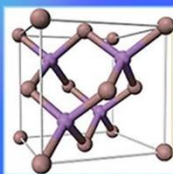


ALD 2021

21st International Conference on Atomic Layer Deposition
JUNE 27-30, 2021 • VIRTUAL MEETING



ATOMIC
LAYER
ETCHING

Featuring the
8th International
**Atomic
Layer
Etching
WORKSHOP**

ALD/ALE 2021 Virtual Meeting Overview

AVS 21st International Conference on Atomic Layer Deposition (ALD 2021) featuring the 8th International Atomic Layer Etching Workshop (ALE 2021) will be adapted into a Virtual Meeting comprised of Live and On Demand Sessions. The registration deadline is **June 30, 2021**; all presenters must register by **May 10, 2021**. The event will feature:

Virtual Meeting Highlights

- Live Tutorial Session with live Q&A Chat Opportunities (Sunday, June 27, 2021)
- Live Plenary, Awards, and Student Finalists with live Q&A Chat Opportunities (Monday, June 28, 2021)
- Live Parallel Technical Sessions with live Q&A Chat Opportunities (Tuesday-Wednesday, June 29-30, 2021)
- On Demand Oral Sessions (Starting Monday, June 28, 2021)
- On Demand Poster Sessions with a Mix of Pre-recorded (Video or Audio) Talks and/or PDF files

Note: Live and On Demand Sessions available on Mobile App/Online Scheduler through July 31, 2021 and then to AVS members in the AVS Technical Library. **Live Sessions will also be recorded and added to the On Demand Sessions.**

The AVS 21st International Conference on Atomic Layer Deposition (ALD 2021) featuring the 8th International Atomic Layer Etching Workshop (ALE 2021) will be adapted into a Virtual Meeting comprised of Live and On Demand Sessions. The registration deadline is **June 30, 2021**; all presenters must register by **May 10, 2021**. The event will feature:

Virtual Meeting Quick Links

- [Meeting Website](#)
- [Technical Program](#)
- [Registration](#)
- [Presentation Instructions](#)
- [Viewing Instructions](#)

Time Zone: All Live Sessions will be held in Eastern Daylight Time (EDT). Please note that Live Sessions will also be recorded and added to the On Demand Sessions. **Time Zone Converter Tool**

Virtual Meeting Schedule

- **Live Session Schedule:** May be found on the next several pages or in the [ALD/ALE 2021 Online Scheduler](#) and [Mobile App](#) (available in June). Live Sessions will be presented over the Meeting dates: June 27-30, 2021.
- **On Demand Session Schedule:** Will be posted prior to the event in the [ALD/ALE 2021 Online Scheduler](#) and [Mobile App](#) (available in March) On Demand access will begin on June 28, 2021.

All sessions will be accessible via the [ALD/ALE 2021 Online Scheduler](#) and/or [Mobile App](#) through July 31, 2021*. Live sessions will be presented via the Zoom platform over the Meeting dates (June 27-30, 2021). On Demand access will begin on Monday, June 28, 2021, 2:00 pm EDT.

**Access After July 31, 2021: AVS Platinum Members will have access to all On Demand Sessions in the AVS Technical Library until their membership expiration date.*

NOTE: All Live Sessions will be held in Eastern Daylight Time (EDT) - USA

Sunday Morning, June 27, 2021

Tutorial Session (ALL INVITED SESSION) Room Live - Session TS1-SuM ALD/ALE Tutorial Session Moderators: Prof. Seán Barry, Carleton University, Canada, Dr. Scott Clendenning, Intel Corporation, USA		<i>All Session Times are noted in EDT (USA)</i>
10:00am EDT	TS1-SuM-1 Tutorial Opening Remarks & Welcome, Seán Barry , Carleton University, Canada	
10:05am	INVITED: TS1-SuM-2 ALE and ALD: Two Biotopes of a Kind in Atomic-Scale Processing, Fred Roozeboom , Eindhoven University of Technology, TNO-Holst Centre, Netherlands	
10:50am	BREAK	
10:55am	INVITED: TS1-SuM-12 Fundamentals of Atomic Layer Deposition: An Introduction ("ALD 101"), Riikka Puurunen , Aalto University, School of Chemical Engineering, Finland	
11:40am	BREAK	
11:45am	INVITED: TS1-SuM-22 Let's Talk Dirty - Battling Impurities in ALD Films, Henrik Pedersen , Linköping University, Sweden	
12:30pm	BREAK	
12:35pm	INVITED: TS1-SuM-32 Seeing Is Believing: <i>In situ</i> Techniques for Atomic Layer Deposition (ALD) Process Development and Diagnostics, Parag Banerjee , University of Central Florida, USA	
1:20pm	BREAK	
1:25pm	INVITED: TS1-SuM-42 ALD Powder Manufacturing, Arrelaine Dameron , Forge Nano, USA	
2:10pm	TS1-SuM-51 Closing Remarks & Thank You!, Scott Clendenning , Intel, USA	

