

ALD/ALE 2024 Program Key

AA	ALD Applications
AF	ALD Fundamentals
ALDALE	ALD & ALE
ALE	Atomic Layer Etching
AM	ALD for Manufacturing
AS	Area Selective ALD
EM	Emerging Materials
NS	Nanostructure Synthesis and Fabrication
PS	Plenary Session

PROGRAM NUMBERS: They are listed with the Conference topic letters first, the session number second, the Day of the Week, Morning (M) or Afternoon (A) and the presentation slot (e.g., **AA1-TuM-1**).

ALD/ALE 2024 Program Overview

Room /Time	Hall 3	Hall 3A	Hall 3D	Hall 3E	Hall 3F	Hall 5A
SuA		TS-SuA: Tutorial and Perspective Session (Separate Registration Required)				
SuP	POSTER SESSIONS (ALE Only)					
MoM						PS-MoM: Plenary Session
MoA		AF-MoA: Precursors and Chemistry: Precursor Design, New Precursors, Process Development I	AA1-MoA: Energy: Batter & Energy Storage AA2-MoA: Applications in ULSI FEOL: Gate Electrodes & Contact Metals, High-K, and 3D Transistor Fabrication	AS-MoA: Selective ALD by Area-Deactivation	ALE-MoA: ALD+ALE and Emerging Topics in ALE	ALDALE-MoA: Student Awardees
MoP	POSTER SESSIONS					
TuM		AF1-TuM: Precursors and Chemistry: Prec Design, New Prec, Process Development II AF2-TuM: Growth & Char: Plasma Enhanced ALD I	AA1-TuM: Applications in ULSI BEOL: Interconnects, Diffusion Barriers, & DRAM AA2-TuM: Energy: Solar Energy Materials	AM-TuM: Equipment Design, Precursor Delivery, and Spatial/R2R/Fast ALD AS-TuM: Selective ALD	ALE1-TuM: ALE Applications and Methodologies ALE2-TuM: Thermal Gas-phase ALE	
TuA		AF1-TuA: Precursors and Chemistry: Prec Design, New Prec, Process Dev III AF2-TuA: Precursors & Chem: Simul, Model, & Mach Learning for ALD	AA1-TuA: Energy: Solar Energy Materials II AA2-TuA: Energy: Catalysis and Fuel Cells	NS-TuA: 2D Nanomaterials by ALD (Including Transition Metal Dichalcogenides) EM-TuA: Vapor Phase Infiltration	ALE1+AM-TuA: ALE & Sustainability ALE2+AM-TuA: A.I. for ALD and ALE, and Wet-Chemical ALE	
TuP	POSTER SESSIONS					
WeM		AF1-WeM: Growth and Char: High Aspect Ratio/High Surf Area/ Powder ALD and Char of ALD Films AF2-WeM: Growth & Char: Low Temp ALD	AA1-WeM: Flash and Ferroelectric Memories AA2-WeM: Memory Applications: RRAM & Neuromorphic, MIM Capacitors	EM-WeM: Molecular Layer Deposition of Organic Materials and Organic-Inorganic Hybrid Materials AA3-WeM: Other Emerging Applications	ALE1-WeM: Plasma and Energy-Enhanced ALE ALE2-WeM: Selectivity, Metrology and Diagnostics in ALE	
WeA		AF1-WeA: Growth and Char: <i>In-situ</i> and <i>in-vacuo</i> Analysis, Surface Science of ALD I AF2-WeA: Growth and Characterization: <i>In-situ</i> and <i>in-vacuo</i>	AA1-WeA: More than Moore Applications AA2-WeA: Emerging: Optics/Optoelectronics	EM-WeA: Other Emerging Materials AA3-WeA: Display Applications	ALE-WeA: Modeling in Atomic Layer Etching AF3-WeA: Growth and Characterization: Plasma Enhanced ALD II	

Sunday Afternoon, August 4, 2024

<p>Tutorial Room Hall 3A - Session TS-SuA Tutorial and Perspective Session (Separate Registration Required) Moderators: Markku Leskelä, University of Helsinki, Finland, Mikko Ritala, University of Helsinki, Finland, Fred Roozeboom, University of Twente and Carbyon B.V., The Netherlands, Dmitry Suyatin, AlixLabs A.B., Sweden</p>		
1:00pm	INVITED: TS-SuA-1 Thermal Atomic Layer Deposition of Electropositive Metal and Element Films and Assessment of Inherently Selective Growth on Substrates, Charles Winter , Wayne State University, USA	
1:15pm		
1:30pm		
1:45pm	INVITED: TS-SuA-4 Area Selective Atomic Layer Deposition: What, What for, and What Next?, Stacey Bent , Stanford University, USA	
2:00pm		
2:15pm		
2:30pm	INVITED: TS-SuA-7 ALE: Basics, New Developments & Applications, Thorsten Lill , Clarycon Nanotechnology Research, Inc., USA	
2:45pm		
3:00pm		
3:15pm	Break	
3:30pm	INVITED: TS-SuA-11 Thin Film Process Technologies for the Atomic Scale Era, Robert Clark , TEL, USA	
3:45pm		
4:00pm		
4:15pm	INVITED: TS-SuA-14 ALD for PV, Current State and Future Prospects, Wei-Min Li , Jiangsu Leadmicro Nano Technology Co. Ltd., China	
4:30pm		
4:45pm		
5:00pm	INVITED: TS-SuA-17 Sustainable Atomic Layer Processing for Semiconductor Applications, Job Soethoudt , IMEC, Belgium	
5:15pm		
5:30pm		

Atomic Layer Etching

Room Hall 3 - Session ALE-SuP

Atomic Layer Etching Poster Session

6:00 – 8:00pm

ALE-SuP-1 Removing Defects from InGaP Surfaces Using Thermal Atomic Layer Etching (ALE), *R. Edel, Andrew Cavanagh, T. Nam, S. George*, University of Colorado Boulder, USA

ALE-SuP-2 Tailored Waveforms for CCP Discharges in ALE Applications, *Anna Nelson, S. Mohr*, Quantemol Ltd., UK

ALE-SuP-3 Atomic Layer Control of 2D WS₂ Through the Formation of Volatile Tungsten Oxychloride, *Hye Won Han, J. Kang, J. Kim, G. Yeom*, Sungkyunkwan University, Republic of Korea

ALE-SuP-4 Thermal Atomic Layer Etching of Ternary Indium Gallium Phosphide Based on Fluorination and Ligand-Exchange Reactions, *TAEWOOK NAM, S. George*, University of Colorado Boulder, USA

ALE-SuP-5 Spontaneous Etching of Group V and VI Metal Oxides by Deoxychlorination Using Thionyl Chloride, *Troy Collieran, S. George*, University of Colorado at Boulder, USA

ALE-SuP-6 Phase Transition of Molybdenum Disulfide by Controlled Ion Beam ALE Method, *Ji Eun Kang, H. Han, J. Kim, G. Yeom*, Sungkyunkwan University (SKKU), Republic of Korea

ALE-SuP-8 Ab Initio Investigation of Chelation on Amorphous CoCl₂ Films for Atomic Layer Etching, *Eugene Huh, S. Lee*, Ewha Womans University, Republic of Korea

ALE-SuP-9 Selective Isotropic Atomic Layer Etching of Silicon Nitride over Silicon Oxide with Surface Fluorination using CF₄/H₂O Plasma and Heating, *Daeun Hong, H. Lee, M. Jeon, H. Chae*, Sungkyunkwan University (SKKU), Republic of Korea

ALE-SuP-10 Selective Thermal Atomic Layer Etching of Molybdenum & Other Metals for Semiconductor Metallization, *M. McBriarty, N. Vu, Bhushan Zope*, Merck KGaA, Darmstadt, Germany, USA

ALE-SuP-11 Theoretical investigation on Plasma Decomposition and Recombination Reaction Characteristics of C₄F₈O Isomers as Alternatives to HFC, *Mihyeon Jo, S. Lee*, Ewha Womans University, Republic of Korea

ALE-SuP-12 Plasma-Enhanced Atomic Layer Etching of Aluminum Oxide Using Trimethylaluminum and Nitrogen Trifluoride, *Ole Bieg, M. Kraut, T. Mikolajick*, Technische Universität Dresden, Institute of Semiconductors and Microsystems, Germany

ALE-SuP-13 A Theoretical Study of Low Gwp Fluoro Gas Decomposition Properties, *Minji Kim, S. Lee*, Ewha Woman's University, Republic of Korea

ALE-SuP-14 Enhancing Doping Efficiency in 2D Semiconductors using Cyclic Doping Method, *Ji Min Kim, J. Kang, H. Han, G. Yeom*, Sungkyunkwan University, Republic of Korea

ALE-SuP-15 Repairing Defects in Organosilane Self-Assembled Monolayers, *Yasuharu Miyamoto, Y. Yoshida*, SCREEN Holdings Co., Ltd., Japan; *T. Utsunomiya*, Kyoto University, Japan; *K. Sawada, S. Kunieda, Y. Ueda*, SCREEN Holdings Co., Ltd., Japan; *H. Sugimura*, Kyoto University, Japan

ALE-SuP-16 Damage-Free Plasma Enhanced ALE of SiO₃ *Daniil Shibanov*, Lomonosov Moscow State University; *D. Lopaev*, Lomonosov Moscow State University, *Y. Zaseev, V. Varakin, D. Kostyukov*, JSC Research Institute of Precision Machine Manufacturing; *A. Rakhimov*, Lomonosov Moscow State University

ALE-SuP-17 Atomic Layer Etching of ITO, *Christoffer Kauppinen*, VTT Technical Research Centre of Finland

ALE-SuP-18 Isotropic Atomic Layer Etching of Titanium Carbide Using Plasma-Exposure and Infrared Heating, *Kazunori Shinoda*, Hitachi High-Tech Corp., Japan; *T. Nguyen*, Nagoya University, Japan; *Y. Kozuma, K. Yokogawa, M. Izawa*, Hitachi High-Tech Corp., Japan; *K. Ishikawa, M. Hari*, Nagoya University, Japan

ALE-SuP-19 Atomic Layer Etching of Tantalum Nitride with Surface Fluorination Using Nf₃ or Cf₄ Plasmas, *H. Kang, Minsung Jeon, H. Chae*, Sungkyunkwan University (SKKU), Republic of Korea

Monday Morning, August 5, 2024

<p>Plenary Session Room Hall 5A - Session PS-MoM Plenary Session Moderators: Markku Leskelä, University of Helsinki, Finland, Mikko Ritala, University of Helsinki, Finland, Fred Roozeboom, University of Twente and Carbyon, B.V., The Netherlands, Dmitry Suyatin, AlixLabs A.B., Sweden</p>		
8:45am	PS-MoM-1 ALD Welcome and Introductory Remarks, <i>Mikko Ritala, Markku Leskelä</i> , University of Helsinki, Finland	
9:00am	INVITED: PS-MoM-2 Opening Remarks: 50 Years of ALD, <i>Tuomo Suntola</i> , Finland	
9:15am	INVITED: PS-MoM-3 ALD: A Disruptive Technology Enabling New Device Architectures, <i>Ivo Raaijmakers</i> , ASM, Netherlands	
9:30am		
9:45am		
10:00am	INVITED: PS-MoM-6 ALD 2024 Innovator Awardee Talk: To Grow and Not To Grow: Exploring Mechanisms during Atomic Layer Deposition, <i>Annelies Delabie</i> , imec and KU Leuven (University of Leuven), Belgium	
10:15am		
10:30am	Break & Exhibits	
10:45am		
11:00am	PS-MoM-10 ALE Welcome and Introductory Remarks, <i>Fred Roozeboom</i> , University of Twente and Carbyon B.V., The Netherlands; <i>Dmitry Suyatin</i> , AlixLabs A.B., Sweden	
11:15am	INVITED: PS-MoM-11 Atomic Layer Precision Process to Enable Advanced Patterning toward High-NA EUV Era, <i>Eric Liu</i> , Tokyo Electron America	
11:30am		
11:45am		

