

# PROGRAM COMMITTEE

- Dr. Jonas Sundqvist** — Fraunhofer Institute for Ceramic Technologies and Systems IKTS, Dresden, Germany
- Dr. Christoph Hossbach** — Picosun Oy and Picosun Europe GmbH, Dresden, Germany
- Dr. Katrin Ferse** — European Society of Thin Films (EFDS), Dresden, Germany
- Dr. Henry Bernhardt** — Infineon Technologies Dresden GmbH, Dresden, Germany
- Dr. Lukas Mayr** — BASF SE, Ludwigshafen, Germany
- Bernd Hintze** — Research Fab Microelectronics Germany (FMD), Dresden, Germany



# GENERAL INFORMATION

	ALD for Industry	Workshop only	Tutorial only
Early Bird before February 09, 2020	690,00 EUR		
Standard	790,00 EUR	590,00 EUR	390,00 EUR
Students	395,00 EUR	290,00 EUR	180,00 EUR

Workshop fees are free of VAT according to §4 (22a) UStG (German value-added tax law).



## RECOMMENDATION FOR HOTEL

**Hotel Stadt Freiburg GmbH**  
(near event location)  
Breisacher Straße 84, 79110 Freiburg  
**Code: ALD**  
Deadline: February 17, 2020  
Room Rate:  
105,00 EUR p.night/Single Room  
Tel.: +49 761 89680  
info@hotel-stadt-freiburg.de  
www.hotel-stadt-freiburg.de

**Stadthotel Freiburg**  
Kolping Hotels & Resorts  
(near city centre)  
Karlstraße 7, 79104 Freiburg  
**Code: ALD**  
Deadline: February 03, 2020  
Room Rate:  
92,00 EUR p. night/Single Room  
Tel.: +49 761 31930  
info@hotel-freiburg.de  
www.kolping-hotels-resorts.de

**Hotel Rappen am Münsterplatz**  
(evening location)  
Münsterplatz 13, 79098 Freiburg  
**Code: ALD**  
Deadline: February 17, 2020  
Room Rate:  
102,00 EUR p.night/Single Room  
Tel.: +49 761 31353  
info@hotel-rappen-freiburg.de  
www.hotel-rappen-freiburg.de

## Get-Together

**Tuesday March 31, 2020, 19:00**  
**Hotel Rappen am Münsterplatz**  
Münsterplatz 13  
79098 Freiburg (Breisgau)  
www.hotel-rappen-freiburg.de

### Platinum Sponsors:



### Gold Sponsors:



### Additional Sponsors:



### Registration Fee Covers:

The registration fee includes the participation of the chosen event, conference proceedings, coffee and lunch breaks, the social evening and tour at Trumpf Hüttinger with bustransfer. Please note, that the number of participants is limited, so please register early.

### Online Registration:

Please use the online registration:  
<https://www.efds.org/event/ald2020/>

### Event Organizer:

European Society of Thin Films  
Gostritzer Straße 63  
01217 Dresden, Germany  
Tel.: +49 351 8718372  
info@efds.org, www.efds.org