Monday Morning, June 28, 2021

	Live Session Room Live - Session LI-MoM Plenary & Awards Live Session Moderators: Prof. Seán Barry, Carleton University, Canada, Prof. Jane P. Chang, University of California, Los Angeles, USA, Dr. Scott Clendenning, Intel Corporation, USA, Dr. Thorsten Lill, Lam Research Corp., USA, Prof. Mikko Ritala, University of Helsinki, Finland, Prof. Stacey Bent, Stanford University, USA	<i>All Session Times are noted in EDT (USA)</i>
10:00am EDT	LI-MoM-1 Opening Remarks & Welcome, Scott Clendenning , Intel, USA; Seán Barry , Carleton University, Canada; Jane Chang , University of California, Los Angeles, USA; Thorsten Lill , Lam Research Corp., USA	
10:10am	INVITED: LI-MoM-3 Plenary Lecture: Materials & Innovation - Essential Elements that Underpin the Next Industrial Revolution, Todd Younkin , SRC, USA	
10:40am	LI-MoM-9 Introduction to ALD and ALE Student Finalists, Seán Barry , Carleton University, Canada; J. Chang , University of California, Los Angeles, USA	
10:45am	LI-MoM-10 ALD Student Award Finalist Talk: Enhanced Surface Adsorption in Electric Field/Potential Assisted Atomic Layer Deposition (EA-ALD) of Ultrathin Ru Film, Yoon Jeong Kim , J. Han , J. Heo , T. Park , Hanyang University, Korea	
11:00am	LI-MoM-13 ALE Student Award Finalist Talk: Cryo-ALE of Silicon Based Materials, Jack Nos , G. Antoun , T. Tillocher , P. Lefauchaux , GREMI CNRS/Université d'Orléans, France; J. Faguet , Tokyo Electron America Inc., USA; K. Maekawa , TEL Technology Center America; R. Dussart , GREMI CNRS/Université d'Orléans, France	
11:15am	BREAK	
11:20am	LI-MoM-17 ALD Student Award Finalist Talk: What Controls the Conformality of Plasma ALD in High-Aspect-Ratio Applications?, Karsten Arts , S. Deijkers , T. Faraz , Eindhoven University of Technology, Netherlands; R. Puurunen , Aalto University, Finland; E. Kessels , H. Knoops , Eindhoven University of Technology, Netherlands	
11:35am	LI-MoM-20 ALE Student Award Finalist Talk: Modelling Atomic Layer Etching of Thin Film Metal Oxides, Rita Mullins , Tyndall National Institute, University College Cork, Ireland; S. Kondati Natarajan , Synopsys, Denmark; M. Nolan , Tyndall National Institute, University College Cork, Ireland	
11:50am	LI-MoM-23 ALD Student Award Finalist Talk: Surface Passivation Using Aminosilanes for Area-Selective Atomic Layer Deposition, Kaat Van Dongen , KU Leuven, Belgium; R. Nye , North Carolina State University, USA; D. De Simone , A. Delabie , IMEC, Belgium	
12:05pm	LI-MoM-26 ALD Student Award Finalist Talk: Electron-Enhanced Atomic Layer Deposition of Ruthenium Thin Films Using (DMBD)Ru(CO) ₃ , Michael Collings , S. George , University of Colorado, Boulder, USA	
12:20pm	INVITED: LI-MoM-29 Plenary Lecture: Mechanisms of Thermal Atomic Layer Etching, Steven George , University of Colorado Boulder, USA	
12:50pm	BREAK	
12:55pm	INVITED: LI-MoM-36 Introduction to 2021 ALD Innovator Awardee Stacey Bent , Stanford University, USA: Up, Down and All Around: Controlling Atomic Placement in ALD, Seán Barry , Carleton University, Canada	
1:00pm	LI-MoM-37 ALD Student Award Finalist Talk: Tuning Properties of Vapor Deposited ZIF-8 Thin Films With Preferred Orientation, Marianne Kräuter , Graz University of Technology, Austria	
1:15pm	LI-MoM-40 ALE Student Award Finalist Talk: Reaction Pathways Leading to Anisotropic Patterning of Cu, Xia (Gary) Sang , M. Martinez , T. Smith , E. Carter , J. Chang , University of California at Los Angeles, USA	
1:30pm	LI-MoM-43 ALE Student Award Finalist Talk: Thermal Atomic Layer Etching of Cobalt Using SO ₂ Cl ₂ and P(CH ₃) ₃ , Jessica Murdzek , S. George , University of Colorado Boulder, USA	
1:45pm	LI-MoM-46 ALD Student Award Finalist Talk: Insight into Film Growth Mechanisms in Polyurea Molecular Layer Deposition (MLD) Using New and Combined Precursors, Siyao Wang , R. Nye , G. Parsons , North Carolina State University, USA	
2:00pm	LI-MoM-49 Closing Remarks and Thank Yous, J. P. Chang , University of California, Los Angeles, USA; Thorsten Lill , Lam Research Corp., USA; S. Barry , Carleton University, Canada, USA; S. Clendenning , Intel, USA	