Monday Afternoon, August 5, 2024

Room Hall 3A	
1:30pm	ALD Fundamentals Session AF-MoA Precursors and Chemistry: Precursor Design, New Precursors, Process Development I Moderators: Charles Dezelah , ASM, Finland, Charles H. Winter , Wayne State University, USA
1:45pm	
2:00pm	
2:15pm	
2:30pm	
2:45pm	
3:00pm	
3:15pm	
3:30pm	
3:45pm	
4:00pm	AF-MoA-11 ALD of Copper and Bismuth Using Pinacolborane as a Reducing Agent, Anton Vihervaara , <i>T. Hatanpää, K. Mizohata, M. Ritala</i> , University of Helsinki, Finland
4:15pm	AF-MoA-12 Ligand Optimization of Volatile Cobalt-Alkoxide ALD Precursor, Atsushi Sakurai , <i>A. Yamashita, T. Yoshino, Y. Ooe, K. Takeda, M. Enzu, M. Hatase, A. Nishida</i> , ADEKA CORPORATION, Japan
4:30pm	AF-MoA-13 Expanding the tert-Butylimido Framework Beyond Molybdenum: New Refractory Metals and Ligands, Kieran Lawford , Carleton University, Canada; <i>M. Land</i> , Dalhousie University, Canada; <i>E. Goodwin</i> , Carleton University, Canada; <i>K. Robertson</i> , St. Mary's University, Canada; <i>S. Barry</i> , Carleton University, Canada
4:45pm	AF-MoA-14 Alkoxide Complexes as Precursors for Coinage Metal and Main Group Element Thermal ALD, David Emslie , Department of Chemistry, Canada; <i>M. Al Hareri, N. Hoffman</i> , McMaster University, Canada
5:00pm	AF-MoA-15 Fluorinated Silver Alkoxides as Precursors for Atomic Layer Deposition, Nick A. Hoffman , <i>D. Emslie</i> , McMaster University, Canada
5:15pm	AF-MoA-16 Atomic Layer Deposition of Niobium Carbonitride Thin Films, Paloma Ruiz Kärkkäinen , <i>T. Hatanpää, K. Mizohata, M. Putkonen, M. Ritala</i> , University of Helsinki, Finland
5:30pm	AF-MoA-17 Using ALD Precursors as Inhibitors During Area-selective ALD, Marc Merckx , <i>P. Yu, S. van der Werf, A. de Jong, E. Kessels</i> , Eindhoven University of Technology, Netherlands; <i>T. Sandoval</i> , Universidad Tecnica Federico Santa Maria, Chile; <i>A. Mackus</i> , Eindhoven University of Technology, Netherlands

Monday Afternoon, August 5, 2024

Room Hall 3D		
1:30pm	AA1-MoA-1 Enabling Fast Charging of Lithium-ion Batteries at Sub-Zero Temperatures with ALD coatings, <i>T. Cho, Y. Chen, D. Liao</i> , University of Michigan, USA; <i>E. Kazyak</i> , University of Wisconsin, USA; <i>D. Penley, Neil P. Dasgupta</i> , University of Michigan, USA	ALD Applications Session AA1-MoA Energy: Batteries and Energy Storage Moderators: Christian Dussarat , Air Liquide Laboratories, Japan, Jin-Seong Park , Hanyang University, Republic of Korea
1:45pm	AA1-MoA-2 Atomic Layer Deposition of Lithium Borate and Borophosphate Thin Films for Lithium-ion Battery Applications, <i>Tippi Verhelle, A. Dhara, L. Henderick</i> , Ghent University, Belgium; <i>J. Meersschaut</i> , IMEC Belgium; <i>J. Dendooven, C. Detavernier</i> , Ghent University, Belgium	
2:00pm	AA1-MoA-3 Fluorine-free ALD Process Produces Fluorine-rich Cathode Electrolyte Interphase for Lithium Batteries, <i>Giulio D'Acunto, S. Shuchi</i> , Department of Chemical Engineering, Stanford University, USA; <i>Y. Cui</i> , Department of Materials Science and Engineering, Stanford University; Stanford Institute for Materials and Energy Sciences, SLAC National Accelerator Laboratory; Department of Energy Science and Engineering, Stanford University, USA; <i>S. Bent</i> , Department of Chemical Engineering, Stanford University; Department of Energy Science and Engineering, Stanford University, USA	
2:15pm	AA1-MoA-4 Atomic Layer Deposition of Interface-Engineered Li ₄ Ti ₅ O ₁₂ : Toward High-Capacity 3D Thin-Film Batteries, <i>Jan Speulmanns, S. Bönhardt, M. Czernohorsky, W. Weinreich</i> , Fraunhofer Institute for Photonic Microsystems IPMS, Germany	
2:30pm	AA1-MoA-5 ALD for Advanced Lithionic Devices: Hybrid Ultrathin Solid-State Electrolytes, <i>Ilyass GHANDARI, N. GAUTHIER, S. POULET</i> , CEA-LETI, France; <i>M. BECHELANY</i> , CNRS, France; <i>M. BEDJAOUI</i> , CEA-LETI, France	
2:45pm	AA1-MoA-6 Low Temperature ALD of Vanadium Sulfide (Ultra)thin Films for Nanotubular Supercapacitors, <i>Raul Zazpe, M. Sepulveda, J. Rodriguez-Pereira, L. Hromadko, M. Kurka, H. Sopha, J. Macak</i> , University of Pardubice, Czechia	
3:00pm	AA1-MoA-7 Boosted Zn ²⁺ Storage Performance of Hydrated V ₂ O ₅ by Defect and Heterostructure, <i>V. Nguyen, J. Kim, Seung-Mo Lee</i> , Korea Institute of Machinery & Materials (KIMM), Republic of Korea	
3:15pm	AA1-MoA-8 High Throughput Atomic Layer Deposition of Niobium Oxide Thin Film for Lithium-ion Battery Application, <i>Sunao Kamimura, C. Dussarat</i> , Air Liquide Laboratories, Japan; <i>N. Blasco</i> , Air Liquide Advanced Materials, France	
3:30pm	Break & Exhibits	
3:45pm		
4:00pm	AA2-MoA-11 Thermal Atomic Layer Deposition of Boron Containing Oxide Films as Solid Sources for Doping of Advanced Memory Devices, <i>Y. Shen</i> , Beijing Superstring Academy of Memory Technology, China; <i>S. Yang</i> , Institute of Microelectronics, China; <i>Jinjuan Xiang</i> , Beijing Superstring Academy of Memory Technology, China; <i>J. Liu, J. Gao</i> , Institute of Microelectronics, China; <i>G. Wang, C. Zhao</i> , Beijing Superstring Academy of Memory Technology, China	ALD Applications Session AA2-MoA Applications in ULSI FEOL: Gate Electrodes & Contact Metals, High-K, and 3D Transistor Fabrication Moderators: Scott Clendenning , Intel Corporation, USA, Christian Wenger , IHP - Leibniz Institut fuer innovative Mikroelektronik, Germany
4:15pm	AA2-MoA-12 Plasma-Enhanced ALD of Thin Conductive Cu Films, <i>Maria Gabriela Sales, N. Nepal, P. Litwin, D. Boris, S. Walton, V. Wheeler</i> , U.S. Naval Research Laboratory, USA	
4:30pm	AA2-MoA-13 Selective Atomic Layer Deposition of Ultra-Thin Ru on W for Metal Contact, <i>Rong Chen, Z. Qi, E. Gu</i> , State Key Laboratory of Intelligent manufacturing Equipment and Technology, School of Mechanical Science and Engineering, Huazhong University of Science and Technology, China; <i>B. Shan</i> , State Key Laboratory of Materials Processing and Die & Mould Technology, School of Materials Science and Engineering, Huazhong University of Science and Technology, China; <i>K. Cao</i> , State Key Laboratory of Intelligent manufacturing Equipment and Technology, School of Mechanical Science and Engineering, Huazhong University of Science and Technology, China	
4:45pm	AA2-MoA-14 Effect of High Precursor Dose on the IZO Film Property Uniformity Within Wafer Deposited by Thermal ALD, <i>Yuting Chen, P. Yuan, X. Ma, Z. Jiao, Y. Shen, L. Chai, J. Xiang, M. Zeng, H. Sun, G. Wang, C. Zhao</i> , Beijing Superstring Academy of Memory Technology, China	
5:00pm	AA2-MoA-15 Development of ALD Gate Dielectrics for TMD Nanosheet FETs, <i>T. Lee, B. Chao, Y. Chung, Y. Su</i> , TSMC, Taiwan; <i>B. Liu, C. Su, C. Kei</i> , Taiwan Instrument Research Institute, Taiwan; <i>C. Cheng, Pinyen Lin, I. Radu</i> , TSMC, Taiwan	
5:15pm	INVITED: AA2-MoA-16 ALD in Semiconductor Logic Manufacturing: Challenges Met and Opportunities Ahead, <i>David Towner</i> , Intel Corp., USA	
5:30pm		

Monday Afternoon, August 5, 2024

Area Selective ALD Room Hall 3E - Session AS-MoA Selective ALD by Area-Deactivation Moderators: Stacey Bent, Stanford University, USA,		Atomic Layer Etching Room Hall 3F - Session ALE-MoA ALD+ALE and Emerging Topics in ALE Moderators: Robert Clark, TEL Technology Center, America, LLC, USA, Dmitry Suyatin, AlixLabs A.B., Sweden	
1:30pm			
1:45pm			
2:00pm			
2:15pm			
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3:00pm			
3:15pm			
3:30pm	Break & Exhibits	Break & Exhibits	
3:45pm			
4:00pm	INVITED: AS-MoA-11 <i>Revealing New AS-ALD Chemistries with Ab Initio Approaches: From Interpretation to Prediction, Ralf Tonner-Zech, Leipzig University, Germany</i>	INVITED: ALE-MoA-11 <i>Highly Selective Si Vertical Etching Enabled by Atomic-Level Process Utilizing SiCl₄ Plasma-Induced Selective Deposition, Miyako Matsui, Hitachi, Ltd., Japan</i>	
4:15pm			
4:30pm	INVITED: AS-MoA-13 <i>Area Selective Atomic Layer Deposition Using a Size Cutter, Han-Bo-Ram (Boram) Lee, Incheon National University, Republic of Korea</i>	ALE-MoA-13 <i>Quasi-ALE Process Transfer from Lab to 300mm Line and Its Optimisation, Jenefa Kannan, M. Rudolph, Fraunhofer IPMS-CNT, Germany; R. Jam, A. Karimi, D. Suyatin, J. Sundqvist, AlixLabs, Sweden</i>	
4:45pm		ALE-MoA-14 <i>Deposition and Etchback Approach for Ultrathin ZrO₂ Coatings on TiO₂/ZrO₂ Core/Shell Nanoparticles, J. Sempel, M. Kaariainen, T. Collieran, University of Colorado at Boulder, USA; A. Lifschitz, Meta Reality Labs, USA; Steven George, University of Colorado at Boulder, USA</i>	
5:00pm	AS-MoA-15 <i>Ald Grown Self-Assembled Monolayers: Using Area-Selective Deposition to Characterize Molecular Scale Pinholes, Sakari Lepikko, R. Ras, Aalto University, Finland</i>	ALE-MoA-15 <i>Study of Depositing Si₃N₄ on Si Wafers Using PEALD and Atomic Scale Removal of Underlying Native Oxide Using PAALE in the Same Chamber Without Ion Bombardment Damage, Birol Kuyel, A. Alphonse, J. Alex, Nano-Master, USA</i>	
5:15pm	AS-MoA-16 <i>Area-Selective Etching of Poly(lactic acid) via Hydrogenolysis for Self-Aligned ALD, Valtteri Lasonen, M. Ritala, University of Helsinki, Finland</i>	ALE-MoA-16 <i>N-Heterocyclic Carbenes for Area Selective Atomic Smoothing, Eden Goodwin, Carleton University, Canada; M. Davies, P. Ragogna, M. Karttunen, Western University, Canada; S. Barry, Carleton University, Canada; C. Crudden, Carbon To Metal Coating Institute / Queens University, Canada</i>	
5:30pm	AS-MoA-17 <i>Selective Surface Fluorination to Enable ASD of Polymer and Metal Oxide on SiN vs. SiO₂, Jeremy Thelven, H. Oh, H. Margavio, C. Oldham, G. Parsons, North Carolina State University, USA</i>		

