

NORDIC DETECTOR COURSE – Reports to be sent to Helsinki

Clean Room CV-IV report (due already during the course):

- Give a brief description of the setup and measurements.
- Plot capacitance and leakage current in function of applied bias voltage for all samples.
- Determine depletion voltage for all samples.
- Compare the leakage current at a fixed voltage (e.g. 50 V) for all samples in one plot.
- Describe the changes in behaviour of the irradiated detector.
- Why it is important to measure leakage current?
- What kind of information about the detector can be obtained from the CV data? From IV data?
- Which polarity of bias voltage do you apply and why?

Gas detector report:

- Describe the test setup and the procedure to construct the detector.
- What gas did you use? Why?
- How did you calibrate the electronics?
- What equipment did you use for it?
- Establish relationship between collected charge Q and calibration pulse height (in Volts).
Hint: you can use the preamplifier input capacitance $C = 1$ pF.
- Plot the **collected charge vs. MCA channel**.
- Fit a straight line in the plot to obtain a calibration curve.
- Show the spectra of the two radiation sources Fe55 (and Am241). Explain the radiation source.
- At what voltage, using which gain did you first see the signal (for both radiation sources)?
- At which voltage did you stop measuring and why?
- Did you use collimator with either source?
- Calculate the collected charge using the calibration results.
- Plot the **charge multiplication vs. Voltage** and **Resolution vs. Voltage**, both sources in same graph, if possible.
- At which point does the detector reach the proportional region?
- What software did you use in the data analysis?
- Did you use any special functions in the software for fitting?
- Remember to do **error analysis!**