WORKSHOP

EFDS

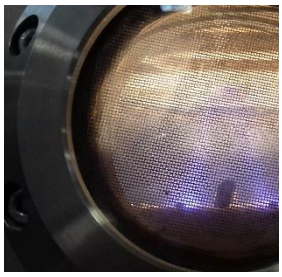
International Workshop

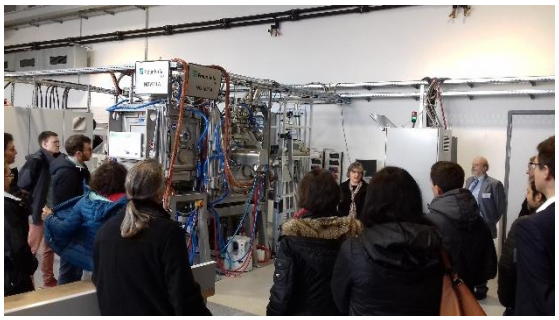
“Stable Control and efficient design of industrial plasma processes with plasma diagnostics”

Supported by

HIDEN ANALYTICAL

December 2 – 3, 2025 | Dresden, Germany





Program & Information

Plasma technologies for surface modification and layer deposition are industrially established and many products in semiconductor technology, the automotive industry, medical technology, etc. are no longer conceivable today without technological plasma processes.

Specific process control is essential to ensure process reliability when using plasma technology. Continuous further development of the relevant diagnostics is required to optimize and ultimately reduce the costs of production processes.

The workshop “Stable Control and efficient design of industrial plasma processes with plasma diagnostics” is dedicated to this topic. Renowned experts from research institutions will be presented basic insights as well as new innovative aspects for a stable process control. While Industrial partners will be demonstrated the implementation of well established tools by some impressive examples. Simple methods that are well suited for industrial use will also be presented. But also very specialized diagnostic procedures and new possibilities by using artificial intelligence will be addressed.

This is the 5th Workshop with the focus on plasma analysis and a deeper understanding of plasma processes. The community meets every 4 years and discusses a basics as well as new possibilities and challenges. In this event you can meet etsbalished experts of the field to discuss your questions and you can also learn or refresh the basics how plasma processes can be monitored and controlled.

PROGRAM COMMITTEE

- **Peter Awakowicz**, Ruhr Universität Bochum
- **Holger Kersten**, Christian-Albrechts-Universität zu Kiel
- **Jörg Neidhardt,** Fraunhofer-Institut für Elektronenstrahl- und Plasmatechnik FEP
- **Michael Klick,** Plasmetrex GmbH
- **Katrin Ferse**, Europäische Forschungs-gesellschaft Dünne Schichten e. V.

ORGANIZER

Europäische Forschungsgesellschaft Dünne Schichten e. V.
Gostritzer Str. 63, 01217 Dresden, Germany

Phone: +49 351 8718370
E-Mail: info@efds.org
Website: www.efds.org

Fraunhofer-Institut für Elektronenstrahl- und Plasmatechnik FEP
Winterbergstraße 28, 01277 Dresden, Germany

Program

Tuesday, December 2, 2025

08:30 | Registration

09:00 | Opening

Session 1 | Plasma diagnostic methods

09:15 | Methods0101
Knowledge based plasma process development and control based on diagnostics and simulations
Julian Schulze, Ruhr-Universität Bochum

09:45 | Methods0102
Powering intelligence: Plasma Diagnostics for Deterministic Control of Advanced PVD Processes
Afaque M. Hossain, Trumpf Hüttinger Co. + KG GmbH

10:15 | Coffee Break

11:00 | Methods 0103
Probes for plasma process diagnostics
Holger Kersten, Christian-Albrechts-Universität zu Kiel

11:30 | Methods0104
Quadrupole-Mass-Spectrometers for Quality Control and Characterisation of Plasma Processes
André Kayser, HIDEN Analytical Europe GmbH

12:00 | Methods 105
Mid-infrared optical frequency comb spectroscopy of plasmas
Jean-Pierre H. van Helden, Ruhr-Universität Bochum

12:30 | Methods0106
Data-integrated modeling of plasma processing
Jan Trieschmann, Christian-Albrechts-Universität zu Kiel

13:00 | Lunch Break

Session 2 | R&D applications

14:30 | R&D0201
Industrial sputtering processes & possibilities of plasma diagnostics at a glance
Daniel Glöß[1], Jakub Studniarek[2], 1 Fraunhofer-Institut für Elektronenstrahl- und Plasmatechnik FEP, 2 Trumpf Huettinger Sp. Z o.o.