Monday Afternoon, August 5, 2024

Room Hall 5A	
1:30pm	<p>ALDALE-MoA-1 ALD Student Award Finalist Talk: Gas Phase Deposition of ALF-MOF for Selective CO₂ Capture: A Molecular Layer Deposition Study, <i>Maram Bakiro, S. Barry</i>, Carleton University, Canada</p>
1:45pm	<p>ALDALE-MoA-2 ALD Student Award Finalist Talk: Surface Functionalization of Poly-Si and SiO₂ Nongrowth Surfaces with Small Inhibitor Molecules to Enable Area-Selective Atomic Layer Deposition of Al₂O₃, <i>Andrew Kaye</i>, Colorado School of Mines, USA; <i>H. Chandra, R. Pearlstein, X. Lei, A. Derecskei, B. Zope</i>, Merck KGaA, USA; <i>S. Agarwal</i>, Colorado School of Mines, USA</p>
2:00pm	<p>ALDALE-MoA-3 ALE Student Award Finalist Talk: Precursor Mobility Through W Thin Films and sub-Surface Etching of Patterned TiO₂ via Atomic Layer Etching, <i>Hannah Margavio</i>, North Carolina State University, USA; <i>N. Arellano, I. Singh, R. Wojtecki</i>, IBM Almaden Research Center, USA; <i>G. Parsons</i>, North Carolina State University, USA</p>
2:15pm	<p>ALDALE-MoA-4 ALD Student Award Finalist Talk: Unravelling the Role of Stoichiometry of ALD Nickel Cobalt Oxides on their Electrocatalytic Activity, <i>Renee van Limpt</i>, Eindhoven University of Technology, Netherlands; <i>M. Lao, M. Tsampas</i>, Dutch Insitute for Fundamental Energy Research (DIFFER), Netherlands; <i>M. Creatore</i>, Eindhoven University of Technology, Netherlands</p>
2:30pm	<p>ALDALE-MoA-5 ALD Student Award Finalist Talk: First-Principles Screening of Precursor Reactivity for ALD of GeAsSe Thin Films for OTS Applications, <i>Bram van der Linden</i>, KU Leuven, and IMEC, Belgium; <i>G. Pourtois, L. Nyns, A. Delabie</i>, IMEC, Belgium</p>
2:45pm	<p>ALDALE-MoA-6 ALE Student Award Finalist Talk: Investigating Patterning of MgZnO by Atomic Layer Etch mode, used For Compute and Memory Applications, <i>Leila Ghorbani</i>, KU Leuven and Imec, Belgium; <i>S. Kundu</i>, IMEC, Belgium; <i>S. De Gendt</i>, KU Leuven and Imec, Belgium</p>
3:00pm	<p>ALDALE-MoA-7 ALD Student Award Finalist Talk: In-situ FTIR Study of Oxygen Source Mixing for Hafnium Oxide Atomic Layer Deposition on Titanium Nitride, <i>Jin-Hyun Kim, D. Le, M. Lee, T. Chu, D. Kim, J. Veyan</i>, University of Texas at Dallas, USA; <i>M. Benham, J. Spiegelman</i>, RASIRC, USA; <i>S. Kim</i>, Kangwon University, Republic of Korea; <i>J. Kim</i>, University of Texas at Dallas, USA</p>
3:15pm	<p>ALDALE-MoA-8 ALD Student Award Finalist Talk: A New Low Temperature ALD Process for Magnesium Oxide, <i>Florian Preischel, D. Rogalla, A. Devi</i>, Ruhr University Bochum, Germany</p>
3:30pm	<p>Break & Exhibits</p>
3:45pm	

ALD & ALE
Session ALDALE-MoA
Student Awardees
Moderators:
Annelies Delabie, IMEC, Belgium,
Ivo Raaijmakers, ASM, Netherlands

ALD for Manufacturing

Room Hall 3 - Session AM-MoP

ALD for Manufacturing Poster Session

5:45 – 7:00pm

AM-MoP-1 Thin-Film-Transistor Based ALD Sensors, *K. Yamano, H. Takeda, R. Miyazawa, M. Miura, B. Ahmad, Fumihiko Hirose*, Graduate School of Science and Engineering, Yamagata University, Japan

AM-MoP-2 Accurate and Fast Wafer Level Conformality Analysis Method for ALD Films in Manufacturing, *Thomas Werner*, Chipmetrics OY, Germany; *M. Zaheer, J. Kinnunen, A. Philip*, Chipmetrics OY, Finland; *K. Kühnel, N. Haupe*, Fraunhofer IPMS, Germany

AM-MoP-3 In-Situ Gas Monitoring of ALD Processes Using Remote Optical Emission Spectroscopy, *Erik Cox, J. Brindley*, Gencoa, UK; *D. Monaghan*, Gencoa, USA

AM-MoP-4 Batch Coating of Gas Lines by Atomic Layer Deposition, *Lassi Leppilähti, D. Nevstrueva*, Beneq, Finland

AM-MoP-5 Implementing of ALD in Post-CMOS-Compatible 200 Mm Wafer Processes, *Rahel-Manuela Neubieser, M. Michel, N. Boysen*, Fraunhofer IMS, Germany; *A. Devi*, Ruhr Universität Bochum, Germany

AM-MoP-6 Optimization and Scale-Up of MgO Thin Film Production via Thermal Atomic Layer Deposition for Industrial Applications, *Muhammad Ahmad, N. Lamminmäki, E. Manninen, P. Kaur*, Picosun Oy, Finland

AM-MoP-7 Method to Evaluate Vapor and Droplet Content from a Direct Liquid Injection Vaporizer using Fourier Transform Infrared Spectroscopy, *David Curran*, MSP--A Division of TSI, USA

AM-MoP-9 Effect of Gas Injection Design on Conformality in High Aspect Ratio Structures in Batch ALD Reactor, *A. Smirnov, Yury Shustrov, I. Petras*, Semiconductor Technology Research d.o.o. Beograd, Serbia

AM-MoP-10 Optical Monitoring of MoCl₅ and MoOCl₄ Vapor Delivery for Atomic Layer Deposition Applications, *Berc Kalanyan, J. Maslar*, National Institute of Standards and Technology (NIST), USA

AM-MoP-11 Visualizing Precursor Flow During ALD Processes, *James Maslar, B. Kalanyan*, National Institute of Standards and Technology (NIST), USA

AM-MoP-12 Thermal Behaviour of Solid ALD Precursors: Comparison of Visual Imaging Tool and Thermogravimetric Analysis, *Jani Viljakka*, Volatec Oy, Finland; *T. Hatanpää*, University of Helsinki, Finland; *M. Lashdaf*, Volatec Oy, Finland; *M. Ritala*, University of Helsinki, Finland; *M. Tiitta*, Volatec Oy, Finland; *O. Nilsen*, University of Oslo, Norway

AM-MoP-13 Thin film Conformality Evaluation on a Wafer Level in Thermal ALD Reactor using LHAR Test Structures, *Oili Ylivaara*, Tietotie 3, Finland; *F. Gao, J. Kinnunen, M. Utraiainen*, Chipmetrics, Finland

ALD Fundamentals

Room Hall 3 - Session AF-MoP

ALD Fundamentals Poster Session

5:45 – 7:00pm

AF-MoP-1 Depositing a Uniform Thin Film of Al₂O₃ Using Atomic Layer Deposition (ALD) onto 2D Electronics to Provide Protective Capping and Surface Passivation, *S. Lee, J. Lee, A. Cho, D.H. Ryu, Hyunbin Chung, K. Kim, T. Choi*, Sejong University, Republic of Korea

AF-MoP-2 Developments in Processing Large Area 2D Materials and Metals via ALD, *Nils Boysen, R. Neubieser*, Fraunhofer IMS, Germany; *F. Zimmermann, K. Brinkmann*, University of Wuppertal, Germany; *M. Michel*, Fraunhofer IMS, Germany; *T. Riedl*, University of Wuppertal, Germany; *A. Devi*, Ruhr University Bochum, Germany

AF-MoP-3 Sacrificial Copper Nitride Layer for PEALD of Copper, *Sakari Kettunen*, University of Helsinki, Finland; *M. Schalk*, Eindhoven University of Technology, Netherlands; *M. Chundak*, University of Helsinki, Ukraine; *M. Ritala, M. Putkonen*, University of Helsinki, Finland

AF-MoP-4 Characteristics of Silicon Nitride Thin Films Deposited Using a Two-Step Plasma Enhanced ALD Process at Very High Frequencies, *DA EUN BAE, H. KIM*, CN1 Co., Ltd., Republic of Korea; *S. LEE, DNF Co., Ltd.*, Republic of Korea; *J. CHOI, J. JEONG*, CN1 Co., Ltd., Republic of Korea

AF-MoP-5 Analysis of ALD Thin Films by Combining MEIS and ERDA Techniques, *Aqsa Ashraf, K. Mizohata*, Helsinki Accelerator Laboratory, University of Helsinki, Finland; *M. Ritala*, HelsinkiALD, University of Helsinki, Finland

AF-MoP-6 Novel Liquid Lanthanide Precursors with Low Viscosity and High Volatility for Atomic Layer Deposition of Lanthanide Oxide Thin Films, *Hanbyul Kim*, SK Trichem, Republic of Korea; *H. Oh*, SK trichem, Republic of Korea; *B. Ryu, Y. Park*, SK Trichem, Republic of Korea

AF-MoP-7 Novel Amidinate Ligand-based Scandium Precursor for Atomic Layer Deposition of Sc₂O₃ Thin Films, *Hansol Oh*, SK trichem, Republic of Korea; *H. Kim, B. Ryu*, SK Trichem, Republic of Korea; *W. Jeon*, Kyunghee University, Republic of Korea; *Y. Park*, SK Trichem, Republic of Korea

