



## SEAL SP14 – NAREA NANOMETER RANGE ELEMENT ANALYSIS WITH A LARGE ANGULAR EDS DETECTOR

### AT A GLANCE

Assessment of a superior detector for energy dispersive x-ray spectroscopy with high spatial resolution

Qualification of very fast film thickness and chemical composition measurements

### SEAL SP14 – PARTNERS

Oxford Instruments  
Fraunhofer IISB  
Infineon

## Advances in NaREA

- Novel large angular EDS detector concept offers a multiple times larger signal yield with respect to the emitted x-ray counts, such that the EDS analysis with very low energy lines is now possible in conventional timeframes with sufficient statistics.
- Conventional EDS analysis using the higher energy lines can be performed ten times faster than usually possible.
- No alternative non-destructive methods exists, that can deliver the same combination of data needed in such a high spatial resolution (nanometer-scale) in one measurement run
- Detector also provides a conservative analysis for organic coatings due to the low possible acceleration voltages and low beam currents
- Sensitivity for light elements is very good
- A new detector with again larger solid angle than the assessed one is now available which should be capable of even outperform the attained excellent results of the project.
- It is possible to carry out many different tasks in the frame of processing of semiconductor layer structures, in FEOL and BEOL applications.



# Semiconductor Equipment Assessment Leveraging Innovation



SEAL PROJECT – BULLETIN

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### Project Results

The fast and routine analysis of semiconductor layer structures with high spatial, respectively depth resolution, enabling the device manufacturers of fast developments and secure recognition of deleterious locations, is a strong demand from semiconductor industry. Fast turn around of results and easy to use analytical tools are required. This project addresses the assessment of a superior detector for energy dispersive x-ray analysis with high spatial resolution, which can deliver film thickness data as well as information about chemical compositions in a combined measurement. Count rates are thereby eight to ten times higher than expected from conventional tools and can bring a great advantage of fast and easy analysis to the end-user.

### SEAL PROJECT MANAGEMENT

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FIGURE 1: Large SDD EDS detector

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