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 leading-edge industries is increasing rapidly. According to market estimates the equipment market alone is currently at an annual revenue of US$ 1.5-1.7 billion (2017) 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.

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 COMMITTEE

Jonas Sundqvist
Fraunhofer Institute for Ceramic Technologies and Systems IKTS, Germany

Christoph Hossbach
Picosun Oy and Picosun Europe GmbH, Germany

Katrin Ferse
European Society of Thin Films (EFDS), Germany

Henry Bernhardt
Infineon Technologies Dresden GmbH, Germany

Anjana Devi
Ruhr-University, Bochum, Germany
Program - Tuesday, March 19, 2019

Practical ALD Show

10:00  Opening
10:00  ALD Systems and Services – A Practical Training
      Christoph Hossbach¹, Tiina McKee²,
      ¹Picosun Europe GmbH, Germany; ²Picosun Oy, Finland
10:30  ALD - Precursor Systems
      Daniel Schlamm, SEMPA Systems GmbH, Germany
10:50  Vacuum Pumps for ALD Applications
      Andrew Irvine, Edwards, Germany
11:10  Dry Bed Chemisorption for the Waste Gas Abatement of ALD Processes
      Joe Guerin, CS Clean Solutions AG, Germany
11:30  In-situ process monitoring – A guidance of using Quadrupole mass spectrometer
      for ALD process monitoring
      Uwe Meissner, MKS Instruments, Germany
12:00  Lunch Break

Tutorial

13:00  Opening
13:10  ALD Technology – Introduction, History & Principles
      Riikka Puurunen, Aalto University School of Chemical Engineering, Finland
14:00  Atomic layer deposition of group 13 nitrides
      Henrik Pedersen, Linköping University, Sweden
14:30  ALD/CVD applications, equipment and precursors in high volume manufacturing
      Jonas Sundqvist, Fraunhofer IKTS, Germany
15:00  Coffee Break
15:30  An introduction to Atomic Layer Deposition equipment: how it’s made and how it’s used
      Paul Poodt, Holst Centre/TNO and SALDtech B.V., The Netherlands
16:00  The role of precursors in ALD processes: An overview of recent progress in precursor chemistry
      Prof. Anjana Devi, Ruhr-University Bochum, Germany
16:30  Metrology for ALD process monitoring and development
      Martin Knaut, Technische Universität Dresden, Germany
17:00  End of First Day
Program - Wednesday, March 20, 2019

Workshop

09:00  Opening

09:15  Keynote Lecture
Forefront Research Advances in (Selective) Atomic Layer Deposition and Etching
Erwin Kessels, Eindhoven University of Technology, The Netherlands

10:00  AL2O3 dielectrics on different batch tools
Henry Bernhardt, Infineon Technologies Dresden GmbH, Germany

10:20  Industrial ALD for 3D components and medical applications
Christoph Hossbach, Picosun Europe GmbH, Germany

10:40  Coffee Break

11:10  ALD Use for Decorative Applications
Ganesh Sundaram, Veeco Instruments, USA

11:30  Memristive ALD Films for Neuromorphic Networks
Christian Wenger, IHP – Leibniz Institut für innovative Mikroelektronik, Germany

11:50  ALD – Enabling the frontiers for energy applications
Joos Hanssen, Euris GmbH, Germany

12:10  Improved Metal Oxide ALD Precursors for Industrial Applications
Andy Zauner, Air Liquide Electronics R&D, France

12:30  Lunch Break

13:30  Sponsoring Pitch

13:50  Optimization of delivered mass from low vapor pressure precursors through process control
Jeffrey Spiegelman, RASIRC, USA

14:10  The Research Fab Microelectronics Germany (FMD) and related ALD activities
Bernd Hintze, Research Fab Microelectronics Germany (FMD)

14:30  Optical Coating of Polymer Substrates by ALD
Adriana Szeghalmi, Fraunhofer IOF, Germany

14:50  Coffee Break
15:20 Atomic Layer Deposition of Lithium Titanate
Sascha Bönhardt, Fraunhofer IPMS, Germany

15:40 Plasma Enhanced ALD using a Capacitively Coupled Plasma in a Cross Flow Reactor
Jacques Kools, Encapsulix S.A., France

16:00 Fast injection in plasma processing
Stephan Wege, Plasway Technologies GmbH, Germany

16:20 Homogeneous and stress controlled PEALD films for large optics
Hassan Gargouri, SENTECH Instruments GmbH, Germany

16:40 ALD for Optical Coatings – Materials and Applications
Kari Koski, Beneq, Finland

17:00 closing remarks
17:05 End of ALD-Workshop

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EFDS
General Information

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<th>ALD for Industry</th>
<th>Workshop only</th>
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<td><strong>Standard</strong></td>
<td>790,00 EUR</td>
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Workshop fees are free of VAT according to §4 (22a) UStG (German value-added tax law).

Terms

The general terms and conditions of sale of the EFDS apply (www.efds.org/agb). Cancellations must be made in written form. In case of the cancellation of your registration before March 05, 2019, a cancellation fee of 50,00 EUR will be charged. After this date, a refund is not possible. The EFDS processes your data according to the data privacy statement of EFDS. You can find all information at www.efds.org/datenschutz.

Fee Covers

The registration fee includes the participation of the chosen event, conference proceedings, coffee and lunch breaks and the social evening.

Online Registration

Please use the online registration:
https://www.efds.org/de/anmeldung-workshop-wsald3

Organization

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Contact

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Venue

Fraunhofer-Forum Berlin-Mitte
Anna-Louisa-Karsch-Straße 2
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Germany
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www.forum.fraunhofer.de

Parking

Parking is available in the adjacent public car parks of Sealife and Radisson Blue for a fee.
Recommendation for Hotel

Monbijou Hotel Berlin
Monbijouplatz 1
10178 Berlin
Code: ALD, Deadline: February 18, 2019
Room Rate: 114.00 EUR per Single
Tel.: +49 30 61620300
info@monbijouhotel.com; www.monbijouhotel.com

More hotels near the event location:

➢ Hotel Zoe by Amano, Präsidentenstraße 6-7, www.amanogroup.de
➢ Alexander Plaza, Rosenstraße 1, www.hotel-alexander-plaza.de
➢ Motel One, Dircksenstraße 36, www.motel-one.com

Get-Together - Tuesday, March 19, 2019

19:00: Restaurant „Brauhaus Lemke am Hackeschen Markt“
Dircksenstraße, S-Bahnboigen 143, 10178 Berlin-Mitte
www.lemke.berlin/hackscher_markt