15:00 | R&D0202
Feedback control in reactive magnetron sputtering
Anas Ghailane, Avaluxe Coating Technologies GmbH & Co. KG

15:30 | R&D0203
Unravelling the origin and properties of particle species in ion beam sputtering
Carsten Bundesmann, Leibniz-Institut für Oberflächenmodifizierung e.V. (IOM)

16:00 Coffee Break & Poster Session

17:00 | R&D0204
Analysis of complex chemical plasma processes for nanotechnology
Sven Zimmermann, Technische Universität Chemnitz

17:30 | R&D0205
Modular Deposition and Ion Beam Sensors
Stefan Seeger, Optotransmitter Umweltschutz Technologie (OUT) e.V.

18:00 End of first Day

19:00 | Get-Together including Mulled Wine at Chrismas Market (details see page 4)

Program

Wednesday, December 3, 2025

09:00 | Welcome back

SESSION 3 | Diagnostic-based control of industrial plasma processes

09:00 | Overview lecture
Plasma Diagnostics, Models, and Control for Efficient Process Monitoring
Michael Klick, Plasmetrex GmbH

09:45 | Control0301
Cutting-Edge Plasma Monitoring Techniques for Process Development, Production Control and Machine Learning
Jan-Peter Urbach, Plasus GmbH

10:15 | Control0302
Digital Twins for Thin-Film Processes: Turning Diagnostics, Tool-Health & Simulation into Actions
Adam Obrusník, Plasma Solve s.r.o.

10:45 | Coffee Break & Poster Session

11:30 | Control0303
VIPR Framework: Invertible Neural Networks & Synthetic Data for Virtual Sensoring — From Scattering to Coating Processes
Nico Mothes, Saxony AI

12:00 | Control0304
Stability in Volume Semiconductor Manufacturing with the Help of Internal and External Tool Data Analyses of Plasma Processes
Stephan Wege, plasway-Technologies GmbH

12:30| Control0305
Plasma diagnostics for optimum film deposition by industrial reactive rotatable magnetron sputter deposition
Volker Linss, VON ARDENNE GmbH

13:00 | Lunch Break

14:30 | Control0306
Plasma Diagnostics for Metal-Ion Synchronized HiPIMS Processes
Sebastian Siol, Swiss Federal Laboratories for Materials Science and Technology

15:00 | Control0307
Laser absorption-based sensors for in-situ concentration monitoring and active control of of gas and plasma processes
Henrik Zimmermann, neoplas control GmbH

15:30 Coffee Break

16:00 | Tour @ Fraunhofer FEP

17:30 End of the Event

Tour @ Fraunhofer FEP

Fraunhofer FEP is a well-known and internationally recognized reserach institut for plasma technologies and the characterization of process plasmas. During the tour you will get insigths to plasma diagnostics in coating processes and examples for plasma analysis projects.
Get in discussion with experienced researchers.

Speakers

Knowledge based plasma process development and control based on diagnostics and simulations

Julian Schulze, Ruhr University Bochum

At the example of technological low temperature radio frequency plasmas non-invasive phase resolved optical emission spectroscopy and experimentally validated plasma simulations are demonstrated to provide the basis for knowledge based plasma process development and control. Via these tools access to the space and nanosecond time resolved dynamics of energetic electrons as well as many other plasma parameters and a detailed understanding thereof are obtained. As such electrons and their energy distribution function determine the generation of process relevant radicals and charged particles, such insights are mandatory for any efficient knowledge based process development and control. Based on such understanding, advanced methods of plasma control via Voltage Waveform Tailoring and uniformity control based on individually driven electrodes and customized boundary surfaces are developed.