AF-MoP-8 Process Development of Cobalt Metal ALD on Novel ALD Machine, *Mathias Franz, L. Kabner*, Fraunhofer ENAS, Germany; *C. Thurm*, University of Technnology Chemnitz, Germany; *L. Jäckel*, Fraunhofer ENAS, Center for Microtechnologies (ZfM), Chemnitz University of Technology, Germany; *M. Daniel*, scia Systems GmbH, Germany; *F. Stahr*, Forschungs- und Applikationslabor Plasmatechnik GmbH, Germany; *S. Schulz*, Fraunhofer ENAS, Center for Microtechnologies (ZfM), University of Technology Chemnitz, Germany

AF-MoP-9 High Quality TiN Plasma Enhanced Atomic Layer Deposition on SiO₂ Substrate with AlN Interfacial Layer via in situ Atomic Layer Annealing, *Valentina Korchnoy*, Technion Israel Institute of Technology, Israel; *I. Popov*, The Hebrew University of Jerusalem, Israel; *M. Koifman Khristosov*, Technion Israel Institute of Technology, Israel; *M. Lisiansky*, Tower Semiconductor, Israel

AF-MoP-10 Turning Online ALD and ALE Databases Into AI-Ready Tools for Development of New Sustainable Materials and Fabrication Processes, *Adrie Mackus, B. Macco*, Eindhoven University of Technology, Netherlands; *B. Karasulu*, University of Warwick, UK; *J. D'Souza, S. Auer*, L3S Research Center at Leibniz University of Hannover, Germany; *E. Kessels*, Eindhoven University of Technology, Netherlands

AF-MoP-11 ALD Process Characterization, Development, and Monitoring Using an Electron Impact Time-of-Flight Mass Spectrometer, *Abdelhak Bensaoula, C. De Koning, C. Frege*, TOFWERK, Switzerland; *T. Nelis*, BFH, Switzerland; *C. Hain*, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland; *C. Guerra*, Swiss Cluster, Switzerland

AF-MoP-12 Tailoring Cobalt Precursors Through Molecular Engineering, *Jean-Pierre Glauber, J. Obenlueschloß, D. Zanders*, Ruhr University Bochum, Germany; *S. Barry*, Carleton University, Canada; *A. Devi*, Ruhr University Bochum, Germany

AF-MoP-14 Optimization of the Growth of Atomic Layer Deposited Ta₂O₅ Thin Films for Large Area Electronics, *Xiao Chen, K. Niang, B. Bakht, Y. Jeon, J. Driscoll, A. Flewitt*, University of Cambridge, UK

AF-MoP-15 Bismuth Alkoxides for Deposition of Bismuth Chalcogenides, *Jaroslav Charvot*, University of Pardubice, Czechia; *R. Parkhomenko, M. Knez*, CIC nanoGUNE, Spain; *A. Bahrami, K. Nielsch*, IFW Dresden, Germany; *F. Bureš*, University of Pardubice, Czechia

AF-MoP-16 From Microscopic to Macroscopic: How Morphology Impacts ALD and CVD Nucleation Kinetics, *Andreas Werbrouck, A. Shearer, S. Bent*, Stanford University, USA

AF-MoP-17 Novel Imido Cyclopentadienyl-based Niobium Precursors for Atomic Layer Deposition of Nb₂O₅ Thin Films, *Dong Hun Shin, H. Oh, J. Chun*, SK trichem, Republic of Korea; *S. Lee, W. Jeon*, Kyung Hee University, Republic of Korea; *Y. Park*, SK trichem, Republic of Korea

AF-MoP-18 Atomic Layer Deposition of In₂O₃ Thin Films Using New In Precursor, *Donghyun Kim, H. Oh*, SK Trichem, Republic of Korea; *Y. Choi, W. Jeon*, Kyung Hee University, Republic of Korea; *Y. Park*, SK Trichem, Republic of Korea

AF-MoP-19 Reductive Surface Chemistry with Plasma Electrons, *Pentti Niiränen, D. Lundin, H. Pedersen*, Linköping University, IFM, Sweden

AF-MoP-20 Surface Chemistry of Atomic Layer Deposited of Gallium Nitride Films at Different Process Temperatures, *houyem hafdi, P. Mpofu, H. Pedersen*, Linköping University, IFM, Sweden

AF-MoP-21 Tuning the Wet Etch Rate of Silicon Dioxide Deposited by Plasma-Enhanced Atomic Layer Deposition, *Keerthi Dorai Swamy Reddy, M. Lisker*, IHP - Leibniz Institut fuer innovative Mikroelektronik, Germany

AF-MoP-22 Ruthenium Metal ALD from Versatile Diazadienyl Precursor, *Jorit Obenlueschloß, D. Zanders, J. Klimars*, Inorganic Materials Chemistry, Ruhr University Bochum, Bochum, Germany; *M. Gock*, Heraeus Precious Metals GmbH & Co. KG, 63450 Hanau, Germany; *A. Devi*, Inorganic Materials Chemistry, Ruhr University Bochum, Bochum, Germany

AF-MoP-23 ALD of Nd₂O₃ and ALD/MLD of Nd-Organic Thin Films Using New Precursor Combinations, *Florian Preischel*, Ruhr University Bochum, Germany; *A. Ghazy*, Aalto University, Finland; *J. Debus*, TU Dortmund, Germany; *D. Rogalla*, Ruhr University Bochum, Germany; *M. Karppinen*, Aalto University, Finland; *A. Devi*, Ruhr University Bochum, Germany

AF-MoP-24 Thermal Atomic Layer Deposition of Aluminum Nitride Films Using Tris(dimethylamido)aluminum and NH_3 , *O. Kim, H. Han, Jian Heo, Y. Choi, C. Kim, H. Kim*, Sejong University, Republic of Korea; *H. Kim, J. Park*, Hansol Chemical Co., Ltd., Republic of Korea; *W. Lee*, Sejong University, Republic of Korea

AF-MoP-25 High-Temperature Atomic Layer Deposition of Silicon Oxide Thin Films Using Tris(dimethylamino)silane and Ozone, *O. Kim, Y. Choi, Changgyu Kim, H. Kim, W. Lee*, Sejong University, Republic of Korea

AF-MoP-26 Ozone-based Atomic Layer Deposition of Titanium Dioxide (TiO_2) using TTIP, *Dharsana Pulikkottil Dinesh, O. Nilsen, H. Sønsetby*, University of Oslo, Norway

AF-MoP-27 Design and Installation of an Advanced Reactor for in-Situ Studies of ALD and ALE by the TU/E Technical Team, *Caspar van Bommel, M. Merckx, J. Zeebregts, C. van Helvoirt, F. van Uittert, E. Kessels, A. Mackus*, Eindhoven University of Technology, Netherlands

AF-MoP-28 Novel Hybrid Ligand Liquid Ta Precursor for High Temperature (> 480 °C) ALD Ta₂O₅/TaN Process, *Hyunju Jung, K. Cho, S. Baik, W. Choi, S. Kim, J. Jeong, H. Kim, H. Lee, J. Kim*, EGTM R&D, Republic of Korea

AF-MoP-30 Impact of TMA Precursor Flow Rate on ALD-Processed Al₂O₃ Thin Films: Experimental and Simulation Insights, *Júlia Karnopp*, Aeronautic Institute of Technology, Brazil; *N. Azevedo Neto, T. Vieira*, Aeronautics Institute of Technology, Brazil; *J. Sagás*, Santa Catarina State University, Brazil; *R. Pessoa*, Aeronautics Institute of Technology, Brazil

AF-MoP-31 Lab-Scale Fixed Bed Reactor for Atomic Layer Deposition on Particulate Materials: Initial Results, *Jorge A. Velasco, M. Ossama, C. Gonsalves, S. Larkiala, S. Andsten*, Aalto University, Finland; *K. Salonen*, ELabs Oy Engineering, Finland; *J. Rask, J. Stang, V. Miikkulainen, S. Jääskeläinen, R. Puurunen*, Aalto University, Finland

AF-MoP-32 Low Energy Ion Scattering Analysis of ALD 2D Materials, *Philipp Brüner, T. Grehl*, IONTOF GmbH, Münster, Germany; *D. Shin, A. Ruiz de Clavijo, S. Lehmann*, Leibniz Institute for Solid State and Materials Research, Dresden, Germany

AF-MoP-33 Plasma-Enhanced Atomic Layer Deposition Processes for Low-Temperature SiN_x with Aminosilane Precursors, *Hyeonjin Choi, J. Kim, Y. Ko, H. Chae*, Sungkyunkwan University (SKKU), Republic of Korea

AF-MoP-34 Characterization of Sticking Probability for Various ALD Chemistries Relevant for Artificial Solid Electrolyte Interphases, *Léo Lapeyre, K. Mackosz, W. Szymyt, L. Pethö, J. Michler*, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland; *P. Raynaud*, LAPLACE, France; *I. Utke*, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland

AF-MoP-35 Deposition of High Quality Aluminium Fluoride Layers through Optimization of a PEALD Process using Al(CH₃)₃ and SF₆, *E. O'Connor, Fabian Steger, C. Sturzenegger, D. Schachtler, H. Thomé*, RhySearch, Switzerland

AF-MoP-36 Characterization of Elemental Composition of ALD Films Using Ion Beam Analysis, *Jaakko Julin, M. Laitinen, S. Kinnunen, T. Sajaavaara*, University of Jyväskylä, Finland

AF-MoP-37 Atomic Layer Deposition of Ga₂O₃ from GaI₃ and O₃: Effect of Substrates on the Film Growth and Structure, *Aivar Tarre, L. Aarik, H. Mändar, J. Aarik*, Institute of Physics, University of Tartu, Estonia

AF-MoP-39 On the Trail Ancient Worlds: Comparative Study of Commercial Scandium and Yttrium Precursors, Asgard, Midgard, Vanaheim and Olympus, *Martin Wilken*, Ruhr Universität Bochum, Germany; *T. Hepp, O. Briel*, Dockweiler Chemicals GmbH, Germany; *A. Muriqi*, Tyndall National Institute, University College Cork, Ireland; *C. Cho*, Ruhr Universität Bochum, Germany; *M. Nolan*, Tyndall National Institute, University College Cork, Ireland; *A. Deví*, Leibniz Institute for Solid State and Materials Research, Germany

AF-MoP-40 Design and Study of N-heterocyclic Carbenes as ALD Precursors, *Mark Aloisio, E. Desroche, F. Tumino, C. Crudden*, Queen's University, Canada

AF-MoP-41 ALD at 50: Collaborations, Topic Modeling, and Intersection with Atomic Layer Etching and Area Selective Deposition, *E. Alvaro*, Northwestern University, USA; *Angel Yanguas-Gil*, Argonne National Laboratory, USA

AF-MoP-42 MoO₂ DRAM Bottom Electrode by Thermal ALD Using a New Liquid Mo Precursor, *Myeongho Kim, Y. Yi, I. Lee, J. Kim, H. Ryu, W. Koh*, UP Chemical Co., Ltd., Republic of Korea; *C. Hwang, W. Jeon*, Kyung Hee University, Republic of Korea

AF-MoP-43 The Role of Substrate Temperature on the Self-limiting Growth of Highly (200) Oriented Cubic NiO Films via Hollow-cathode Plasma-assisted Atomic Layer Deposition, *F. Bayansal, S. Allaby, H. Saleh, B. Willis, Necmi BIYIKLI*, University of Connecticut, USA

AF-MoP-44 2D and 3D Growth Competition in ALD Super-cycles Process: Fe₃Ni₂O₇ and Fe₃Co₂O₇, *Estelle Jozwiak*, Humboldt University Berlin, Germany