Tuesday Morning, June 29, 2021

	Live Session Room Live - Session LI-ALD-TuM1 Precursors (AF): ALD Processes Live Session Moderators: Prof. Jin-Seong Park, Hanyang University, Korea (Republic of), Dr. Tania Sandoval, Technical University Federico Santa Maria, Chile, Dr. Matthias Young, University of Missouri-Columbia, USA	<i>All Session Times are noted in EDT (USA)</i>
9:30am EDT	LI-ALD-TuM1-1 Welcome, Thank Yous & Session Instructions, Jin-Seong Park , Hanyang University, Korea (Republic of)	
9:35am	INVITED: LI-ALD-TuM1-2 Atomic Layer Deposition of Amorphous/Nanocrystalline Phase-Composite Nanolayers, Myung-Mo Sung , Hanyang University, Republic of Korea	
9:55am	LI-ALD-TuM1-6 Density Functional Study on ALD Precursors for Hexagonal Boron Nitride Deposition, Naoya Uene , T. Mabuchi, Tohoku University, Japan; J. Yong, Japan Advanced Chemicals Ltd., China; M. Zaitso, S. Yasuhara, Japan Advanced Chemicals Ltd., Japan; T. Tokumasu, Tohoku University, Japan	
10:10am	LI-ALD-TuM1-9 A Novel co-Precursor Approach for Atomic Layer Deposition of Various Semiconductor Thin Films, Kok Chew Tan , J. Jung, C. Yeon, J. Kim, S. Kim, T. Eom, S. Lee, Y. Park, Soulbrain, Korea (Republic of)	
10:25am	LI-ALD-TuM1-12 Tuneable YAlOx Protective Coatings Against Plasma Damage to Meet the Requirements in Future Semiconductor Fabrication Processes, J. Kalliomaki, M. Kaaria, K. Dorai, Tiina McKee , Picosun Oy, Finland	
10:40am	BREAK	
10:50am	INVITED: LI-ALD-TuM1-17 ALD of Boron Nitride by Polymer Derived Ceramics chemistry, W. Hao, T. Saboo, C. Journet, Catherine Marichy, Univ Lyon, France	
11:10am	LI-ALD-TuM1-21 Process Parameter and Substrate Dependence of Sticking Coefficients in Atomic Layer Deposition Processes, Martin Knaut , TU Dresden, Germany; L. Jäckel, Fraunhofer ENAS, Germany; M. Albert, T. Mikolajick, TU Dresden, Germany	
11:25am	LI-ALD-TuM1-24 Volatile Cerium and Ytterbium Precursors for Atomic Layer Deposition: Synthesis, DFT and Application, Parmish Kaur , Ruhr University Bochum, Germany; A. Muriqi, Tyndall National Institute, University College Cork, Ireland; R. Ghiyasi, Aalto University, Finland; M. Nolan, Tyndall National Institute, University College Cork, Ireland; M. Karppinen, Aalto University, Finland; A. Devi, Ruhr University Bochum, Germany	
11:40am	LI-ALD-TuM1-27 Predicting Precursor Volatility With Machine Learning, Simon D. Elliott , A. Chandrasinghe, A. Chandrasekaran, Y. An, M. Halls, Schrödinger, USA	
11:55am	INVITED: LI-ALD-TuM1-30 Surface Chemistry of Deposition and Etch from First Principles Simulations, Michael Nolan , Tyndall Institute, Ireland	
12:15pm	BREAK	
12:30pm	INVITED: LI-ALD-TuM1-37 Atomic Layer Deposition of Functional Dielectrics and Metals for the Emerging Non-Volatile Memories, Anna Chernikova , M. Kozodaev, R. Khakimov, Y. Lebedinskii, A. Markeev, Moscow Institute of Physics and Technology, Russian Federation	
12:50pm	LI-ALD-TuM1-41 Crystallinity Control via Atomic Level Scaffolding, Elham Rafie Borujeny , K. Cadien, University of Alberta, Canada	
1:05pm	LI-ALD-TuM1-44 Plasma-Enhanced Atomic Layer Deposition of Copper Oxide Semiconductors With Tunable Phase, Oxidation State, and Morphology for P-Type Thin Film Transistors, Julia D. Lenef , J. Jo, O. Trejo, University of Michigan, Ann Arbor, USA; D. Mandia, Argonne National Laboratory, USA; R. Peterson, N. Dasgupta, University of Michigan, Ann Arbor, USA	
1:20pm	LI-ALD-TuM1-47 Tuning Coercive Field and Polarization in Inherently Ferroelectric HZO Film Deposited Using HfD-04 and ZrD-04, Raisul Islam , M. McBriarty, M. Laudato, R. Clarke, S. Hoang, C. Chen, G. Panaman, K. Littau, EMD Electronics, USA	
1:35pm	INVITED: LI-ALD-TuM1-50 Ferroelectric Devices: From Applications to Microstructures, Asif Khan , Georgia Institute of Technology, USA	
1:55pm	LI-ALD-TuM1-54 Closing Remarks & Thank Yous, Tania Sandoval , Technical University Federico Santa Maria, Chile	