Powering intelligence: Plasma Diagnostics for Deterministic Control of Advanced PVD Processes

Afaque M. Hossain, Trumpf-Hüttinger Co.+KG. GmbH

Advanced PVD processes such as HIPIMS, dual magnetron sputtering (DMS), and reactive sputtering require unprecedented control over deposition conditions. The power supply has evolved into a primary equipment that features sophisticated power delivery modes namely pulsing and frequency control with key plasma parameters for thin film optimization. We use pulse shapes of varying widths by which we can precisely tailor the energy of the sputtered atoms/ions at the substrate. It was observed that higher frequencies can enhance plasma ionization and density which leads to dense, low-stress films with superior morphology. Advanced power control integrated in the power supply ensures process stability by effectively suppressing micro-arcing and preventing target poisoning in reactive environments. This integrated approach, linking power delivery to real-time plasma feedback enables a truly deterministic, highly repeatable manufacturing paradigm for complex optical and electronic coatings.

Speakers

Probes for plasma process diagnostics

Holger Kersten, Christian-Albrechts-Universität zu Kiel

Diagnostics of electrons and ions in plasmas and fluxes of charged and neutral species toward plasma-facing surfaces by non-optical methods will be discussed. The focus is laid on the fundamentals of conventional methods as Langmuir probes (LP), Faraday cups (FC) and retarding field analyzers (RFA), but as well as on the principles of non-conventional diagnostics as calorimetric and force probes (CP, FP). These rather simple methods are useful tools for the measurement of overall (not species resolved) ions and neutral fluxes toward surfaces. For example, RFAs provide overall ion energy distribution functions, whereas CPs and FPs can even deliver information about fluxes of fast neutrals.

Although many of these diagnostics have their roots in the beginnings of plasma research, they were gradually refined to match the requirements of plasma environments in industry, such as rf-discharges, reactive plasmas, magnetron discharges, dusty plasmas, and atmospheric pressure plasmas.

Quadrupole Mass Spectrometers for Quality Control and Characterization of Plasma Processes

André Kayser, HIDEN Analytical Europe GmbH

Quadrupole mass spectrometry offers detailed insight into plasma chemistry and dynamics, enabling real-time monitoring of ions, neutrals, and residual gases across a wide pressure range. Combined with advanced plasma probes and ion energy analyzers, this approach supports quality control and process optimization in applications such as ALD, PECVD, HIPIMS, PA-PLD and ion beam etching.

Ion milling diagnostics with dedicated software provide precise control of etch processes and predictive endpoint detection. Integrated diagnostics improve reproducibility, stability, and contamination control in surface engineering and thin film deposition. This talk highlights selected analytical methods and case studies that demonstrate how plasma characterization tools enhance performance and yield in demanding plasma-based manufacturing environments.

Speakers

Mid-infrared optical frequency comb spectroscopy of plasmas

Jean-Pierre van Helden,
Ruhr University Bochum

Information on the molecular composition of plasma, on the absolute concentrations and temperatures of the reactive species in the plasma, their population distribution among the quantum states and their reaction kinetics is essential for understanding and optimizing plasma processes. I will discuss the recent progress in plasma spectroscopy in the infrared and terahertz spectral region. We develop and apply state-of-the-art optical frequency comb-based spectroscopy techniques, offering a unique combination of broad bandwidth and high spectral resolution. This enables the simultaneous detection of multiple species in the plasma. Furthermore, terahertz absorption spectroscopy using quantum cascade lasers has recently been developed and implemented as a new diagnostic technique for investigating ground state atomic oxygen densities in plasmas. This method could be a compact and easy-to-use alternative for the industry compared to the established methods for measuring atomic densities.

Data-integrated modeling of plasma processing

Jan Trieschmann, Christian-Albrechts-Universität zu Kiel

Emerging technologies heavily rely on advanced plasma processing, continuously requiring a more precise process control. Modeling and simulation of surface-facing low-temperature plasmas (LTPs) may enable a physical knowledge-based process design, taking into account the properties of the plasma and the deposit. However, a consistent simulation at all levels is difficult due to the extremely complex dynamics of multi-component plasmas interacting with bounding surfaces. In this talk, a coupled scheme resembling the manifold physico-chemical processes in reactive LTPs will be discussed, integrating unbiased data-driven surrogate models into numerical simulations. The former are derived from high fidelity data obtained from physical models at the lower levels (e.g., atomistic simulations of the surface kinetics). Application of such multi-scale modeling approach is discussed at the example of reactive sputter deposition of thin film memristive devices.

