



Discussion Session on Defect and Material Characterization

Convener: Mara Bruzzi (Florence University)

Discussion: Michael Moll

Topics for discussion:

- **Project on p-type sensors (Anna Macchiolo & Mara Bruzzi)**
 - Lower rho p-type would be good for measurements (difficult to get in low quantity!)
- **Comprehensive list of defects (for simulation group)?**
 - ...some work in Hamburg? Alexandra?
- **Future of WODEAN?**
- **Comparison of various methods?**
 - Experiment: Lifetime; Trapping; Leakage Current; DLTS; TSC; PITS; TCT;
 - Simulations: Predict what would be expected for various methods using same defect parameters.

- Your input please 😊
 - Subject
 - Another subject

- **mm notes for discussion taken during session**

- **HRPITS**

- Impressive resolution on extraction of emission time constants.
- Statistics: Compare samples irradiated with same fluence.
- Annealing studies to be compared to conventional DLTS/TSC annealing data?
- Are measurements on diodes and the used samples (2 ohmic contacts) really comparable?

- **Electron irradiation**

- NIEL violation – impact?
- ..could some samples be measured at ITME?
- Further studies?

- **p-type samples (incl. Si with Ge)**

- Status of silicon with impurities C, Ge,
- Si with Ge: More defects created than without Ge?
- Si with N: Status at ITME?
 - Erik: There have been previous works on N-doped silicon; it was not possible to properly oxidize the material
- Enhanced annealing by carrier injection/recombination

- **Lifetime measurements**

- Can we compare/understand lifetime measurements with/in view of other defect measurements on diodes

- **mm notes for discussion taken during session**
 - **Hall measurements**
 - Measurements on SiGe (5%) → should we produce sensors out of such material?
 - Hall mobility and Magnetoresistance – How to relate to other measurements?
 - **Detrapping measurements**
 - Similar to PITS? Exchange of transient analyses algorithms?