Tuesday Morning, June 29, 2021

Live Session Room Live - Session LI-ALD-TuM2 ALD Applications (AA) Live Session Moderators: Prof. Annelies Delabie, IMEC, Belgium, Prof. Jolien Dendooven, Ghent University, Belgium, Prof. Xiangbo Meng, University of Arkansas, USA		<i>All Session Times are noted in EDT (USA)</i>
9:30am EDT	LI-ALD-TuM2-1 Welcome, Thank Yous & Instructions, Jolien Dendooven , Ghent University, Belgium	
9:35am	INVITED: LI-ALD-TuM2-2 ALD Growth of Low Work Function Metal Gate for FinFET Technology, Jinjuan Xiang , C. Zhao, Institute of Microelectronics, Chinese Academy of Sciences, China; Y. Ding, Jiangnan University, China; C. Xu, Nata Opto-electronic Material Co., Ltd., China; L. Du, Jiangnan University, China; J. Li, X. Wang, Institute of Microelectronics, Chinese Academy of Sciences, China	
9:55am	LI-ALD-TuM2-6 Atomic Layer Deposition of GeTe/Sb ₂ Te ₃ Superlattice for Large-Capacity and Low-Power Phase Change Memory, Chanyoung Yoo , E. Park, W. Kim, J. Jeon, W. Choi, B. Park, G. Han, Seoul National University, Korea (Republic of); Y. Lee, Jeonbuk National University, Korea (Republic of); C. Hwang, Seoul National University, Korea (Republic of)	
10:10am	LI-ALD-TuM2-9 Atomic Layer Deposited p-type SnO Thin Films with c-axis Preferred Orientation and the Associated Device Applications, Hye-mi Kim , S. Choi, H. Jeong, J. Park, Hanyang University, Korea	
10:25am	LI-ALD-TuM2-12 Atomic Layer Deposition of Highly Conductive Co ₉ S ₈ Thin Films Using Diamine Adducts of Cobalt(II) Halides and H ₂ S, Miika Mattinen , Eindhoven University of Technology, Netherlands; T. Hatanpää, K. Mizohata, J. Räisänen, M. Leskelä, M. Ritala, University of Helsinki, Finland	
10:40am	BREAK	
10:50am	INVITED: LI-ALD-TuM2-17 ALD-Oxide Materials and Surface Modification for Next-Generation PV Devices, Nathanaele Schneider , Institut Photovoltaïque d'Ile de France	
11:10am	LI-ALD-TuM2-21 Particle Atomic Layer Deposition as an Effective Way to Enhance the Li-S Battery Energy Density, Mato Knez , S. Garcia, CIC nanoGUNE, Spain	
11:25am	LI-ALD-TuM2-24 Advanced ALD Technologies Platform to Enable Future Applications and Scaling & Review of Emerging Applications for Sensors, Mems, Energy Harvesters, Transparent Electronics and Coated Powder for Composites, Noureddine Adjeroud , Luxembourg Institute of Science and Technology (LIST), Luxembourg	
11:40am	LI-ALD-TuM2-27 Molecular Layer Deposition of Li-Ion Conducting "Lithicone" Solid Electrolytes, Eric Kazyak , M. Shin, W. LePage, T. Cho, N. Dasgupta, University of Michigan, Ann Arbor, USA	
11:55am	INVITED: LI-ALD-TuM2-30 Atomic-Level Precision at Large Scale: Opportunities and Challenges of ALD, Fatemeh Hashemi , TNO Science and Industry, the Netherlands	
12:15pm	BREAK	
12:30pm	INVITED: LI-ALD-TuM2-37 ALD in Photovoltaics: From Extremely Thin to Ultrathin Layers, Physical Insight, and Chemical Methods Development, P. Büttner, D. Döhler, Y. Cao, V. Koch, F. Scheler, Friedrich-Alexander-University Erlangen-Nürnberg (FAU), Germany; C. Pointer, Lehigh University, USA; S. Korenko, M. Barr, I. Mínguez-Bacho, Friedrich-Alexander-University Erlangen-Nürnberg (FAU), Germany; E. Young, Lehigh University, USA; Julien Bachmann , Friedrich-Alexander-University Erlangen-Nürnberg (FAU), Germany	
12:50pm	LI-ALD-TuM2-41 Demonstration of Pt-Wire Temperature Sensors Fabricated by Atomic-Layer 3D Printer Using MeCpPtMe ₃ and O ₃ , Gabriel Vanko , B. Hudec, Slovak Academy of Sciences, Slovakia; M. Precner, Institute of Electrical Engineering, Slovak Academy of Sciences, Bratislava, Slovakia; I. Kundrata, M. Plakhotnyuk, ATLANT 3D Nanosystems, Denmark; J. Bachmann, Friedrich-Alexander Universität Erlangen-Nürnberg, Germany; K. Fröhlich, Slovak Academy of Sciences, Slovakia	
1:05pm	LI-ALD-TuM2-44 Optimization of 1D Core-Shell Heterostructures for Gas Sensing, M. Raza, Nicola Pinna , Humboldt University Berlin, Germany	
1:20pm	LI-ALD-TuM2-47 Bridging the Synthesis Gap in Vapor-Phase Deposition using Ionic Liquid as Solvent, Jingwei Shi , S. Bent, Stanford University, USA	
1:35pm	LI-ALD-TuM2-50 A Model of ALD Particle Coating in Fluidized Bed Reactors: Comparison With Experiments and Other Particle Coating Techniques, Angel Yanguas-Gil , Z. Lu, P. Darapaneni, D. Kang, A. Mane, J. Kropf, C. Marshall, J. Elam, Argonne National Laboratory, USA	
1:50pm	LI-ALD-TuM2-53 Closing Remarks & Thank Yous, Xiangbo Meng , University of Arkansas, USA	