Speakers

Laser absorption-based sensors for in-situ concentration monitoring and active control of of gas and plasma processes

Henrik Zimmermann, neoplas control GmbH

The technologically use of molecular plasmas as efficient and sustainable tool for materials and surface processing is continuously gaining in economic and ecological importance. Nowadays plasma technological processes play a key role in various branches like semiconductor, automotive and biomedical industries to name a few.

However, due to in-situ generation of species the treatment environment is of high complexity with respect to the variety of molecular reaction products. Continuous in-situ trace gas detection is a favourable diagnostic, when addressing efficiency and yield aspects. In this context, the ability of laser based sensors determining absolute ground state concentration of stable and transient molecular species is of great relevance to infer their reactions with the material surface.

The aim of the present contribution is to review recent achievements using QCLAS for plasma diagnostics and to emphasise its performance capability for plasma technological applications.

Feedback control in reactive magnetron sputtering

Anas Ghailane, Avaluxe Coating Technology GmbH & Ko KG

Anas Ghailane[1], Tommaso Sgrilli[2], Lara Maroto Diaz[2], Patricia Killen[2], Victor Bellido Gonzalez[2]
1: Avaluxe Coating Technology GmbH & Ko KG, Fürth, Germany | 2: Gencoa Ltd, Liverpool, UK

Gas control during reactive sputtering strongly influences the deposition rate and film properties of the compound being deposited. Reactive gases can trap the target in poisoned mode unless the partial pressures of the reactive gas(es) are individually monitored and controlled at high speed. The dynamics of a reactive sputtering system typically requires a closed-loop feedback speed of control in the 10's of msec range. Active feedback control reacts and adjusts the reactive gas flow control valves within 1 msec. Depending upon gas line lengths and system size, the gas will then take typically between 10-100 msecs to enter the area in-front of the sputter target. With a closed loop feedback control time of <100msec most reactive processes can be maintained at high rate and with good control in the 'transition' region.

An important part of the control system is the choice of 'sensor' to provide feedback from the process of the effect of the reactive gas changes. The sensor signal is the 'input' to the controller and a fast and stable input signal makes achieving good control more straightforward.

The different control sensors of the Speedflo from Gencoa are explained and examples of depositions controlled by the Speedflo to achieve specific properties are presented.

Speakers

Unravelling the origin and properties of particle species in ion beam sputtering

Carsten Bundesmann, Leibniz Institute of Surface Engineering (IOM)

Ion beam sputter deposition is a physical vapor deposition technique for the growth of thin films with excellent properties, for instance, optical coatings for high power laser applications.

Among others, the energy and flux of the film-forming particles play a major role in thin film growth. Usually, the investigations of ion beam sputter processes focus on sputtered target particles only, more precisely, on particles sputtered from a collision cascade. However, there are other particles species, which are emitted from the target and may take a crucial role in thin film growth.

This talk sums up systematically the origin and the major properties of all particle species in ion beam sputter deposition. The impact of ion beam and geometrical process parameters on particle properties is illustrated. Finally, some fine examples of how particle properties have a systematic impact on thin film properties are described.

Analysis of complex chemical plasma processes for nanotechnology

Sven Zimmermann, Technische Universität Chemnitz

The integration of novel insulation layers into the metallization system of leading edge semiconductor components requires a large number of complex plasma processes. Such layers usually consist of a silicate matrix in which organic groups are embedded to reduce permittivity and moisture absorption. When these layers are exposed to plasmas, interaction occurs between these organic groups and radicals formed in the plasma. As these mechanisms are destructive, the analysis and optimization of plasma chemistry in industrial processes is of great importance. In addition to conventional process gases, large organosilicate molecules are sometimes added to the plasma in order to specifically exploit interactions between plasma chemistry and layer composition. The control and analysis of such processes requires special plasma diagnostics. Some of these will be presented in this presentation. The results obtained will be discussed using the example of a 22 nm back-end of line technology.

Speakers

Modular Deposition and Ion Beam Sensors

Stefan Seeger, Optotransmitter Umweltschutz Technologie (OUT) e.V.