AF-MoP-45 Surface Morphology Analysis for WO_x Thin Film after Post-Sulfurization, *C. Chang, B. Liu, H. Chen, K. Chiu, C. Su, Y. Lin, Yang-Yu Jhang, Y. Pu*, Taiwan Instrument Research Institute, NARlabs, Taiwan

AF-MoP-46 Low-Temperature Atomic Layer Deposition Process of SnSe₂ Thin Films, *Alejandra Ruiz-Clavijo*, Institute for Metallic Materials, Leibniz Institute for Solid State and Materials Research, Germany

AF-MoP-47 Conformality Characterization of Al-Doped ZnO Films Grown by Atomic Layer Deposition on Lateral High-Aspect-Ratio Test Structures, *Eero Haimi*, Aalto University, Finland; *A. Philip*, Aalto University, India; *J. Velasco*, Aalto University, Bolivia (Plurinational State of); *M. Karppinen, R. Puurunen*, Aalto University, Finland

AF-MoP-48 Advancing Plasma Processes: Insights from Retarding Field Energy Analyzers in Ald/Ale Applications, *Angus McCarter, T. Gilmore, A. Verma*, Impedans Ltd., Ireland

AF-MoP-49 Precision Interface Engineering of CuNi Alloys by Powder ALD Toward Better Thermoelectric Performance, *Amin Bahrami, S. He*, Leibniz-Institut für Festkörper- und Werkstoffforschung Dresden, Germany; *C. Jung*, Max-Planck-Institut für Eisenforschung GmbH, Germany; *R. He*, Leibniz-Institut für Festkörper- und Werkstoffforschung Dresden, Germany; *Z. Ren*, University of Houston, USA; *S. Zhang*, Max-Planck-Institut für Eisenforschung GmbH, Germany; *K. Nielsch*, Leibniz-Institut für Festkörper- und Werkstoffforschung Dresden, Germany

AF-MoP-50 Advances in Rare Earth Precursors for ALD, *Dominik Naglav-Hansen*, Ruhr Universität Bochum, Germany

AF-MoP-51 New Non-pyrophoric Metalorganic Precursor for ALD of Ga₂O₃, *Marcel Schmickler, F. Preischel, A. Devi*, Ruhr University Bochum, Germany

AF-MoP-52 Novel Molybdenum Precursor for Chemical Vapor Deposition and Atomic Layer Deposition, *Yuma Dote, A. Yao, A. Kikuchi*, Central Glass Co., Ltd., Japan

AF-MoP-53 Role of Indium and Tin Elements in Zinc-Based Ternary Oxide Thin Films Grown by Atomic Layer Deposition, *Dong-Hyun Lim, I. Oh, A. Choi*, Ajou University, Republic of Korea

AF-MoP-54 Ultra-Low Electron Temperature Plasma for Damage-Free Atomic Layer Deposition of Titanium Nitride Films: Advancements in PEALD Process Applications, *MINSEOK KIM, S. Kim, C. Lim, D. Kim, C. Chung*, Hanyang University, Korea

AF-MoP-56 Ultra Thin Diffusion Barrier Development by Utilizing Advanced Deposition Materials in ALD, *Changbong Yeon, D. Cho, J. Jung*, Soulbrain, Republic of Korea; *K. Tan*, Soulbrain, Malaysia; *J. Lim, Y. Park*, Soulbrain, Republic of Korea

AF-MoP-57 A Novel Liquid Ruthenium Precursor and Its Successful Implementation in ALD, *Niklas Huster*, Ruhr University Bochum, Germany; *I. Selvakumar*, Ruhr University Bochum, India; *F. Preischel, J. Obenluneschloß*, Ruhr University Bochum, Germany; *M. Gock, M. Unkrig-Bau, F. Eweiner*, Heraeus Precious Metals GmbH & Co. KG, Germany; *D. Rogalla*, RUBION - Ruhr University Bochum, Germany; *A. Devi*, Ruhr University Bochum, Germany

AF-MoP-58 Tailoring the Properties of Oxide Films by Doping Using Atomic Layer Deposition Method, *Mahtab Salari Mehr, L. Aarik, T. Jõgiass, H. Mändar*, University of Tartu, Estonia

AF-MoP-59 Low-Temperature Atomic Layer Deposition of Vanadium Oxide: Unveiling the Nucleation and Growth Mechanism, Characterization, and Its Application in Perovskite Solar Cells, *NIRANJAN SINGH BAGHEL, S. Sarkar*, Indian Institute of Technology Bombay, India

AF-MoP-60 Fermi Level Tuning of ZnO Films through Mn Doping by Atomic Layer Deposition Supercycles, *Carolina Bohórquez Martínez*, Center of Nanoscience and Nanotechnology-UNAM, Mexico; *M. Domínguez de la Vega*, Institute for Research into Electronic Microscopy and Materials-UCA, Spain

AF-MoP-61 Atomic Layer Deposition of HfO₂ Thin Film Using a Novel Pyrrole Based Hf Precursor, *Hyunwoo Jeong, C. Park, K. Park, H. Kim, K. Lee, J. Park*, Hansol Chemical Co., Ltd., Republic of Korea

AF-MoP-62 Low-Carbon Silicon Oxynitride Films with Trisilylamine, *Youngju Ko, H. Choi, J. Kim, N. Kim, H. Chae*, Sungkyunkwan University (SKKU), Republic of Korea

AF-MoP-64 High-Temperature Atomic Layer Deposition of SiO₂ Using Metalorganic Si Precursor, *Sajeong Eom, S. Lee, H. Yoon, S. Park, S. Na, J. Yoo, S. Jung, H. Kim*, Yonsei University, Korea

AF-MoP-65 Tailoring Crystal and Electrical Characteristics of Indium Oxide via Oxygen Reactants and Substrate Temperature Control in Atomic Layer Deposition, *Seong-Hwan Ryu, T. Hong, S. Choi*, Hanyang University, Korea; *K. Yeom, D. Ryu, J. Seok*, Hansol Chemical, Republic of Korea; *J. Park*, Hanyang University, Korea

AF-MoP-67 Understanding Selectivity Loss in Area-Selective ALD - a DFT Investigation of the SMI Layer Disintegration Mechanisms, *Philipp Wellmann, R. Tonner-Zech, Wilhelm-Ostwald-Institut, Universität Leipzig, Germany*

AF-MoP-68 Nucleation of Copper ALD Films Studied with in Situ Synchrotron Measurements, *Aleksandra Figura-Jagoda, S. Klejna, M. Marzec, AGH University of Krakow, Academic Centre for Materials and Nanotechnology, Poland; E. Kokkonen, Max IV Laboratory, Sweden; A. Kwiatkowski, AGH University of Krakow, Faculty of Physics and Applied Computer Science, Poland; K. Maćkosz, C. Minzoni, Empa, Swiss Federal Laboratories for Materials Science and Technology, Thun, Switzerland; A. Szkudlarek, AGH University of Krakow, Academic Centre for Materials and Nanotechnology, Poland; I. Utke, Empa, Swiss Federal Laboratories for Materials Science and Technology, Thun, Switzerland; M. Sikora, AGH University of Krakow, Academic Centre for Materials and Nanotechnology, Poland*

AF-MoP-69 In-Situ Investigation of Oxidant Influence on Materials Properties of Ultrathin Cerium Oxide Films Using Novel Ce(Dpdmg)₃ Precursor, *Rudi Tschammer, J. Kosto, C. Morales, BTU Cottbus, Germany; M. Schmickler, Ruhr Universität Bochum, Germany; K. Henkel, BTU Cottbus, Germany; A. Devi, Ruhr Universität Bochum, Germany; J. Flege, BTU Cottbus, Germany*

AF-MoP-70 Impact of the Knudsen Number on the ALD Saturation Profile Characteristics - Extended Slope Method, *C. Gonsalves, J. Velasco, J. Yim, J. Järvillehto, V. Vuorinen, Riikka L. Puurunen, Aalto University, Finland*

AF-MoP-71 Atomic Layer Deposition of Hafnium Oxide for Ferroelectric Devices, *Stijn van der Heijden, B. Macco, E. Kessels, Eindhoven University of Technology, The Netherlands*

AF-MoP-72 Analysing Growth Behaviour of Low Temperature ALD ZnO Films on Meso-porous Si Gr Battery Anodes for Improved Performance SEI, *Boris Hudec, Institute of Electrical Engineering, Slovak Academy of Sciences, Slovakia; P. Sahoo, A. Güneren, M. Precnerová, Centre for Advanced Materials Application, Slovak Academy of Sciences, Slovakia; M. Pecz, Institute of Electrical Engineering, Slovak Academy of Sciences, Slovakia; K. Fröhlich, Centre for Advanced Materials Application, Slovak Academy of Sciences, Slovakia*

AF-MoP-73 Rapid ALD by Forced Flow Through 3-Dimensional Macroscopic Nanoporous Solids, *Austin Cendejas, ASEE Postdoctoral Fellow Residing at U.S. Naval Research Laboratory, USA; B. Greenberg, K. Anderson, B. Feygelson, U.S. Naval Research Laboratory, USA*

AF-MoP-74 QCM the UiO Way, a Tutorial, *Ola Nilsen, University of Oslo, Norway*

AF-MoP-75 Sticking Coefficients in Atomic Layer Deposition Processes, *Martin Knaut, O. Bieg, T. Mikolajick, TU Dresden, Germany*

AF-MoP-76 A Data-Driven Approach to Analyzing Chemical Reactions and Predicting Film Properties in SiO₂N_y ALD Processes, *Sung Kyu Jang, H. Kim, J. Jeon, H. Kim, Korea Electronics Technology Institute, Republic of Korea; H. Kim, SurplusGLOBAL, Republic of Korea; S. Kim, H. Kim, W. Lee, S. Kim, Korea Electronics Technology Institute, Republic of Korea*

AF-MoP-78 In-situ Quartz Crystal Microbalance Measurement of Adsorption Equilibrium for Trimethylaluminum, *Yuxuan Wu, The University of Tokyo, Japan; J. Yamaguchi, N. Sato, A. Tsukune, Y. Shimogaki, The University of Tokyo, Japan*

AF-MoP-79 Influence of N₂/Ar Plasma Exposure Time on the Growth Kinetics of Epitaxial In Studied by in Situ Grazing Incidence Small-Angle X-Ray Scattering, *Jeffrey Woodward, U.S. Naval Research Laboratory, USA; S. Rosenberg, Lockheed Martin Advanced Technology Center, USA; D. Boris, M. Johnson, U.S. Naval Research Laboratory, USA; Z. Robinson, SUNY Brockport, USA; S. Johnson, Honeywell, USA; N. Nepal, U.S. Naval Research Laboratory, USA; K. Ludwig, Boston University, USA; S. Walton, C. Eddy, U.S. Naval Research Laboratory, USA*

AF-MoP-80 Theoretical Explorations of Vapour Phase Infiltration, *Karl Rönnyb, Tyndall National Institute, University College Cork, Ireland; M. Perego, CNR-IMM, Unit of Agrate Brianza, Italy; M. Nolan, Tyndall National Institute, University College Cork, Ireland*

AF-MoP-81 Synthesis and Characterization of Group III Precursors for Atomic Layer Deposition, *Dexter Dimova, S. Barry, Carleton University, Canada*

AF-MoP-82 Suppression of Ru-loss and Crystallization of SrRuO₃ Films via Optimization of Initial RTA Steps, *Donghyung Lee, Seoul National University, Republic of Korea*

