



Workshop on Defect Analysis in Radiation Damaged Silicon Detectors

Hamburg, 23./24. August 2006

Motivation for this Workshop



- Idea for this workshop was triggered by report on Photo-Luminescence results given by Gordon Davies in RD50 meeting November 2005
- Results on Defect analysis so far mainly based on DLTS, PITS and TSC, other methods only used sporadically
- Coordinated effort necessary
- Invite specialist for all relevant techniques

Topics Covered



- Survey of available tools for defect analysis
DLTS, TSC, PL, IR, PITS, other methods..
- Overview on present knowledge of most relevant defects;
specific issues still needing clarification; the role of
impurities O, C and H
- Possibilities for a coordinated project on most important
topics making use of all available techniques

Participants



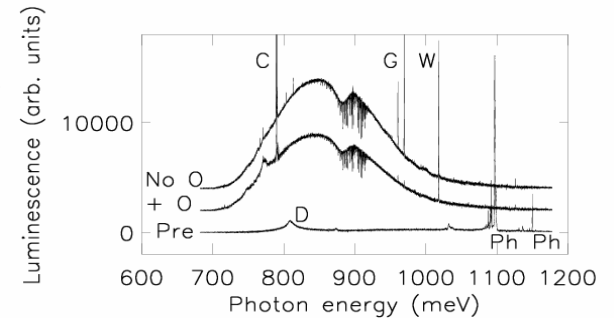
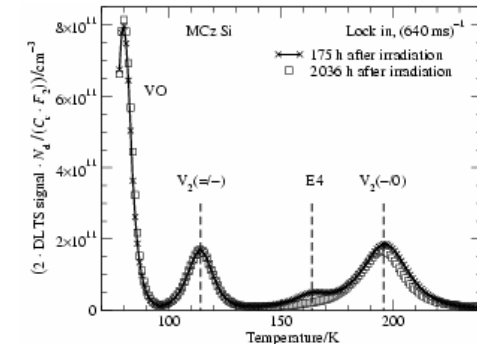
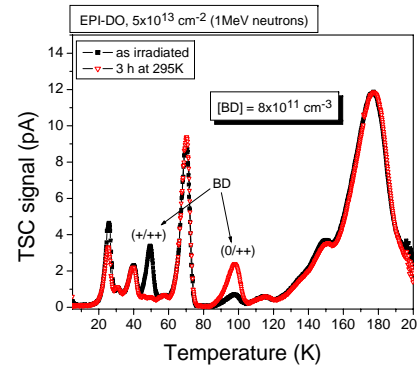
Gordon Davies (King's College London)
Eckhart Fretwurst (University of Hamburg)
Eugenijus Gaubas (University of Vilnius)
Frank Hönniger (University of Hamburg)
Pawel Kaminsky (ITME Warsaw)
Gregor Kramberger (University of Ljubljana)
Gunnar Lindström (University of Hamburg)
Leonid Makarenko (University of Minsk)
David Menichelli (INFN Florence and University of Florence)
Leonid Murin (Academy of Science, Minsk and University of Oslo)
Ioana Pintilie (NIMP - Bucharest and University of Hamburg)
Bengt Svensson (University of Oslo)
Juozas Vaitkus (University of Vilnius)
Quingyu Wei (MPI-Semiconductor Laboratory, Munich)

Talks

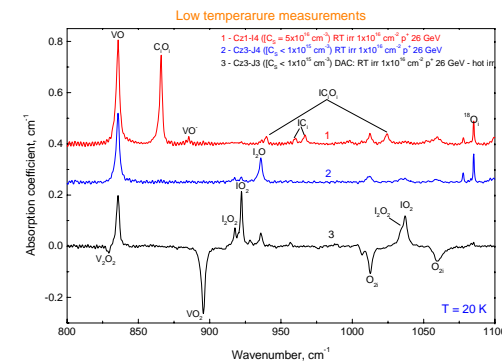
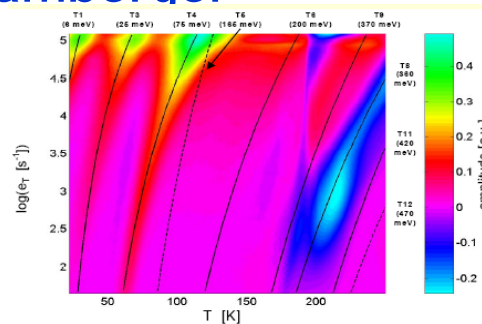
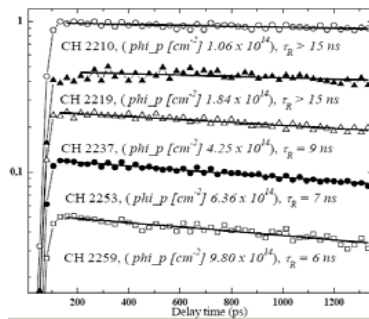
to be found in RD50 web page



- Techniques:
 - DLTS: E. Fretwurst, D. Menichelli, L. Mararenko
 - TSC: I. Pintilie
 - PL: G. Davies
 - IR: L. Murin
 - PITS: P. Kaminsky
 - Non-traditional methods: J. Vaitkus and E. Gaubas



- Defect overview: B. Svensson
- S-LHS challenge: G. Lindström
- Charge collection: G. Kramberger



Definition of Coordinated Project



- Most important issue for S-LHC: charge trapping largely independent on damage by different hadron types and not sensitive on specific silicon material
- Two types of material (MCz- and FZ-silicon):
Irradiations only at TRIGA-reactor Ljubljana (main reason: year round availability on short term notice)
- Start with MCz-material:
Fluence range: $3 \cdot 10^{11}$ - $3 \cdot 10^{16}$ n/cm²
Samples send to Ljubljana
- Methods to be used for investigation:
DLTS: Oslo, Hamburg, Florence, Minsk
TSC: Hamburg
PL: Imperial College, ITME
IR: Oslo
PITS ITME
PC, life time: Vilnius
EPR: ITME, NIMP



Next Meeting foreseen

Late April 2007