This presentation introduces a modular deposition sensor specifically designed for advanced plasma processes. It simultaneously measures crucial parameters like energy influx, deposition rate, ion or electron current, or surface resistivity, offering highly adaptable configurations for diverse research and industrial needs. We also detail a dedicated ion beam sensor that provides precise energy influx and electron current measurements, enabling precise control over ion beam parameters. Together, these robust diagnostics enhance industrial plasma process stability and efficiency through continuous real-time monitoring and active feedback loops. Their inherently modular design ensures seamless integration into various plasma systems, ultimately optimizing process conditions, and reducing operational costs. Experimental results will demonstrate the sensors' capabilities and their significant potential to advance process management.

Plasma Diagnostics, Models, and Control for Efficient Process Monitoring

Michael Klick, Plasmetrex GmbH

Controlling complex industrial plasma processes involves combining precise diagnostics, smart modeling, and accurate measurement systems. Setting up a meaningful and efficient process control always starts with a meticulous analysis of the requirements under industrial conditions. Decisions on the type of data and their necessary data quality (sampling rate, range, sensitivity, meaning, ...) follows the analysis and builds the basis for model development that will constitute at the end the digital twin of the tool.

The concept of complimentary sensors will be discussed as one of the key concepts.

Using examples from the semiconductor manufacturing for RF plasmas, the practical realization is shown:

- Early fault detection and classification (FDC)
- Power-driven mode changes in ICPs beyond E-H-mode transition
- Supporting gas flow reduction of GHG with process model and SEERS plasma sensor
- Prediction of process results (CD) using a process models within a digital twin

Speakers

Cutting-Edge Plasma Monitoring Techniques for Process Development, Production Control and Machine Learning

Jan-Peter Urbach,
PLASUS GmbH

As specifications in the thin film industry become more and more demanding, high production yields and cost effective production are major factors in this competitive market. These goals drive the demand for efficient process monitoring and control systems, which provides different sensor techniques combined in a single system:

Multi-channel spectroscopic plasma monitoring with unprecedented time resolution, broadband reflectometry for real-time in-situ layer thickness measurement, electrical pulse curve measurement of pulsed plasma/HIPIMS applications, etc.

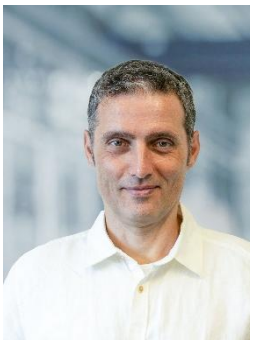
The acquired data from all sensors can be processed simultaneously and can be combined and evaluated for controlling the process parameters like reactive gas flow or ion density and the product parameters, i.e. layer thickness or color simultaneously and in real-time. This results not only in an enhanced production stability and improved product quality but it also provides reliable and comprehensive data for ML analysis.

Digital Twins for Thin-Film Processes: Turning Diagnostics, Tool-Health & Simulation into Actions

Adam Obrusnik,
PlasmaSolve s.r.o.

Industrial sputter and etch tools already capture power-supply waveforms, optical spectra, pressure traces and post-process metrology, yet most of this diagnostic gold sits idle. This talk demonstrates PlasmaSolve's physics-informed digital-twin concept that fuses tool health monitoring, sensor and component data with high-fidelity plasma and surface-chemistry models plus machine-learning layers. The integrated framework delivers reliable and consistent forecasts of ion energy, film forming specie flux, target erosion and substrate heating, feeding automatic set-point corrections that tighten process windows, boost reproducibility and cut scrap by double-digit percentages. At full maturity the twin acts as a virtual coater representation, accurately predicting coating thickness, composition and properties for a broad range of recipe–part combinations without the need to actually run a test process to see the outcome.

Speakers



Plasma diagnostics for optimum film deposition by industrial reactive rotatable magnetron sputter deposition

Volker Linss, VON ARDENNE GmbH

The sputter deposition with rotatable targets is industrial standard for large- area high-productivity coating. Some important differences to planar magnetron sputtering are the material reservoir and material utilization one the one hand (economic aspects) but also emission characteristics of particles, the redeposition on the target, and the dynamic sputter erosion due to the rotating target tube on the other hand (process aspects). The latter properties are very important for reactive sputtering of such a rotating tube target.