AF-MoP-83 Doped SnO₂ Thin Films Fabricated at Low Temperature by Atomic Layer Deposition with a Precise Incorporation of Niobium Atoms, *G. Diress Gesesse, Institut Photovoltaïque d'Ile-de-France (IPVF), France; Damien Coutancier, UMR-IPVF 9006, CNRS, Institut Photovoltaïque d'Ile-de-France (IPVF), France; M. Al Katrib, F. Donsanti, Institut Photovoltaïque d'Ile-de-France (IPVF), France; M. Boutemy, UMR 8180, CNRS, Institut Lavoisier de Versailles (ILV), France; N. Schneider, UMR-IPVF 9006, CNRS, Institut Photovoltaïque d'Ile-de-France (IPVF), France*

AF-MoP-84 ALD Deposited Lanthanum Doped HfO₂ Thin Films on a Lateral High Aspect Ratio Structure (LHAR): Surface Characterization Using X-ray Photoelectron Spectroscopy (XPS) and Time-of-Flight Secondary Ion Mass Spectrometry (ToF-SIMS), *J. Emara, A. Kia, Sascha Bönhardt, C. Mart, K. Kühnel, N. Haufe, Fraunhofer Institute for Photonic Microsystems Center Nanoelectronic Technologies, Germany; R. Puurunen, Aalto University, Finland; M. Utriainen, Chipmetrics Oy, Finland; W. Weinreich, Fraunhofer Institute for Photonic Microsystems Center Nanoelectronic Technologies, Germany*

AF-MoP-85 Investigating and Overcoming the Challenges of Coating sub-Micron Dielectric Powders by Thermal and Plasma ALD, *Shagufta Batliwala, B. Peek, P. Chalker, A. Gardner, S. Gare, University of Liverpool, UK; J. Brindley, Gencoa, UK; R. Potter, University of Liverpool, UK*

AF-MoP-86 Indium Precursors with Improved Thermal Stability for Atomic Layer Deposition of Indium Oxide, *Lukas Mai, P. Mehlmann, Merck Electronics KGaA, Germany; R. Higuchi, Intermolecular, Inc.; H. Heil, Merck Electronics KGaA, Germany*

AF-MoP-87 DFT Study of Metal Precursor Pulse in Atomic Layer Deposition of Pt, *Sylwia Klejna, AGH University of Krakow, Poland*

AF-MoP-88 Analytical Factors in High-Resolution Mapping of Low Leakage Current Detection in High-K Materials Deposited by Atomic Layer Deposition, *James J.Y. Su, B. Liu, C. Kei, C. Hsiao, F. Chen, Taiwan Instrument Research Institute, National Applied Research Laboratories, Taiwan*

Nanostructure Synthesis and Fabrication

Room Hall 3 - Session NS-MoP

Nanostructures Synthesis and Fabrication Poster Session

5:45 – 7:00pm

NS-MoP-1 Interfacial Distortion of Sb₂Te₃-Sb₂Se₃ Multilayers via ALD for Enhanced Thermoelectric Properties, *Jun Yang, A. Bahrami, S. Lehmann, K. Nielsch, Leibniz IFW-Dresden, Germany*

NS-MoP-2 Effect of Ga₂O₃ Doping in Atomic Layer Deposited SnO₂ Thin Films, *J. Bae, T. Lee, D. Lee, Hyeongtag Jeon, Hanyang University, Republic of Korea*

NS-MoP-3 Lateral Conversion Synthesis of TMDs from Lithographically Patterned ALD Films, *Teveye Kuykendall, Lawrence Berkeley National Laboratory, USA; A. Kemelbay, Lawrence Berkeley National Laboratory, Kazakhstan; S. Aloni, Lawrence Berkeley National Laboratory, USA*

NS-MoP-4 Low Temperature SiO₂ Deposition in a Fluidized Bed to Improve the Colloid Stability of Polymer Microspheres, *Rens Kamphorst, Delft University of Technology, Netherlands*

NS-MoP-6 Al₂O₃ and HfO₂ Thin Layers by ALD on 1L-MoS₂: from Nucleation to Structural/Electrical Properties, *Emanuela Schilirò, S. Panasci, B. Galizia, A. Mio, G. Nicotra, CNR-IMM, Catania, Italy; S. Agnello, Department of Physics and Chemistry, University of Palermo; ATeN Center, Palermo, Italy; B. Pecz, G. Radnoczi, Institute for Technical Physics and Materials Science, Centre for Energy Research, HAS, Hungary; I. Deretzis, A. La Magna, F. Roccaforte, R. Lo Nigro, F. Giannazzo, CNR-IMM, Catania, Italy*

NS-MoP-7 Atomic Layer Deposition of Ruthenium Nanoparticles on Low Surface Energy Carbon Supports and Titania Nanotube Layers for Alkaline Hydrogen Evolution Reaction, *S. Mouli Thalluri, J. Rodriguez-Pereira, R. Zazpe, H. Söpha, University of Pardubice, Czechia; Jan Macak, University of Pardubice, Brno University of Technology, Czechia*

NS-MoP-8 Iridium Nanoparticles for Alkaline Hydrogen Evolution Reaction Synthesized by Atomic Layer Deposition on Titania Nanotube Layers and Carbon Supports, *Jhonatan Rodriguez-Pereira, B. Bawab, R. Zazpe, J. Macak, University of Pardubice, Czechia*

NS-MoP-9 Improving Thermoelectric Performance in Bi-Te Powders through Precision Control of TiO₂-induced Interface via Atomic Layer Deposition, *Su Min Eun, B. Choi, Seoul National University of Science and Technology, Republic of Korea*

NS-MoP-10 Selective Deposition of Pt Nanoparticles on 2D WS₂ for Enhanced Photodetection, *Hwi Yoon, D. Shin, I. Sohn, Yonsei University, Republic of Korea; T. Nakazawa, TANAKA Kikinzoku Kogyo K.K, Japan; S. Chung, H. Kim, Yonsei University, Republic of Korea*

NS-MoP-11 Demonstrating Graphene Hall Sensor Device Stability via Encapsulation Layer Optimization, *Jaspreet Kainth, R. Coleman, R. Baines, H. Glass, Paragraf, UK*

NS-MoP-12 Atomic Layer Deposition Assisted Fabrication of Metal-Organic Framework Films for Flexible Biosensing Devices, *J. Wang, X. Ke, Z. Zhao, Fudan University, China; X. Zuo, Xueqiang Lu, Jiangsu MNT Micro and Nanotech Co., Ltd., China; G. Huang, Y. Mei, Fudan University, China*

Monday Evening, August 5, 2024

NS-MoP-13 Growth of ALD Gold Nanoparticles on Oxide Surfaces, *Mari Napari*,
H. Cossey, King's College London, UK; *A. Werbrouck*, University of Missouri, USA; *J. Julin*,
University of Jyväskylä, Finland; *S. Barry*, Carleton University, Canada; *A. Zayats*, King's
College London, UK

Tuesday Morning, August 6, 2024

Room Hall 3A		
8:00am	AF1-TuM-1 Navigating the Semiconductor Market for ALD Precursors - in the Past and in the Future, <i>Jonas Sundqvist</i> , TECHCET LLC CA, Germany	ALD Fundamentals Session AF1-TuM Precursors and Chemistry: Precursor Design, New Precursors, Process Development II Moderators: Hyungjun Kim , Yonsei University, Korea Atsushi Sakurai , ADEKA CORPORATION, Japan
8:15am	AF1-TuM-2 Improvement of COSMO-SAC Method for Estimating Vapor Pressure of ALD Precursors, <i>Noboru Sato</i> , The University of Tokyo, Japan; <i>Y. Wu</i> , The University of Tokyo, Japan, China; <i>J. Yamaguchi</i> , <i>A. Tsukune</i> , <i>Y. Shimogaki</i> , The University of Tokyo, Japan	
8:30am	AF1-TuM-3 Development of Precursors and Reactivity for Thermal Atomic Layer Deposition (ALD) of Main Group Elements, <i>Majeda Al Hareri</i> , <i>D. Emslie</i> , McMaster University, Canada	
8:45am	AF1-TuM-4 A New ALD Process for Elemental Tellurium, <i>Paavo Porri</i> , <i>T. Hatanpää</i> , <i>H. Nieminen</i> , <i>K. Mizohata</i> , <i>M. Putkonen</i> , <i>M. Ritala</i> , University of Helsinki, Finland	
9:00am	AF1-TuM-5 Development of an Innovative Method to Find New Efficient Gallium ALD Precursors, <i>Eva Pugliese</i> , <i>D. Coutancier</i> , <i>J. Hervochon</i> , <i>P. Pavard</i> , CNRS-IPVF, France; <i>C. Gosmini</i> , Ecole Polytechnique - CNRS, France; <i>V. Lair</i> , Cimie ParisTech PSL, France; <i>A. Ringuede</i> , Chimie ParisTech PSL, France; <i>M. Bouttemy</i> , Institut Lavoisier de Versailles, France; <i>A. Auffrant</i> , Ecole Polytechnique - CNRS, France; <i>N. Schneider</i> , CNRS-IPVF, France	
9:15am	AF1-TuM-6 Insights into Reactive Oxygen Species and Film Properties of Atomic Layer Deposited Al ₂ O ₃ using Different Plasma-Activated Waters as Co-reactant, <i>J. Karnopp</i> , Aeronautics Institute of Technology, Brazil; <i>F. Miranda</i> , Universidade Estadual Paulista (UNESP), Brazil; <i>N. Azevedo Neto</i> , Aeronautics Institute of Technology, Brazil; <i>L. Daiane Pereira Leite</i> , Universidade Estadual Paulista (UNESP), Brazil; <i>D. Marcel Leite</i> , <i>C. Alves Junior</i> , <i>A. da Silva Sobrinho</i> , <i>Rodrigo Sávio Pessoa</i> , Aeronautics Institute of Technology, Brazil	
9:30am	AF1-TuM-7 The Effect of Co-Reactants on Interfacial Oxidation in Atomic Layer Deposition of Oxides on Metal Surfaces, <i>J. Swarup</i> , <i>H. Chuang</i> , <i>A. You</i> , James Engstrom , Cornell University, USA	
9:45am	AF1-TuM-8 Atomic Layer Deposition of Co ₂ P Thin Films, <i>Elisa Atosuo</i> , <i>P. Deminskyi</i> , ASM Microchemistry Ltd., Finland; <i>K. Mizohata</i> , <i>T. Hatanpää</i> , <i>M. Ritala</i> , University of Helsinki, Finland	
10:00am	Break & Exhibits	
10:15am		
10:30am		
10:45am	AF2-TuM-12 Plasma-Enhanced ALD of Ga ₂ O ₃ and GaN with Remote CCP-Plasma, Short Cycle Times, and Substrate Biasing, Roel Theeuwes , Eindhoven University of Technology, Netherlands; <i>L. Gutmann</i> , Eindhoven University of Technology, Germany; <i>H. Knoops</i> , Oxford Instruments Plasma Technology, Eindhoven University of Technology, Netherlands; <i>E. Kessels</i> , Eindhoven University of Technology, Netherlands	ALD Fundamentals Session AF2-TuM Growth and Characterization: Plasma Enhanced ALD I Moderators: Hyeontag Jeon , Hanyang University, Republic of Korea, Erwin Kessels , Eindhoven University of Technology, Netherlands
11:00am	AF2-TuM-13 Y ₂ C Thin Films Prepared by Plasma Enhanced Atomic Layer Deposition as a Diffusion Barrier and Glue Layer for Cu & Ru Interconnects, Minjeong Kweon , <i>C. Park</i> , <i>S. Kim</i> , <i>S. Kim</i> , Ulsan National Institute of Science and Technology (UNIST), Republic of Korea	
11:15am	AF2-TuM-14 Plasma Enhanced Atomic Layer Deposition of Boron Nitride, Marc Reynaud , University of Texas at Austin, USA; <i>J. Zhao</i> , <i>J. Carroll</i> , <i>G. Blankemeyer</i> , <i>P. Ventzek</i> , Tokyo Electron America, Inc., USA; <i>J. Warner</i> , <i>J. Ekerdt</i> , University of Texas at Austin, USA	
11:30am	AF2-TuM-15 Time-Resolved Study of OH Radicals During PEALD of Al ₂ O ₃ by Advanced Laser Spectroscopy, Antoine Salden , TU / Eindhoven, Netherlands; <i>M. Ceppelli</i> , <i>L. Martini</i> , University of Trento, Italy; <i>R. Engeln</i> , <i>H. Knoops</i> , <i>E. Kessels</i> , TU / Eindhoven, Netherlands	
11:45am	AF2-TuM-16 Engineering of Vo _x Properties Through Control of Plasma Characteristics During Plasma-Enhanced Atomic Layer Deposition, Peter Litwin , U.S. Naval Research Laboratory, USA; <i>M. Currie</i> , <i>N. Nepal</i> , <i>M. Sales</i> , <i>D. Boris</i> , <i>S. Walton</i> , <i>V. Wheeler</i> , US Naval Research Laboratory, USA	