Tuesday Morning, June 29, 2021

Live Session Room Live - Session LI-ALE-TuM3 Atomic Layer Etching Live Session I Moderators: Dr. Dmitry Suyatin, Lund University, Sweden, Prof. Gottlieb Oehrlein, University of Maryland, USA		<i>All Session Times are noted in EDT (USA)</i>
9:30am EDT	LI-ALE-TuM3-1 Welcome, Thank Yous & Instructions, Dmitry Suyatin , Lund University, Sweden, G. Oehrlein, University of Maryland, USA	
9:35am	INVITED: LI-ALE-TuM3-2 Atomic Scale Profile Control in Fine Pitch Patterning and High Aspect Ratio Contact Hole Etching, Tetsuya Nishizuka , S. Kumakura, T. Katsunuma, Y. Kihara, M. Honda, Tokyo Electron Miyagi, Ltd., Japan	
9:55am	LI-ALE-TuM3-6 Nanoscale Cryogenic Process for Highly Selective Etch of Si ₃ N ₄ Over Si, Gaelle Antoun , T. Tillocher, P. Lefauchaux, GREMI CNRS/Université d'Orléans, France; A. Girard, IMN CNRS/Université de Nantes, France; C. Cardinaud, IMN CNRS/Université d'Orléans, France; J. Faguet, Tokyo Electron America Inc., USA; K. Maekawa, D. Zhang, H. Kim, M. Wang, TEL Technology Center, America, LLC, USA; R. Dussart, GREMI CNRS/Université d'Orléans, France	
10:10am	LI-ALE-TuM3-9 Using Selective Surface Functionalization of SiN _x to Increase SiO ₂ to SiN _x ALE Selectivity, R. Gasvoda , Xue Wang , Colorado School of Mines, USA; P. Kumar, Z. Zhang, E. Hudson, Lam Research Corporation, USA; S. Agarwal, Colorado School of Mines, USA	
10:25am	LI-ALE-TuM3-12 Etch-stop Mechanisms in Plasma-assisted Atomic Layer Etching of Silicon Nitride: A Molecular Dynamics Study, Jomar Tercero , University of the Philippines; A. Hirata, Sony Semiconductor Solutions Corporation, Japan; M. Isobe, Osaka University, Japan; M. Fukasawa, Sony Semiconductor Solutions Corporation, Japan; M. Vasquez, Jr., University of the Philippines; S. Hamaguchi, Osaka University, Japan	
10:40am	BREAK	
10:50am	INVITED: LI-ALE-TuM3-17 Landscape of Spontaneous Etch via Ligand-Exchange in Thermal Atomic Layer Etching, Ann Lii-Rosales , A. Cavanagh, S. George, University of Colorado Boulder, USA	
11:10am	LI-ALE-TuM3-21 Mechanisms of Self-Limiting Processes in Thermal Atomic Layer Etching of Nickel by β-diketones, Abdulrahman Basher , I. Hamada, T. Ito, K. Karahashi, S. Hamaguchi, Osaka University, Japan	
11:25am	LI-ALE-TuM3-24 Oxidation Influences Etch Quality in the Low-Temperature Thermal ALE of Copper, Martin McBriarty , J. McWilliams, M. Moinpour, R. Kanjolia, K. Littau, EMD Electronics, USA	
11:40am	LI-ALE-TuM3-27 Thermal Atomic Layer Etching of Al ₂ O ₃ and AlN Using HF or XeF ₂ for Fluorination and BCl ₃ for Ligand-Exchange, Austin Cano , S. George, University of Colorado at Boulder, USA	
11:55am	LI-ALE-TuM3-30 Closing Remarks & Thank Yous, Gottlieb Oehrlein , University of Maryland, USA, D. Suyatin, Lund University, Sweden	

