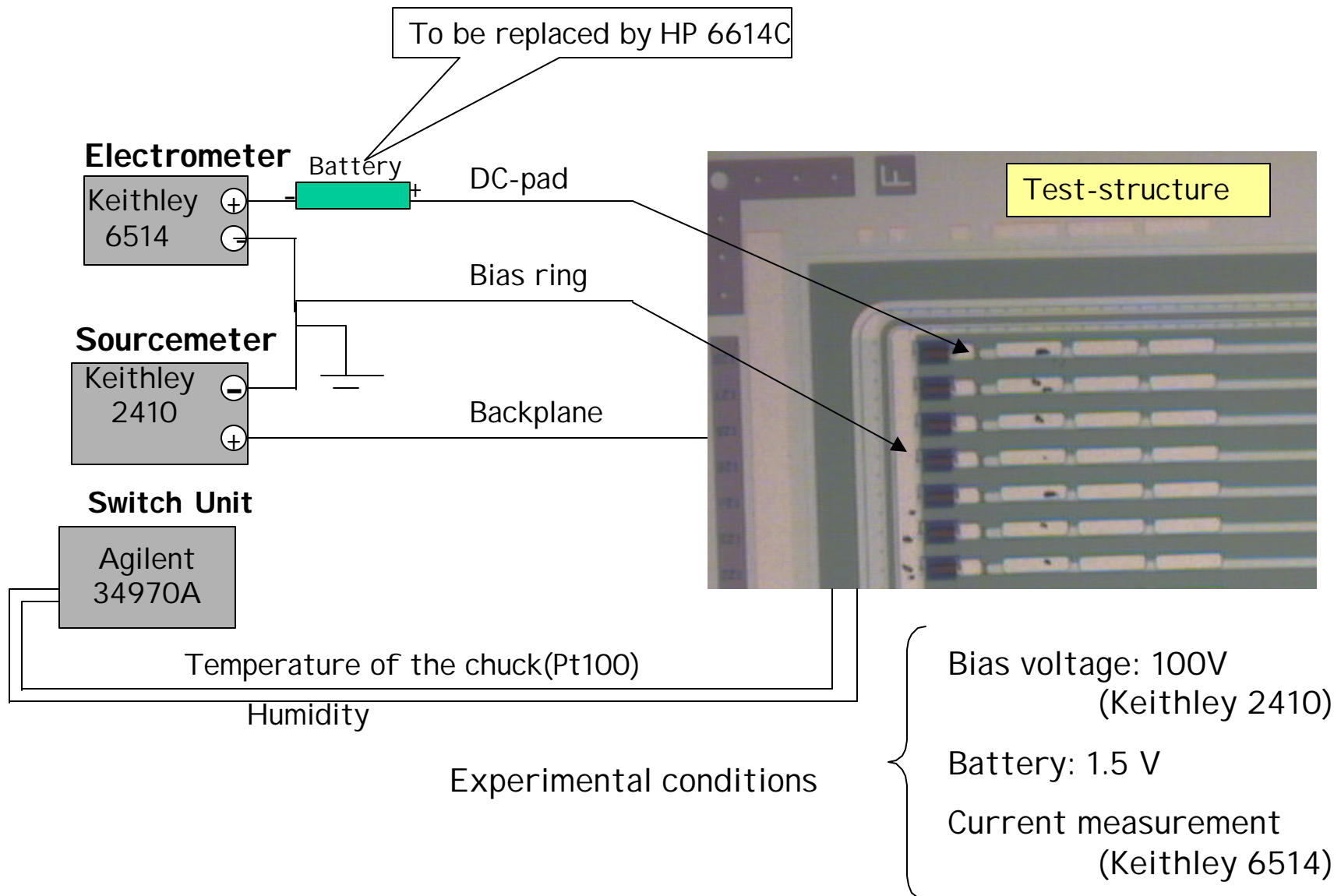


To be measured (HP6614C power supply ordered)