Tuesday Morning, August 6, 2024

Room Hall 3D		
8:00am	AA1-TuM-1 Leakage Control of DRAM High-k Capacitor Stack by Ald Sc_2O_3 , Y_2O_3 Inter-Layer, <i>R. Higuchi, A. Babadi, C. Chen, Bhushan Zope</i> , Merck KGaA, Darmstadt, Germany, USA	ALD Applications Session AA1-TuM Applications in ULSI BEOL: Interconnects, Diffusion Barriers, & DRAM Moderators: Mike McSwiney , Applied Materials, USA, David Towner , Intel Corp., USA
8:15am	AA1-TuM-2 ALD Deposited IGO with High Thermal Stability (~ 800 °C) by Controlling Crystallinity for Multi-bit Operation 2T0C DRAM, <i>Jae-Hyeok Kwag, S. Choi, J. Sim, T. Cho, C. Park, Y. Song, J. Park</i> , Hanyang University, Republic of Korea	
8:30am	AA1-TuM-3 Improving Electrical Properties of ZrO_2 Dielectric Films Without Sacrificing Tetragonal Crystallinity via Gd Doping, <i>Seungwoo Lee, Y. Choi, J. Jeong, J. Nam</i> , Kyung Hee University, Republic of Korea; <i>H. Oh, H. Kim, Y. Park</i> , SK trichem, Republic of Korea; <i>W. Jeon</i> , Kyung Hee University, Republic of Korea	
8:45am	INVITED: AA1-TuM-4 Area Selective Co ALD for Highly Reliable ULSI Interconnect System and the Establishment of ALD Process Design Framework, <i>Yukihiko Shimogaki</i> , The University of Tokyo, Japan	
9:00am		
9:15am	AA1-TuM-6 Atomic Layer Deposition (ALD) of Transition Metal Dichalcogenides (TMDS) Layers as Metal Diffusion Barriers for Back-End-of-Line (BEOL) Applications, <i>Anil Mane, S. Katta, J. Morris, C. Phatak, J. Elam</i> , Argonne National Laboratory, USA	
9:30am	AA1-TuM-7 High-Quality Co Thin Film by Thermal ALD Using CCTBA Precursor by Controlling H_2 Dose, <i>Jun Yamaguchi, N. Sato, A. Tsukune, T. Momose, Y. Shimogaki</i> , The University of Tokyo, Japan	
9:45am	AA1-TuM-8 Improved Properties of Atomic Layer Deposited Ru Films by Providing Additional Reactant for Cu Alternative Interconnects, <i>Jeongha Kim, K. Sang Bok</i> , Ulsan National Institute of Science and Technology (UNIST), Republic of Korea; <i>T. Cheon</i> , Daegu Gyeongbuk Institute of Science & Technology (DGIST), Republic of Korea; <i>S. Kim</i> , Ulsan National Institute of Science and Technology (UNIST), Republic of Korea	
10:00am	Break & Exhibits	
10:15am		
10:30am		
10:45am	INVITED: AA2-TuM-12 ALD Layers and Interfaces in Next Generation Photovoltaics, <i>Mariadriana Creatore</i> , TU Eindhoven, Netherlands	ALD Applications Session AA2-TuM Energy: Solar Energy Materials I Moderators: Wei-Min Li , Jiangsu Leadmicro Nano-Equipment Technology Ltd., China, Nathanaelle Schneider , CNRS-IPVF, France
11:00am		
11:15am	AA2-TuM-14 Utilizing Low-Temperature Ald Technique to Investigate Perovskite Nickelates for Photovoltaic Applications, <i>Anjali Choubey, H. Hovde Sønsteby</i> , University of Oslo, Norway; <i>H. von Wenckstern</i> , University of Oslo, Germany; <i>O. Nilsen</i> , University of Oslo, Norway	
11:30am	AA2-TuM-15 Atomic Layer Deposition of Defect-Engineered TiO_x and TaO_x Protective Coatings for Photoelectrochemistry, <i>Tim Rieth, O. Bienek, J. Kühne, I. Sharp</i> , Walter Schottky Institut, Technische Universität München, Germany	
11:45am	AA2-TuM-16 Influence of Atomic Layer Deposition Tin Oxide Properties on the Performance of Perovskite Solar Cells, <i>Bhavya Rakheja, A. Hultqvist</i> , Uppsala University, Angstrom Laboratory, Sweden; <i>T. Törndahl</i> , Uppsala University, Sweden	

Tuesday Morning, August 6, 2024

Room Hall 3E		
8:00am	INVITED: AM-TuM-1 Development of a Modular Manufacturing Equipment Architecture for Application Tailored Process Options, <i>Jacques Kools</i> , Encapsulix SAS, France	ALD for Manufacturing Session AM-TuM Equipment Design, Precursor Delivery, and Spatial/R2R/Fast ALD Moderators: Doug Agnew, Lam Research, USA, Ganesh Sundaram, Veeco-CNT, USA
8:15am		
8:30am	AM-TuM-3 Optimizing Precursor Utilization for Spatial ALD in High Surface Area Substrates, <i>J. van Himste</i> , SparkNano B.V., Netherlands; Paul Poedt , SparkNano B.V. and Eindhoven University of Technology, Netherlands	
8:45am	AM-TuM-4 Development and Scale-up of ALD onto Synthetic Graphite Powder in a Continuous Vibrating Reactor for Battery Applications, <i>B. Castro</i> , Forge Nano Inc, USA; <i>A. Broerman</i> , <i>C. Gump</i> , Arrelaine Dameron , Forge Nano, USA	
9:00am	AM-TuM-5 Ultra High Speed Spatial PEALD Using a Novel Precursor Separation Method, Eric Dickey , Lotus Applied Technology, USA	
9:15am	AM-TuM-6 An Innovative 3D Solution for High Throughput Roll-to-Roll ALD, Diederick Spee , Kalpana Systems, Netherlands; <i>A. Ghazy</i> , Kalpana systems, Netherlands	
9:30am	AM-TuM-7 A Novel Technique for Pulsed Liquid Source Vapor Delivery in ALD and Short-Pulse CVD, Kathleen Erickson , <i>T. Sandbakken</i> , MSP - A Division of TSI, USA	
9:45am	AM-TuM-8 In-situ Spectroscopic Ellipsometry During Spatial ALD of Al ₂ O ₃ , ZnO, and SnO ₂ , Melika Motaghian , <i>M. van de Poll</i> , <i>S. Ratnasingham</i> , Eindhoven University of Technology, Netherlands; <i>H. de Vries</i> , SALD B.V., Netherlands; <i>P. Poedt</i> , Eindhoven University of Technology, Netherlands; <i>J. Hilfiker</i> , J.A. Woollam Co., Inc., USA; <i>E. Kessels</i> , <i>B. Macco</i> , Eindhoven University of Technology, Netherlands	
10:00am	Break & Exhibits	
10:15am		
10:30am		
10:45am	AS-TuM-12 A Novel SMI for AS-ALD, Molly Alderman , <i>A. Upadhyay</i> , Carleton University, Canada; <i>M. Griffiths</i> , <i>K. Blakeney</i> , <i>D. Agnew</i> , <i>P. Lemaire</i> , <i>J. Smith</i> , <i>D. Hausmann</i> , <i>D. Mandia</i> , LAM Research, USA; <i>S. Barry</i> , Carleton University, Canada	Area Selective ALD Session AS-TuM Selective ALD Moderators: Han-Bo-Ram Lee, Incheon National University, Republic of Korea, Angel Yanguas-Gil, Argonne National Lab, USA
11:00am	AS-TuM-13 Atomic Layer Plasma Treatment for Area-Selective Atomic Layer Deposition of High-Quality SiO ₂ Thin Film, Sanghun Lee , <i>S. Seo</i> , <i>T. Kim</i> , <i>H. Yoon</i> , <i>S. Park</i> , <i>S. Na</i> , <i>J. Seo</i> , Yonsei University, Republic of Korea; <i>W. Nah</i> , Air Liquide, Republic of Korea; <i>S. Chung</i> , <i>H. Kim</i> , Yonsei University, Republic of Korea	
11:15am	AS-TuM-14 Enhancing Selectivity for AS-ALD of MoO ₂ through Hydrogen Treatment: Strategy of Surface Cleaning and Expanding Deactivated Areas, Hae Lin Yang , <i>J. Kwon</i> , <i>C. Park</i> , Hanyang University, Korea; <i>S. Lee</i> , <i>B. Kim</i> , <i>C. Jung</i> , <i>H. Lim</i> , Samsung Electronics Co., Inc., Republic of Korea; <i>J. Park</i> , Hanyang University, Korea	
11:30am	AS-TuM-15 Contra-Selective Deposition of SiO ₂ on Metals, Chad Brick , <i>T. Ogata</i> , Gelest, Inc, USA	
11:45am	AS-TuM-16 Photoluminescent Graphene-Lanthanide Heterostructures via Direct Laser Writing and Area-Selective Atomic-Molecular Layer Deposition, Aleksei Emelianov , <i>K. Mentel</i> , University of Jyväskylä, Finland; <i>A. Ghazy</i> , Aalto University, Finland; <i>A. Johansson</i> , University of Jyväskylä, Finland; <i>M. Karppinen</i> , Aalto University, Finland; <i>M. Pettersson</i> , University of Jyväskylä, Finland	