Wednesday Morning, June 30, 2021

Live Session Room Live - Session LI-ALD-WeM1 Selective Deposition (AS) Live Session Moderators: Prof. Adam Hock, Illinois Institute of Technology, USA, Prof. Henrik Pedersen, Linköping University, Sweden, Prof. Matti Putkonen, University of Helsinki, Finland		<i>All Session Times are noted in EDT (USA)</i>
9:30am EDT	LI-ALD-WeM1-1 Welcome, Thank Yous & Instructions, Matti Putkonen , University of Helsinki, Finland	
9:35am	INVITED: LI-ALD-WeM1-2 Another Opportunity in Area Selective Atomic Layer Deposition using Precursor Inhibitors, Han-Bo-Ram Lee , Incheon National University, Republic of Korea	
9:55am	LI-ALD-WeM1-6 Direct Deposition of High-resolution 3D Nanostructures by Atomic-Layer Additive Manufacturing (ALAM), Sarah Tymek , Friedrich-Alexander-University Erlangen-Nürnberg (FAU), Germany; I. Kundrata , ATLANT, Germany; M. Barr , Friedrich-Alexander-University Erlangen-Nürnberg (FAU), Germany; P. Wiesner , ATLANT, Germany; M. Plakhotnyuk , ATLANT, Denmark; J. Bachmann , Friedrich-Alexander-University Erlangen-Nürnberg (FAU), Germany	
10:10am	LI-ALD-WeM1-9 The Relation between Reactive Surface Sites and Precursor Choice for Area-Selective Atomic Layer Deposition, Marc Merckx , A. Angelidis , J. Li , Eindhoven University of Technology, Netherlands; D. Hausmann , Lam Research Corp., USA; E. Kessels , Eindhoven University of Technology, Netherlands; T. Sandoval , Universidad Técnica Federico Santa María, Chile; A. Mackus , Eindhoven University of Technology, Netherlands	
10:25am	LI-ALD-WeM1-12 Diffusion-Mediated Ruthenium Area-Selective Atomic Layer Deposition in Nanopatterns, Jan-Willem J Clerix , E. Marques , J. Soethoudt , KU Leuven / imec, Belgium; F. Grillo , ETH Zurich, Switzerland; G. Pourtois , imec, Belgium; J. Van Ommen , TU Delft, Netherlands; A. Delabie , KU Leuven / imec, Belgium	
10:40am	BREAK	
10:50am	INVITED: LI-ALD-WeM1-17 Area-Selective CVD of Metallic Films on Oxide Substrates With Acidic or Basic Hydroxyl Groups, Laurent Souqui , University of Illinois at Urbana-Champaign, USA; Z. Zhang , Applied Materials, USA; S. Liu , University of California - Riverside, USA; E. Mohimi , LAM Research, USA; G. Girolami , J. Abelson , University of Illinois at Urbana-Champaign, USA	
11:10am	LI-ALD-WeM1-21 Inhibiting Plasma Enhanced Atomic Layer Deposition of SiO ₂ on Cu using Thiol Multilayers in an ABC Cycle, Rohit Narayanan Kavassery Ramesh , W. Xu , R. Gasvoda , Colorado School of Mines, USA; X. Lei , B. Zope , H. Chandra , R. Ridgeway , X. Jiang , G. Liu , R. Kanjolia , A. Derecskei , R. Pearlstein , EMD Electronics, USA; S. Agarwal , Colorado School of Mines, USA	
11:25am	LI-ALD-WeM1-24 Sequential Area Selective Deposition of Poly(3,4-ethylenedioxythiophene) (PEDOT) and Tungsten on SiO ₂ /Si-H Substrates, Hwan Oh , J. Kim , S. Song , G. Parsons , North Carolina State University, USA	
11:40am	LI-ALD-WeM1-27 Atomic Precision Advanced Manufacturing and Lessons for Area-Selective Deposition, Scott Schmucker , E. Frederick , Q. Campbell , J. Ivie , E. Anderson , Sandia National Laboratories, USA; K. Dwyer , University of Maryland, College Park, USA; A. Baczewski , G. Wang , Sandia National Laboratories, USA; R. Butera , Laboratory for Physical Sciences, USA; S. Misra , Sandia National Laboratories, USA	
11:55am	INVITED: LI-ALD-WeM1-30 The Role of Precursor-Inhibitor Interactions in Area-Selective Atomic Layer Deposition, Tania Sandoval , Universidad Técnica Federico Santa María, Chile	
12:15pm	BREAK	
12:30pm	LI-ALD-WeM1-37 Spatially Controlled Atomic Layer Deposition within Polymer Templates for Multi-Material Nanorods and Nanowires Fabrication, Rotem Azoulay , T. Segal Peretz , Technion, Israel	
12:45pm	LI-ALD-WeM1-40 Maskless Patterned Spatial ALD for Thin-Film Encapsulation, C. Frijters , SALDtech B.V., Netherlands; Y. Creyghton , Holst Centre / TNO, Netherlands; Paul Poodt , SALDtech B.V., Netherlands	
1:00pm	LI-ALD-WeM1-43 Y ₂ O ₃ Atomic Layer Deposition Process Scale-Up to Very Large Batch Size, Lassi Leppilahti , P. Päivike , M. Saarniheimo , S. Sneek , Beneq, Finland	
1:15pm	LI-ALD-WeM1-46 Low Temperature Thermal Atomic Layer Deposition of Elemental Tellurium Using and a Novel Tellurium Precursor and Nitrogen-Based Coreactants, A. Upadhyay , Wayne State University, USA; K. Woods , Applied Materials, USA; M. Saly , T. Knisley , Applied Materials Inc., USA; Charles Winter , Wayne State University, USA	
1:30pm	INVITED: LI-ALD-WeM1-49 When Complex Becomes Complicated – Strategies for Succeeding with Arduous Ternary Oxide Processes, Henrik Soenstebj , University of Oslo, Norway	
1:50pm	LI-ALD-WeM1-52 Announcement of ALD and ALE Student Awardees, Closing Remarks & Thank Yous, Dr. Scott Clendenning , Intel Corporation, USA	

