Invitation

Hands-on Workshop

EBIC on the TEM - STEBIC

Friday, November 24th, 2023

Dresden Center for Nanoanalysis (DCN) | **TU Dresden**

DEAR COLLEAGUES,

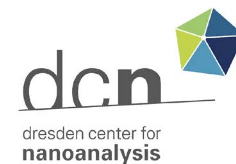
Join the **Dresden Center for Nanoanalysis (DCN)** and **point electronic** at TU Dresden for a hands-on workshop.

Experience and discuss with us new developments on Electrical Analysis in the TEM, with a focus on Scanning Transmission Electron Beam Induced Current (STEBIC) technique for mapping internal fields in junctions and devices.

This is a new development in TEM for research and characterization of novel nano-devices for optoelectronics, photovoltaics and power applications, as well as developments in failure analysis for CMOS technology.

We will discuss the science and technology for STEBIC, including TEM sample preparation, and demonstrate the technique live on the JEOL F-200 TEM at DCN.

The EA for TEM system is already installed at a few locations in Europe and North America, and their published results will be reviewed to illustrate what is now possible to achieve.



VENUE

Dresden Center for Nanoanalysis (DCN) | TU Dresden
Helmholtzstraße 18 - Barkhausenbau | 01069 Dresden

View at the Campus map: https://navigator.tu-dresden.de/karten/dresden/geb/bar

REGISTRATION

Have we piqued your interest? We're looking forward to hearing from you at mm@pointelectronic.de

ORGANIZER

point electronic GmbH | Erich-Neuss-Weg 15 | 06120 Halle (Saale)

MORE INFORMATION

https://www.youtube.com/watch?v=kKXYUOgCETc

THE PROGRAM

9:30 Registration and Welcome

10:00 Introduction to the STEBIC technique
Dr. René Hammer, point electronic

Fundamental principles of Electrical Analysis in TEM/SEM, including the EBIC and RCI techniques, and origins of contrast from internal fields, recombination activity and resistance maps to simultaneous SE and EBAC signals.

Key experimental aspects, including TEM sample preparation, in-situ holders, electronics for routing, biasing, amplification, digitisation and imaging. Typical results on PN junctions and nano-devices.

11:00 Introduction to the EA for TEM equipment

Key hardware components, interfaces and connectors to TEM and in-situ holder, software communication with TEM, hardware synchronisation with external equipment, installation requirements. Introduction to measurement of pixel values/signal quantification.

11:30 Lunch

12:00 Hands-on demonstration
Dr. René Hammer, point electronic

Live demonstration using a cross-sectional CMOS device lamella showing internal field from a transistor junction.

Connections to the sample, sample handling and routing aspects. Software workflow for image acquisition, zero-current calibration, current-voltage sweeps and live colour mixing.

Methods to assist signal interpretation.

Offline data processing, including pseudo-colour, quantitative display and line profiles.

13:00 Coffee Break

13:15 - 14:00 Q&A and open panel discusssion, conclusions

YOUR CONTACT

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