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SEVENTH FRAMEWORK PROGRAMME

SEAL PROJECT – BULLETIN

SEAL SP11 - NFMICROPCD NEAR FIELD MICROWAVE PHOTOCONDUCTIVE DECAY FOR LIFETIME MEASUREMENT

AT A GLANCE

Integration of near field and photo-decay measurement methods

Assessment of lifetime-measurements with 25µm lateral resolution on product wafers

SEAL SP11 – PARTNERS

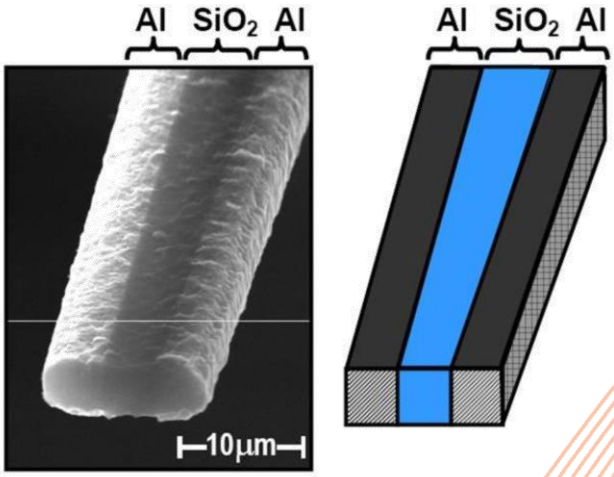
Semilab

MEMC Electronic. Materials SpA, a SunEdison Company

Fraunhofer IISB

Advances in NFmicroPCD

- The NeoMetriK low-k characterization tool was upgraded to enable minority carrier lifetime measurements.
- Microwave probe, electronic components and software was modified to achieve this goal.
- Optimization of measurement methods and recipes was carried out.
- The tool was tested and proven on bulk silicon samples with different surface passivation.
- A test matrix of wafers with low-level of heavy metal contaminants was selected for evaluation.
- Evaluation results show that the method is sensitive to heavy metal contamination in p over p++ epitaxial layers which is of high industrial interest.



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SEAL PROJECT MANAGEMENT
Prof. Lothar Pfitzner
Fraunhofer IISB
Schottkystraße 10
D–91058 Erlangen
T: +49(0)9131/761-110
I: www.iisb.fraunhofer.de

Project Results

Semilab has wide experience in microwave photo-conductive decay lifetime measurements, and also supplies a tool originally designed for low-k dielectric constant measurement using near-field microwave technology. In this feasibility evaluation, the possible integration of the two methods have been examined and tested successfully. The resulting equipment is the first tool capable of performing lifetime-related measurements with a 25µm lateral resolution in a non-contact way, thus measurements on test vehicles of product wafers are also possible. Also, measurement is possible on epitaxial layers over highly doped layers where conventional methods are less sensitive.

SP11 – CONTACT
Miklos Tallian
Semilab
I: www.semilab.com

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