Wednesday Morning, June 30, 2021

Live Session Room Live - Session LI-ALD-WeM2 AM/AF (in-situ metro) Live Session Moderators: Dr. Alex Martinson, Argonne National Laboratory, USA, Dr. Virginia Wheeler, U.S. Naval Research Laboratory, USA, Dr. Nathanaelle Schneider, CNRS-IPVF, France		<i>All Session Times are noted in EDT (USA)</i>
9:30am EDT	LI-ALD-WeM2-1 Welcome, Thank Yous & Instructions, Nathanelle Schneider , CNRS-IPVF, France	
9:35am	INVITED: LI-ALD-WeM2-2 Surface Modification of TiO ₂ Nanoparticles by Ultrathin SiO ₂ Films, Cu ₂ O and Pt Nanoclusters for Enhanced Photocatalytic Activity Using Atomic Layer Deposition in a Fluidized Bed Reactor: A Comparative Study, Hao Van Bui , Phenikaa University, Viet Nam; D. Benz, J. van Ommen , Delft University of Technology, Netherlands	
9:55am	LI-ALD-WeM2-6 In-Situ High Temperature XRD of Atomic Layer Deposited Gallia-Ceria Mixed Oxides, Fatemeh Gashoul Daresibi , University of Tehran, Iran; M. Heikkilä, M. Ritala , University of Helsinki, Finland; A. Khodadadi, Y. Mortazavi , University of Tehran, Iran	
10:10am	LI-ALD-WeM2-9 Using Ambient Pressure X-Ray Photoelectron Spectroscopy to Study ALD in real-time, Esko Kokkonen , Max IV Laboratory, Sweden; M. Kaipio, H. Nieminen , University of Helsinki, Finland; F. Rehman , Lund University, Sweden; V. Miikkulainen , Aalto University, Finland; M. Putkonen, M. Ritala, S. Huotari , University of Helsinki, Finland; J. Schnadt , Lund University, Sweden; S. Urpelainen , University of Oulu, Finland	
10:25am	LI-ALD-WeM2-12 Observing the Crystallization of Ultrathin Alumina and Polymorphic Transformations of Gallium Oxide Using <i>in Situ</i> Reflection High Energy Electron Diffraction, Alexandra Howzen , N. Strandwitz , Lehigh University, USA	
10:40am	BREAK	
10:50am	INVITED: LI-ALD-WeM2-17 Novel Functional Metal-Organic Materials by ALD/MLD, Maarit Karppinen , Aalto University, Finland	
11:10am	LI-ALD-WeM2-21 Ultrathin Hybrid Siloxane-Alumina Dielectric Films by Ring Opening Molecular Layer Deposition of Cyclic Tetrasiloxane, Kristina Ashurbekova , Dagestan State University, Russian Federation; K. Ashurbekova , CIC nanoGUNE BRTA, Spain; I. Saric , University of Rijeka, Croatia; M. Gobbi, E. Modin, A. Chuvilin , CIC nanoGUNE BRTA, Spain; M. Petravic , University of Rijeka, Croatia; I. Abdulagatov , Dagestan State University, Russian Federation; M. Knez , CIC nanoGUNE BRTA, Spain	
11:25am	LI-ALD-WeM2-24 Optically Controlled Large-Coercivity Room-Temperature Thin-Film Magnets Through ALD/MLD, Anish Philip , M. Karppinen , Aalto University, Finland	
11:40am	LI-ALD-WeM2-27 Deposition of Thermally Stable Polybenzimidazole (PBI) Thin Films by Molecular Layer Deposition Technique, Saba Ghafourisaleh , M. Leskelä, M. Putkonen, M. Ritala , University of Helsinki, Finland	
11:55am	INVITED: LI-ALD-WeM2-30 Future of Membrane Separations through Atomic Layer Processing, David Bergsman , University of Washington, USA	
12:15pm	BREAK	
12:30pm	LI-ALD-WeM2-37 Molecular Layer Deposition of All-Organic Polyamide Nylon 6,2, Marcel Junige , S. George , University of Colorado at Boulder, USA	
12:45pm	LI-ALD-WeM2-40 Vapor Phase Conversion of Pt Nanoparticles Into Pt-Sn Bimetallic Nanoparticles, Nithin Poonkottil , R. Ramachandran , Ghent University, Belgium; E. Solano , ALBA Synchrotron, Spain; N. Veeraraghavan Srinath, J. Feng, A. Werbrouck, M. Van Daele, M. M. Minjauw, M. Filez, H. Poelman , Ghent University, Belgium; A. Coati , Synchrotron SOLEIL, France; C. Detavernier, J. Dendooven , Ghent University, Belgium	
1:00pm	LI-ALD-WeM2-43 Atomic Layer Deposition of Zirconium Sulfide, Xiangbo Meng , University of Arkansas, USA	
1:15pm	LI-ALD-WeM2-46 Vapor Phase Infiltration of Titanium Tetrachloride Into Polyaniline (PANI): Process Kinetics, Electronic Properties and Optical Response, Mark Losego , S. Gregory, Y. Li, K. Malinowski , Georgia Tech, USA	
1:30pm	INVITED: LI-ALD-WeM2-49 Atomic/Molecular Layer Deposition for Batteries Materials, Chunmei Ban , University of Colorado Boulder, USA	
1:50pm	LI-ALD-WeM2-53 Announcement of ALD and ALE Student Awardees, Closing Remarks & Thank Yous, Seán Barry , Carleton University, Canada	