The contribution will give an overview on important aspects of the difference between planar and rotatable target sputtering in general, will show the racetrack plasma characterization by OES, and will finally conclude which actions can be taken to optimize the deposited films. Examples for the reactive sputtering with rotatable targets of several materials will be given.

Stability in Volume Semiconductor Manufacturing with the Help of Internal and External Tool Data Analyses of Plasma Processes

Stephan Wege, Plasway-Technologies GmbH

Continuous monitoring and analysis of internal equipment data are essential to achieve and maintain a high level of control for high yield volume manufactoring.

Data Analyses on 10ms level needed:

- Internal tool data like MFC needle position, pressure, RF power, ...
- External Data like Plasma OES, RGA like data, I/V Matchbox Data

In partially plasma-based techniques such as atomic layer etching (ALE) and plasma-enhanced atomic layer deposition (PEALD), direct monitoring of gas mixtures and precursor densities offers significant advantages. RGA like data created by INFICON system in non-plasma process steps can be correlated to optical emission spectroscopy (OES) data collected during plasma steps including the internal tool data. Maybe with the help of AI in future.

Speakers

Industrial sputtering processes & possibilities of plasma diagnostics at a glance

Daniel Glöß, Jakub Studniarek, Fraunhofer FEP, Trumpf Hüttinger Sp. Z o.o.

Magnetron sputtering is a key technology for industrial coating processes, used in stationary systems for wafers and dynamic concepts such as batch drum coaters and inline machines for large substrates. Various magnetron designs enable flexibility for different applications. Achieving stable coating performance requires precise process control, which relies on plasma monitoring. Common strategies include electrical feedback (e.g., impedance control) and optical emission diagnostics (OED or spectrometer), each with specific benefits and limitations. For deeper process understanding, advanced plasma diagnostics are used to analyze the influence of coating conditions on the film properties. As an example, results from a study using a pilot inline coater comparing bipolar pulsing with bidirectional pulsing (BDP) for metallic Si and reactive SiO_2 deposition illustrate the influence of power modes on plasma and layer characteristics.

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Poster

Virtual Metrology for reduced representation of spatially resolved etching depth in Bosch Process

Aditya Deshmukh, Fraunhofer ENAS, TU Freiberg

Probe measurement technology MRP used in pulsed plasma processes

Moritz Oberberg, House of Plasma GmbH

Virtual metrology (VM) of average etch depth is essential for ensuring high yield in semiconductor manufacturing; however, it does not capture local defects. We present a two-step VM for spatially resolved etch depth: first, dimensionality reduction to obtain a reduced representation of etch depth measured at 89 uniformly spaced points for 100 wafers, and second, prediction of the reduced representation from in-situ optical emission spectroscopy (OES) and process parameter embeddings. Reduced representation, using Principal Component Analysis (PCA), enables efficient reconstruction, while capturing dominant variation modes and ready visualization of outliers and drifts, aiding control. A Gaussian Process Regressor (GPR) predicts the reduced coefficients from in-situ embeddings, achieving 0.16 µm RMSE for a 45 µm depth. This data-driven framework enables wafer-to-wafer monitoring and provides a foundation for advanced process control, while being more informative than average depth VM.

Physical Vapor Deposition technologies, especially HiPIMS, are key in modern manufacturing for producing advanced coatings that enhance durability and performance. In HiPIMS, plasma drives the deposition process, creating and transporting atoms and ions from a metal target and reactive gases like nitrogen or oxygen to form tailored films. Plasma conditions determine essential coating properties such as hardness. A major challenge is the hysteresis effect, where excessive reactive gas leads to target poisoning, reducing efficiency, while insufficient gas yields poor-quality films. Reliable plasma diagnostics are crucial for process stability and optimization. This work presents a robust plasma monitoring system for industrial HiPIMS using a Multipole Resonance Probe (MRP) to measure plasma parameters with microsecond precision. The MRP employs active plasma resonance spectroscopy and advanced in-house electronics, enabling time-resolved analysis and improved control of plasma behavior.