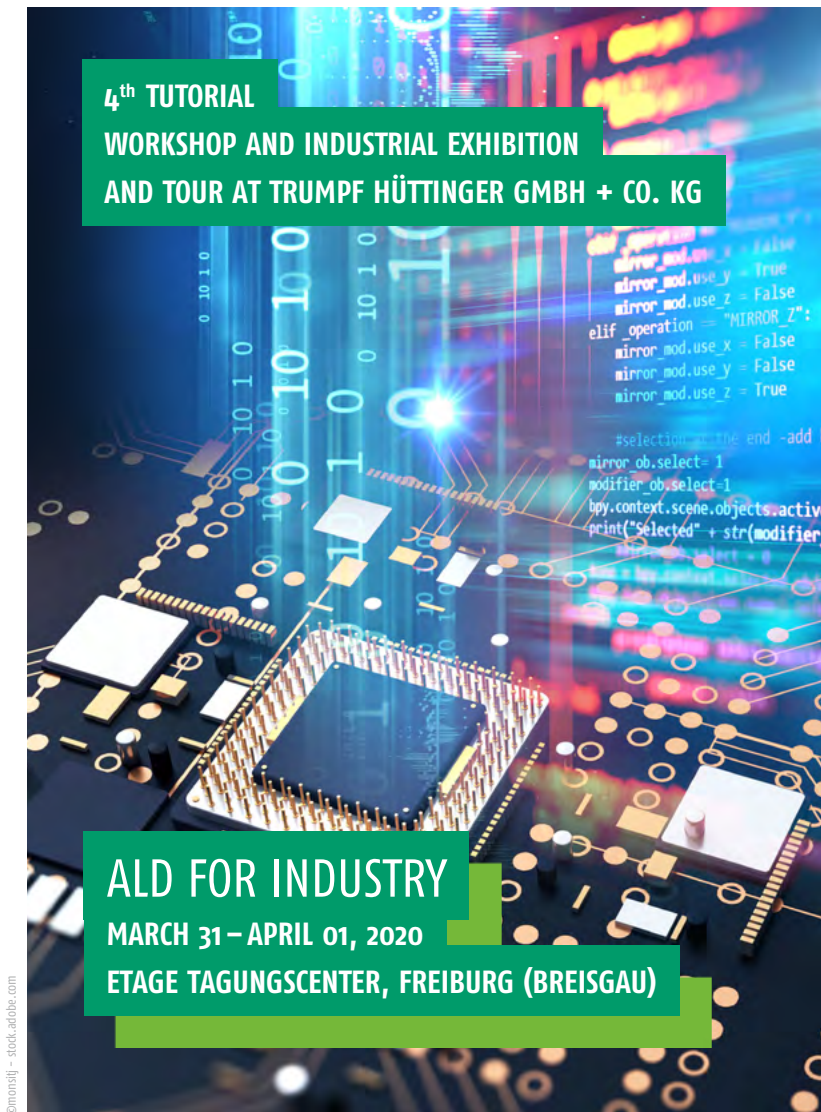
### Event Location:

ETAGE Tagungszentrum  
an der Messe Freiburg  
Emmy-Noether-Straße 2  
79110 Freiburg (Breisgau)  
Tel.: +49 761 38813515  
etage@fwtm.de  
www.etage-freiburg.de

Terms: The general terms and conditions of sale of the EFDS apply ([www.efds.org/agb](http://www.efds.org/agb)). Cancellations must be made in written form. In case of the cancellation of your registration before March 17, 2020, a cancellation fee of 50,00 EUR will be charged. After this date, a refund is not possible.



Europäische Forschungsgesellschaft Dünne Schichten e. V.  
European Society of Thin Films



**4<sup>th</sup> TUTORIAL**  
**WORKSHOP AND INDUSTRIAL EXHIBITION**  
**AND TOUR AT TRUMPF HÜTTINGER GMBH + CO. KG**

**ALD FOR INDUSTRY**  
**MARCH 31 – APRIL 01, 2020**  
**ETAGE TAGUNGSCENTER, FREIBURG (BREISGAU)**





## PREFACE

**A topical workshop with focus on industrialization and commercialization of ALD for current and emerging markets.**

Atomic Layer Deposition (ALD) is used to deposit ultraconformal thin films with sub-nm film thickness control. The method is unique in the sense that it employs sequential self-limiting surface reactions for growth in the monolayer thickness regime. Today, ALD is a key technology in leading edge semiconductor technology and the field of application in other industries is increasing rapidly. According to market estimates the equipment market alone is currently at an annual revenue of US\$ 1.8 – 1.9 billion (2018) and it is expected to double in the next 4–5 years.

In a European context ALD was invented independently twice in Europe (Russia & Finland) and since the last 15 years Germany has grown to become one of the strongest European markets for ALD in R&D, chemicals, equipment and end users.

This year we will organize the 4<sup>th</sup> EFDS ALD INDUSTRY WORKSHOP in South Germany (Freiburg), much closer to the other ALD hubs in continental Europe in France, The Netherlands, Belgium, Italy and Switzerland. ALD for Industry provides the opportunity to get in contact with industrial and academic partners, to learn more about fundamentals of ALD technology and to get informed about recent progress in the field.

The Event will focus on the current markets for ALD and addresses the applications in Semiconductor industry, MEMS & Sensors, Battery Technology, Medical, Display, Lightning, Barriers and Photovoltaics.