Wednesday Morning, June 30, 2021

Live Session Room Live - Session LI-ALE-WeM3 Atomic Layer Etching Live Session II Moderators: Prof. Satoshi Hamaguchi, Osaka University, Japan, Dr. Angelique Raley, TEL Technology Center, America, LLC, USA		<i>All Session Times are noted in EDT (USA)</i>
9:30am EDT	LI-ALE-WeM3-1 Welcome, Thank Yous, & Instructions, Satoshi Hamaguchi , Osaka University, Japan, A. Raley, TEL Technology Center, America, LLC, USA	
9:35am	INVITED: LI-ALE-WeM3-2 Precise Atomic Layer Control of 2D MoS ₂ by ALE Technique for Device Applications, Geun Young Yeom , Sungkyunkwan University, Republic of Korea; K. Kim, J. Kang , Sungkyunkwan University, Korea, Korea (Democratic People's Republic of); K. Kim , Sungkyunkwan University, Korea, Massachusetts Institute of Technology, USA	
9:55am	LI-ALE-WeM3-6 Structural and Compositional Evolution of SiN Surfaces Under Low Energy Ar ⁺ Bombardment, Erik Cheng, G. Hwana , University of Texas at Austin, USA; P. Ventzek, Z. Chen , Tokvo Electron America	
10:10am	LI-ALE-WeM3-9 Demonstration of Atomic-Layer-Etching of SiO ₂ in a small-plasma-volume incorporating 162MHz CCP source and 27MHz substrate bias using CHF ₃ and Ar/O ₂ , Cleo Harvey, B. Ellingboe , Dublin City University, Ireland	
10:25am	LI-ALE-WeM3-12 Vacuum Ultraviolet Enhanced Atomic Layer Etching of Metal Films, Xin Yang, H. Nallan , University of Texas at Austin, USA; B. Coffey , Lam Research, USA; J. Ekerdt , University of Texas at Austin, USA	
10:40am	BREAK	
10:50am	INVITED: LI-ALE-WeM3-17 Plasma ALE for Anisotropic and Isotropic Etching, Erwin Kessels, A. Mackus , Eindhoven University	
11:10am	LI-ALE-WeM3-21 Atomic Layer Etching of Gallium Nitride (GaN) Using SF ₆ /Ar Plasmas, Lamia Hamraoui, T. Tillocher, P. Lefauchaux, R. Dussart , GREMI CNRS/Université d'Orléans, France; M. Boufnichel , STMicroelectronics, France	
11:25am	LI-ALE-WeM3-24 Selective Atomic Layer Etching between GaN and SiN by Using HBr Neutral Beam, Takahiro Sawada, D. Otori , Tohoku University, Japan; K. Sugawara , Sumitomo Electric Industries, Ltd., Japan; M. Okada, K. Nakata, K. Inoue , Sumitomo Electric Industries, Ltd, Japan; D. Sato , Showa Denko K.K., Japan; S. Samukawa , Tohoku University, Japan	
11:40am	LI-ALE-WeM3-27 Study of Surface Damage Formation in Atomic Layer Etching of Si via Molecular Dynamics Simulation, Erin Joy Capdos Tinacba, M. Isobe, S. Hamaguchi , Osaka University, Japan	
11:55am	BREAK	
12:00pm	INVITED: LI-ALE-WeM3-31 Patterning High Density STT-MRAM with a Novel Atomic Layer Etch Process, Samantha Tan, W. Yang, T. Mukherjee, Z. El Oteff, Y. Fan, R. Lin, S. Yun, K. Kanarik, T. Lill, Y. Pan, R. Gottscho , Lam Research Corporation, USA	
12:20pm	LI-ALE-WeM3-35 Exploring Thermal Ale for Spin-Torque Majority Gate Applications, Jean-Francois de Marneffe , imec v.z.w., Belgium; P. Nguyen , Air Liquide, USA; S. Couet, L. Souriau , imec v.z.w., Belgium; N. Stafford, P. Venkateswara , Air Liquide, USA; S. De Gendt , imec v.z.w. / KULeuven, Dpt of Chemistry, Belgium; Y. Canvel , imec v.z.w, Belgium	
12:35pm	LI-ALE-WeM3-38 Topographic Selective Deposition (TSD) by Combining Plasma Enhanced Atomic Layer Deposition and Atomic Layer Etching Processes, Moustapha Jaffal, G. Lefevre, T. Yeghoyan, T. Chevolleau , LTM, France; R. Gassilloud, N. Posseme , CEA-LETI, France; M. Bonvalot , LTM, France; C. Vallee , University Grenoble-Alpes, France	
12:50pm	LI-ALE-WeM3-41 Surface Smoothing by Atomic Layer Deposition and Etching, S. Gerritsen, Nicholas Chittock, V. Vandalon, W. Kessels, A. Mackus , Eindhoven University of Technology, Netherlands	
1:05pm	LI-ALE-WeM3-44 In Situ Analysis on Atomic Layer Etching of Al ₂ O ₃ , Johanna Reif, M. Knaut, S. Killge, M. Albert, J. Bartha, T. Mikolajick , Technische Universität Dresden, Germany	
1:20pm	LI-ALE-WeM3-47 Announcement of ALE and ALD Student Awardees, Closing Remarks & Thank Yous, Thorsten Lill, Lam Research Corporation, USA, A. Raley , TEL Technology Center, America, LLC, USA S. Hamaguchi, Osaka University, Japan	