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Poster

PlasmaMon – a development tool for plasma technique and plasma technology

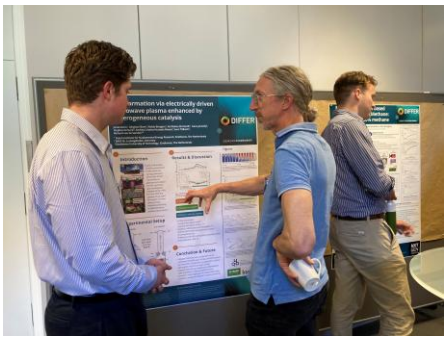
Herrmann Schlemm, Jenion

Virtual metrology (VM) of average etch depth is essential for ensuring high yield in semiconductor manufacturing; however, it does not capture local defects. We present a two-step VM for spatially resolved etch depth: first, dimensionality reduction to obtain a reduced representation of etch depth measured at 89 uniformly spaced points for 100 wafers, and second, prediction of the reduced representation from in-situ optical emission spectroscopy (OES) and process parameter embeddings. Reduced representation, using Principal Component Analysis (PCA), enables efficient reconstruction, while capturing dominant variation modes and ready visualization of outliers and drifts, aiding control. A Gaussian Process Regressor (GPR) predicts the reduced coefficients from in-situ embeddings, achieving 0.16 µm RMSE for a 45 µm depth. This data-driven framework enables wafer-to-wafer monitoring and provides a foundation for advanced process control, while being more informative than average depth VM.

Poster Session

There is a lot of research and development activities around Plasma Technologies and Plasma Analytics around sputter and etching processes. You did not receive a talk? Use the chance and present a poster. This is a nice way to get in discussion with other colleagues. According to registrations up to two Poster Session will take place on Tuesday, December 2, 2025, at 16:00 – 17:00 and Wednesday, December 3, 2025 from 10:30 – 11:30 in the morning. Posters will be visible over the whole event.

To **submit your poster**, please use the abstract form and send your filled abstract to ferse@efds.org **until October 20, 2025**. For any questions, please do not hesitate to contact us.



Get-Together

Networking is an important part of this event. Beside long breaks for good discussions, there will be an evening event in the city of Dresden. During this time the Christmas market is open and well-tasting Mulled Wine can be enjoyed in an exclusive atmosphere.

Tuesday, December 2, 2025

19:00 | Meet at Neumarkt
Here you can enjoy the atmosphere of the Christmas market at Neumarkt directly in front of the “Frauenkirche” by drinking a Mulled Wine.

19:30 | Get-Together at Restaurant “Dresden 1900”
Time to have Dinner and nice talks to other participants and speakers.

Registration

Link to Registration

Conference Tickets	Price*
Standard ticket | early bird	730 EUR
Standard ticket | after August 31, 2025	830 EUR
Student ticket / Student Poster	420 EUR
Poster Presenters	730 EUR

The registration fee includes the participation of the chosen event, conference booklet, coffee and lunch breaks as well as the Get-Together.
*Workshop fees are free of VAT according to §4 (22a) UStG (German value-added tax law)

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The general terms and conditions of sale of EFDS apply (www.efds.org/en/agb).
Cancellations must be made in written form.

Travelling

Workshop Location

Fraunhofer-Institut für Elektronenstrahl- und Plasmatechnik FEP
Winterbergstraße 28, 01277 Dresden, Germany

Directions & Parking

It´s possible to park directly on the parking deck of Fraunhofer FEP or in the surrounding area. Directions and the location map can be found here.

Get-Together Location

Restaurant „Dresden 1900“
An der Frauenkirche 20
01067 Dresden (Neumarkt)

Recommendation:
go by Bus/Tram to Neumarkt!

Hotel Recommendations

Penck Hotel
Dresden, Ostra-Allee 33, 01067 Dresden
reservierung@penckhotel.de
T: +49 351-4922-78

Holiday Inn Express Dresden Zentrum
Prager Strasse 13, 01069 Dresden
DE01.reservation@LROHotels.com
T: +49 69-96759 549

DORMERO Hotel Dresden City
Kreischaer Strasse 2, 01219 Dresden
dresden-city@dormero.de
T: +49 351-87310

INNSiDE by Meliá Dresden
Salzgasse 4, 01067 Dresden
innside.dresden@melia.com | melia.com
T: +49 351-795150

A visit to Dresden's Christmas markets is always worthwhile – why not plan an extra day for your stay in Dresden?
Dresden´s Christmas Markets
from 26.11. – 24.12.2025