UNIVERSITY
OF OSLO

DLTS Calibration Study – RD50

Tel Aviv; *Arie Ruzin*

St. Petersburg; *Elena Verbiskaya*

Oslo; *Eduoard Monakhov*

Hamburg; *Jörg Stahl*

Florence; *Mara Bruzzi*

Canberra; *Bengt Svensson*

Samples

- Si p^+n-diodes (detectors) – W311 (by courtesy of M. Moll)
  - Processed by ST Microelectronics
  - <100> orientation, ~1 kΩ resistivity
  - 5x5 mm^2 active area
  - Oxygenated 1200 °C, 30 h
  - CV: $N_d=(4.5\pm0.5)x10^{12}$ cm^{-3} for 6 randomly selected diodes
- 15 MeV e^-, $3x10^{12}$ cm^{-2}, RT (KTH, Stockholm)
- Each participant; 1 unirradiated & 1 irradiated diode

Instructions

- Reverse bias: 10 V, Pulse voltage: 10 V, Pulse width: 10 ms, Guard ring: not necessary/used

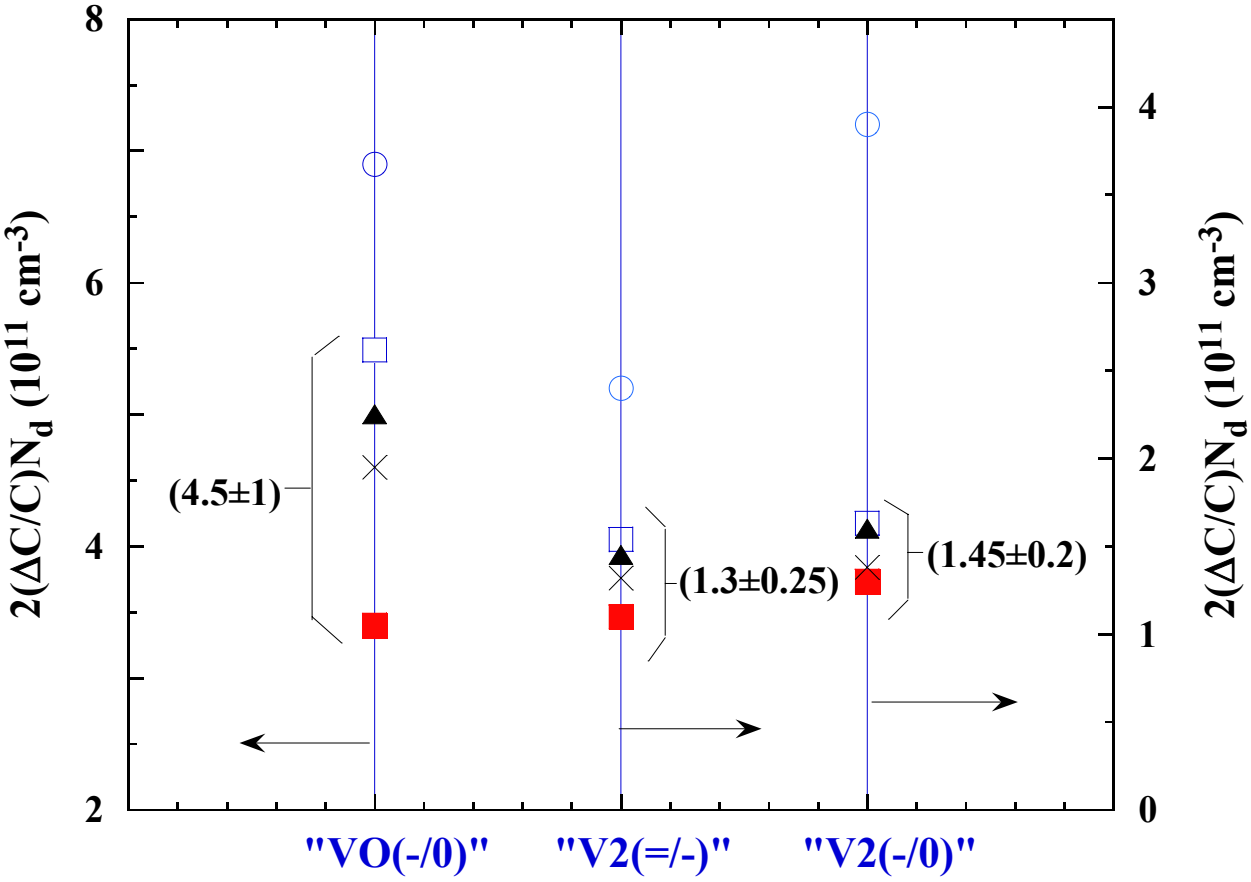
- Three major peaks; "VO(-/0)", "V_2(=/-)" and "V_2(-/0)"
  - ***Determine the positions of the peaks !***
  - ***Determine $2(\Delta C/C)N_d$ ($=N_T$), without λ–correction, for the three peaks !***

Results – Peak Positions

- "VO(-/0): 0.17±0.01 eV
- "V_2(=/-)": 0.235±0.015 eV
- "V_2(-/0)": 0.415±0.015 eV

(Tel Aviv had problems with their DC voltage supply)

Results – Concentrations



Conclusions

- The agreement on peak positions is reasonable
- Further exchange of samples will be performed in order to improve the agreement on trap concentrations