R_{poly} measurement setup

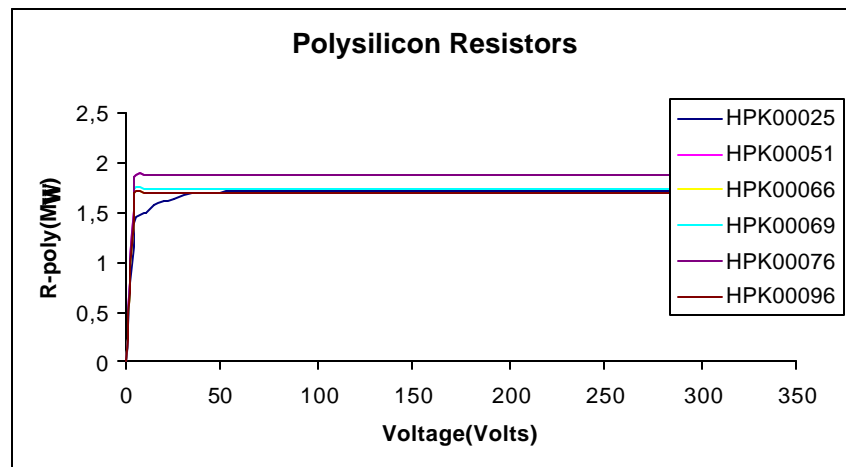




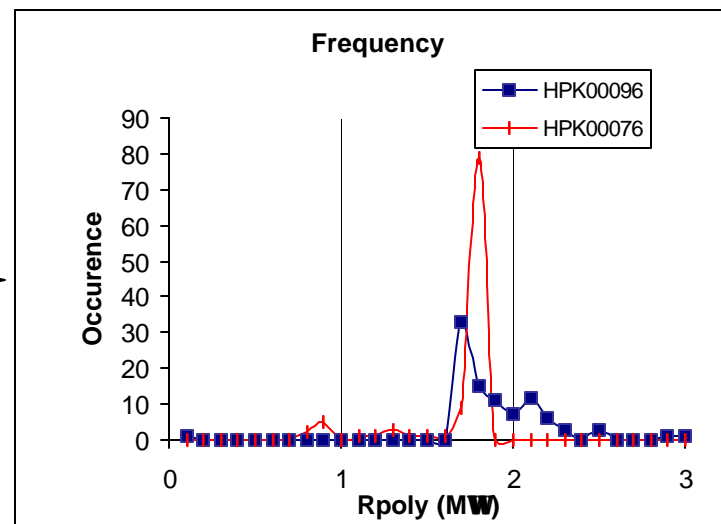
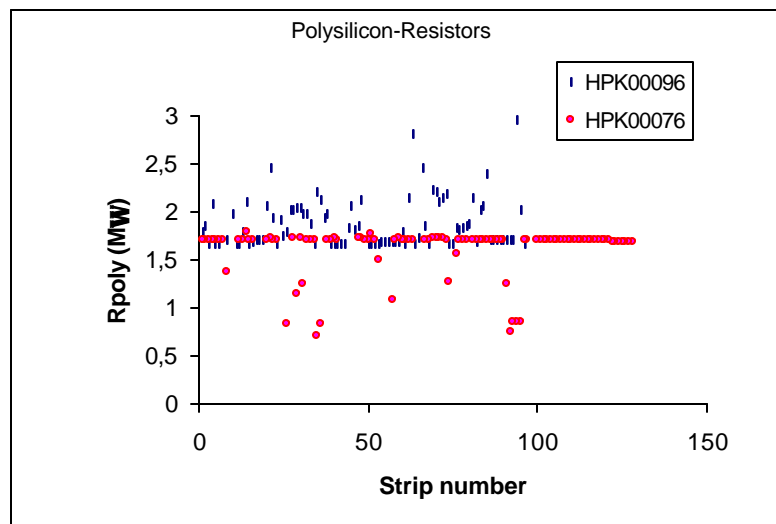
R_{poly} measurements