## PROGRAM | Tuesday, March 31, 2020

Tour at Trumpf Hüttinger, Tutorial, Industrial Exhibition & Get-Together

07:00 – 08:45	<b>Set up of exhibition</b>
08:00 – 08:45	<b>Registration</b>
09:00	<b>Bus transfer</b> from ETAGE Tagungscenter to Trumpf Hüttinger
<b>09:45</b>	<b>Start of Company Tour at Trumpf Hüttinger</b>
11:30	<b>Bus transfer</b> from Trumpf Hüttinger to ETAGE Tagungscenter
<b>12:00</b>	<b>Lunch Break &amp; Opening of Industrial Exhibition</b>
<b>13:00</b>	<b>Opening of Tutorial</b>
13:15	<b>Current and Emerging ALD Processes, Precursors, IP Trends and Applications in High Volume Production</b> Jonas Sundqvist, Fraunhofer IKTS, Dresden, Germany
13:45	<b>ALE for Nanopatterning</b> Dmitry Suyatin, Lund University, Lund, Sweden
14:15	Elevator Pitch
<b>14:45</b>	<b>Coffee Break &amp; Industrial Exhibition</b>
15:15	<b>Precursor Chemistry for the ALD of Functional Thin Films: Synthesis, Evaluation and Applications</b> Nils Boysen, Ruhr-Universität, Bochum, Germany
15:45	<b>ALD for photovoltaic applications</b> Tobias Törndahl, Uppsala University, Uppsala, Sweden
16:15	<b>Plasma ALD Processing of GaN Power and RF Devices for High Volume Manufacturing</b> Aileen O'Mahony, Oxford Instruments, Bristol, United Kingdom
16:45	End of first day program
<b>19:00</b>	<b>Get-Together</b> »Hotel Rappen am Münsterplatz«, Münsterplatz 13, 79098 Freiburg (city centre)



## PROGRAM | Wednesday, April 01, 2020

Workshop & Industrial Exhibition

<b>09:00</b>	<b>Opening</b>
09:05	<b>Keynote Lecture</b> <b>When time-resolved CVD outperforms continuous CVD – ALD as the enabler for InN based electronics</b> Henrik Pedersen, Linköping University, Sweden
09:50	<b>How relevant is the surface reaction mechanism for ALD precursor and process development?</b> Lukas Mayr, BASF SE, Ludwigshafen, Germany
10:20	<b>ALD of Noble Metals – Challenges &amp; Perspectives for Ru and Pt ALD precursors</b> Nicolas Blasco, Air Liquide, Paris, France
<b>10:40</b>	<b>Coffee Break &amp; Industrial Exhibition</b>
11:10	<b>ALD at CEA-Leti: from research to applications</b> Remy Gassilloud, CEA Leti, Grenoble, France
11:30	<b>ALD for Challenging 3D Structures: Industrial Applications</b> Christoph Hossbach, Picosun Oy and Picosun Europe GmbH, Dresden, Germany
11:50	<b>Conformal Thick Dielectric Deposition on 3D Structures at CVD Speed</b> Veronique De Jonghe, Plasma-Therm, St. Petersburg, USA
12:10	<b>Multifunctional Protective Coatings by Fast ALD</b> Jacques Kools, Encapsulix SAS, Simiane-Collongue, France
<b>12:30</b>	<b>Lunch Break &amp; Industrial Exhibition</b>

13:30	<b>ALD of Titanium Nitride as ultra-thin Lithium-Ion Diffusion Barrier</b> Sascha Böhnhardt, Fraunhofer IPMS CNT, Dresden, Germany
13:50	<b>Industrial production of moisture barrier coatings by Atomic Layer Deposition</b> Kalle Niiranen, Beneq Oy, Espoo, Finland
14:10	<b>Innovative ALD industrial Services</b> Joël Matthey, Positive Coating, La Chaux-de-Fonds, Switzerland
14:30	<b>Direct atomic pattern printing</b> Maksym Plakhotnyuk, ATLANT 3D Nanosystems, Kgs. Lyngby, Denmark
<b>14:50</b>	<b>Coffee Break &amp; Industrial Exhibition</b>
15:20	<b>In-situ real-time and ex-situ spectroscopic analysis of Al<sub>2</sub>O<sub>3</sub> films prepared by plasma enhanced atomic layer deposition</b> Paul Plate, SENTECH Instruments GmbH, Berlin, Germany
15:40	<b>Batch ALD for 5G High Volume Applications</b> Ganesh Sundaram, Veeco Instruments, Waltham, USA
16:00	<b>Aspects of ALD work within the FMD and potential extensions</b> Bernd Hintze, Research Fab Microelectronics Germany (FMD), Dresden, Germany
16:20	<b>Final Discussion</b>
<b>16:30</b>	<b>End of Workshop</b>