Results



R_{poly} stabilized
for bias > 50V

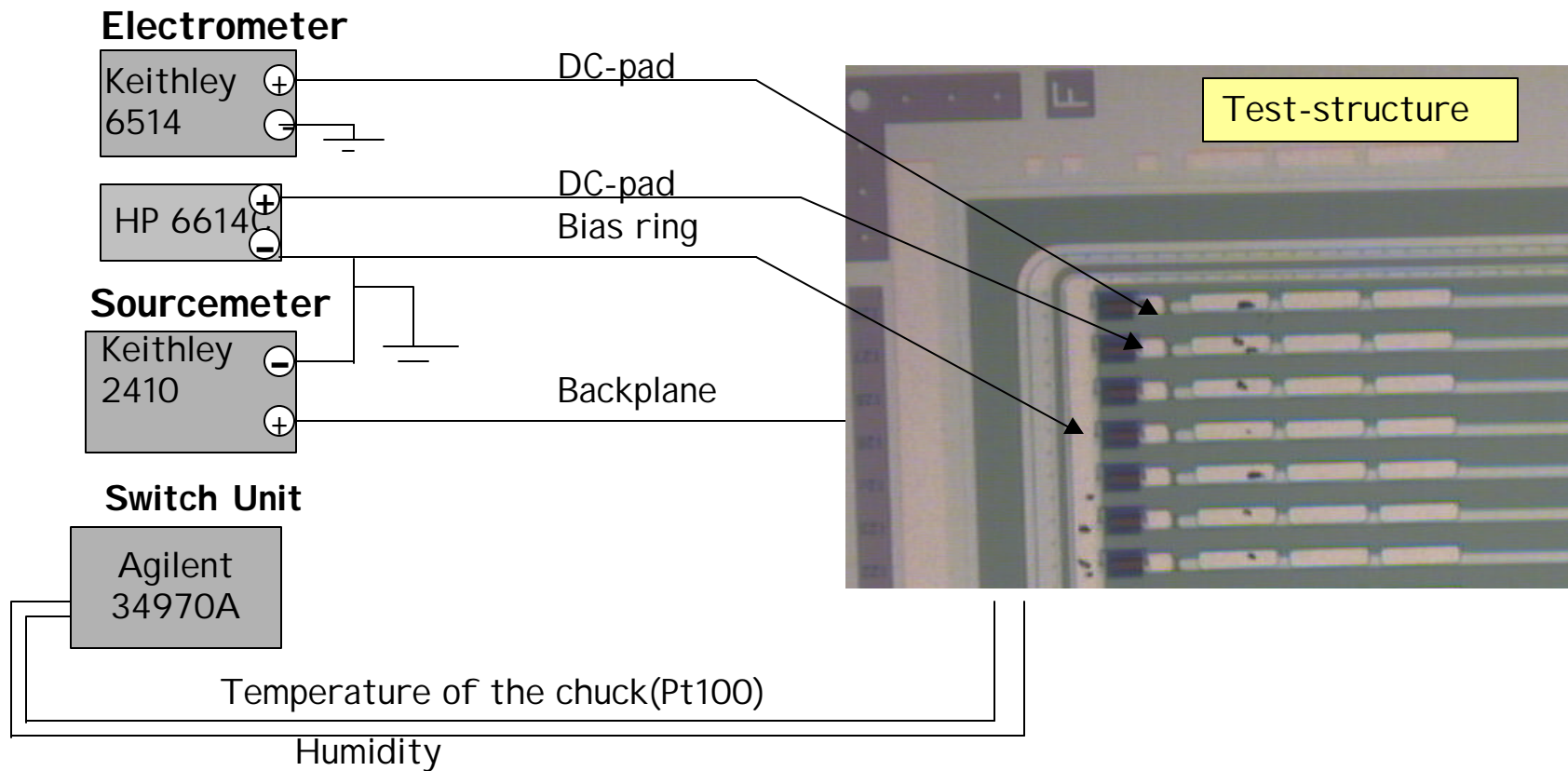




$R_{\text{interstrip}}$ measurement setup



To be measured in the future (HP6614C ordered)





Open questions



- 1) Temperature of the chuck 20°C \longrightarrow -10°C ?
- 2) Bias Voltage 100 V \longrightarrow 250V ?
- 3) LCR meter mode for CV measurement Cs-Rs/ Cp-Rp ?
- 4) Interstrip capacitance measurements on AC pads \longrightarrow DC pads ?
- 5) I V measurements with connecting Guard ring ?
- 6) Measurements on the mini-sensor **only** (for structures) ?
- 7) Waiting for comparative measurements of a given structure between Karlsruhe and Louvain (under way).