Tuesday Morning, August 6, 2024

Room Hall 3F		
8:00am	INVITED: ALE1-TuM-1 Current Status of ALE in Semiconductor Processes, <i>Keun Hee Bai</i> , Samsung Electronics Co., Republic of Korea	Atomic Layer Etching Session ALE1-TuM ALE Applications and Methodologies Moderators: Hannah Margavio , North Carolina State University, USA, Fred Roozeboom , University of Twente and Carbyon, B.V., The Netherlands
8:15am		
8:30am	ALE1-TuM-3 ALE Preparation of Diamond Surfaces for Materials and Device Applications, <i>Jeffrey Daulton, M. Geis, M. Polking</i> , MIT Lincoln Laboratory, USA	
8:45am	ALE1-TuM-4 Comparison of Different PEALE Modes on AlGaN/GaN Heterostructures, <i>C. Miersch, Sarah Seidel</i> , Fraunhofer Institute for Integrated Systems and Device Technology IISB, Germany; <i>A. Schmid, J. Heitmann</i> , Department of Applied Physics, Technical University of Freiberg, Germany; <i>F. Beyer</i> , Fraunhofer Institute for Integrated Systems and Device Technology IISB, Germany	
9:00am	ALE1-TuM-5 Quasi-ALE Process for GaN: High Etching Rate Without Compromising the Surface Roughness, <i>P. Mouriño-Miñambres, R. Resta-López, F. Martin-Romero, Miguel Sinusia Lozano, V. Gómez</i> , Nanophotonics Technology Center - Universitat Politècnica de València, Spain	
9:15am	ALE1-TuM-6 A New Challenge for Developing Novel Atomic Layer Etching: Applying the Leidenfrost Effect to Obtain Floating Nanomist-Assisted Vapor Etching, <i>Thi-Thuy-Nga Nguyen</i> , Nagoya University, Japan; <i>Y. Yamaguchi, K. Shinoda</i> , Hitachi, Ltd., Japan; <i>K. Sun</i> , Nagoya University, Japan; <i>K. Maeda, K. Yokogawa, M. Izawa</i> , Hitachi High-Tech Corp., Japan; <i>K. Ishikawa, M. Hori</i> , Nagoya University, Japan	
9:30am	ALE1-TuM-7 Electron-Enhanced Etching of Molybdenum Using Sequential O ₂ and HCl Reactive Background Gases to Form Volatile Molybdenum Oxichlorides, <i>Michael Collings, S. George</i> , University of Colorado, Boulder, USA	
9:45am	ALE1-TuM-8 Impact of Activation Strategies for SiO ₂ Atomic Layer Etching Applied to Contact Patterning, <i>Antoine Ronco, F. Boulard, S. Leclercq</i> , Univ. Grenoble Alpes, CEA, Leti, France; <i>N. Possème</i> , ST Microelectronics, France	
10:00am	Break & Exhibits	
10:15am		
10:30am		
10:45am	INVITED: ALE2-TuM-12 Thermal Etching of Metals and Metallic Materials for Gate-All-Around Devices, <i>Dimitri Kioussis, S. Karumuri, M. Uddin, S. Barnhill, Y. Huang, B. Erickson</i> , Intel Corporation, USA	Atomic Layer Etching Session ALE2-TuM Thermal Gas-phase ALE Moderators: Heeyeop Chae , Sungkyunkwan University (SKKU), Republic of Korea, Jean-François de Marneffe , IMEC, Belgium
11:00am		
11:15am	ALE2-TuM-14 Low Temperature, Conversion-Free Thermal Atomic Layer Etching of Zinc Oxide using Hydrofluoric Acid and Trimethylgallium, <i>Taewook Nam, D. Zywojko, J. Partridge, S. George</i> , University of Colorado Boulder, USA	
11:30am	ALE2-TuM-15 Thermal Atomic Layer Etching of the Indium Gallium Zinc Oxide (IGZO) Family by Fluorination and Ligand-Substitution Hydrogen-Transfer Reactions, <i>Troy Collieran, J. Partridge, A. Abdulgatov, S. George</i> , University of Colorado at Boulder, USA	
11:45am	ALE2-TuM-16 Designing an ALE Process and Uncovering the Etching Mechanism for a 2D van Der Waals Material: Ternary Transition Metal Chalcogenide CrPS ₄ , <i>Marissa Pina, M. Whalen, J. Xiao, A. Teplyakov</i> , University of Delaware, USA	

Tuesday Afternoon, August 6, 2024

Room Hall 3A		
1:30pm	AF1-TuA-1 New Class of Tin Precursors Targeting Low Temperature ALD Processing, <i>Jean-Pierre Glauber</i> , A. Devi, Ruhr University Bochum, Germany	ALD Fundamentals Session AF1-TuA Precursors and Chemistry: Precursor Design, New Precursors, Process Development III Moderators: Anjana Devi , Ruhr University Bochum, Germany, Paul Williams , Pegasus Chemicals, USA
1:45pm	AF1-TuA-2 Novel Synthesis Route for Atomic Layer Epitaxy of BaSnO ₃ , <i>Andreas Alstad</i> , H. Sønsteby, University of Oslo, Norway	
2:00pm	AF1-TuA-3 Microwave Enhanced ALD of Al ₂ O ₃ , <i>B. Kupp</i> , A. Schraner, <i>John Conley</i> , Oregon State University, USA	
2:15pm	AF1-TuA-4 Atomic Layer Deposition of SnO Film Using Liquid Sn(EtCp) ₂ Precursor and Combinations of H ₂ O and H ₂ Plasma, <i>Fumikazu Mizutani</i> , N. Takahashi, Kojundo Chemical Laboratory Co., Ltd., Japan; <i>T. Nabatame</i> , National Institute for Materials Science, Japan	
2:30pm	AF1-TuA-5 A New Water Assisted ALD Process for Sc ₂ O ₃ Using a Volatile Liquid Precursor, <i>Martin Wilken</i> , Ruhr Universität Bochum, Germany; <i>T. Hepp</i> , O. Briel, Dockweiler Chemicals GmbH, Germany; <i>A. Muriqi</i> , Tyndall National Institute, University College Cork, Ireland; <i>C. Cho</i> , Ruhr Universität Bochum, Germany; <i>M. Nolan</i> , Tyndall National Institute, University College Cork, Ireland; <i>A. Devi</i> , Leibniz Institute for Solid State and Materials Research, Dresden (IFW), Germany	
2:45pm	AF1-TuA-6 Atomic Layer Deposition of Crystalline Molybdenum Trioxide and Suboxide Thin Films, <i>Alexey Ganzhinov</i> , M. Putkonen, M. Ritala, University of Helsinki, Finland	
3:00pm	AF1-TuA-7 Promising Precursor Chemistry for ALD of Lithium-Based Thin Films, <i>Jorit Obenlünenschloß</i> , Inorganic Materials Chemistry, Ruhr University Bochum, Bochum, Germany; <i>N. Boysen</i> , Fraunhofer Institute for Microelectronic Circuits and Systems, Duisburg, Germany; <i>U. Brokmann</i> , Inorganic Non-metallic Materials, Technische Universität Ilmenau, Ilmenau, Germany; <i>D. Rogalla</i> , RUBION, Ruhr University Bochum, Bochum, Germany; <i>E. Rädlein</i> , Inorganic Non-metallic Materials, Technische Universität Ilmenau, Ilmenau, Germany; <i>A. Devi</i> , Inorganic Materials Chemistry, Ruhr University Bochum, Bochum, Germany	
3:15pm	AF1-TuA-8 Benchmarking 4 Different Cobalt Precursors for Atomic Layer Deposition of Complex Cobalt Oxides, <i>Yani Amedjkouh</i> , H. Sønsteby, University of Oslo, Norway	
3:30pm	Break & Exhibits	
3:45pm		
4:00pm	INVITED: AF2-TuA-11 Machine Learning Assisted Surface Reaction Study of Al(Me) ₃ and Water on OH/Si(111), <i>H. Nakata</i> , <i>Cheol Ho Choi</i> , Kyungpook National University, Republic of Korea	ALD Fundamentals Session AF2-TuA Precursors and Chemistry: Simulation, Modeling, and Machine Learning for ALD Moderators: Michael Nolan , University College Cork, Ireland, Ralf Tonner-Zech , Leipzig University, Germany
4:15pm		
4:30pm	AF2-TuA-13 Quantum Chemical Investigation on the Reaction Mechanism of Atomic Layer Deposition of ZrO ₂ from Heteroleptic CpZr(N(CH ₃) ₂) ₃ Precursor and Ozone, <i>Rabi Khanal</i> , R. Joe, A. Dip, Tokyo Electron America, Inc., USA	
4:45pm	AF2-TuA-14 Microkinetic Modelling to Reveal How the Atomic-Scale Mechanism of Deposition or Etch Plays Out at Feature and Reactor Scale, <i>Simon D. Elliott</i> , Schrödinger, Ireland; <i>T. Hughes</i> , T. Ludwig, Schrödinger, USA; <i>J. Gavartin</i> , Schrödinger, UK	
5:00pm	AF2-TuA-15 First-Principles Based Comprehensive Surface Kinetic Modeling for Molybdenum ALD Film Growth, <i>Toshihiko Iwao</i> , K. Lee, J. Cha, J. Hong, J. Son, S. Kang, Etch/CLN Equipment R&D Team, Samsung Electronics, Republic of Korea	
5:15pm	AF2-TuA-16 Modelling the Ligand Exchange Process for the Atomic Layer Deposition of Metal and Metal Oxide Thin Films, <i>Ji Liu</i> , Tyndall National Institute, University College Cork, Ireland; <i>H. Sønsteby</i> , University of Oslo, Norway; <i>M. Nolan</i> , Tyndall National Institute, University College Cork, Ireland	

Tuesday Afternoon, August 6, 2024

Room Hall 3D		
1:30pm	INVITED: AA1-TuA-1 Toward All-ALD Halide Perovskite Solar Cells, <i>G. Popov, A. Weiss, M. Ritala, M. Leskelä, Marianna Kemell</i> , University of Helsinki, Finland	ALD Applications Session AA1-TuA Energy: Solar Energy Materials II Moderators: Arrelaine Dameron , Forge Nano, USA, Neil Dasgupta , University of Michigan, USA
1:45pm		
2:00pm	AA1-TuA-3 Plasma-enhanced Atomic Layer Deposition of Tunable Cobalt Nitride Thin Films Enabled by Sequential N ₂ Plasma Exposure, <i>Matthias Kuhl</i> , Technical University Munich, Germany; <i>L. Kohlmaier</i> , Technical University Munich, Austria; <i>I. Sharp</i> , Technical University Munich, USA; <i>J. Eichhorn</i> , Technical University Munich, Germany	
2:15pm	AA1-TuA-4 Hybrid Solar Cells Comprising Inorganic and Organic Materials Through Vapor Phase Infiltration, <i>K. Ashurbekova</i> , 1. CIC nanoGUNE, Spain; <i>Mato Knez</i> , CIC nanoGUNE, Spain	
2:30pm	AA1-TuA-5 Mitigating the Cross-Ion Migration Towards Perovskite Using a Conformal Layer of Alumina via Atomic Layer Deposition, <i>Mayank Kedia, C. Das, M. Saliba</i> , Forschungszentrum Jülich GmbH, Germany	
2:45pm	AA1-TuA-6 Thermoelectric Properties of Sb ₂ Te ₃ -based Fereocrystals based on Atomic Layer Deposition, <i>J. Yang, D. Shin, S. Lehmann, A. Bahrami, Korneli Nielsch</i> , Leibniz Inst. of Solid State and Materials Research / IFW-Dresden, Germany	
3:00pm	INVITED: AA1-TuA-7 Atomic Layer Deposition for Photoelectrochemical Solar Fuel Production, <i>Lionel Santinacci</i> , CNRS/Aix-Marseille Univ., France	
3:15pm		
3:30pm	Break & Exhibits	
3:45pm		
4:00pm	AA2-TuA-11 How Instability Can Be Beneficial for Electrocatalysis: The Case of Nickel Sulfide Oxygen Evolution Reaction Precatalyst, <i>Miika Mattinen</i> , University of Helsinki, Finland; <i>J. Schröder, G. D'Acunzo, T. Jaramillo</i> , Stanford University, USA; <i>M. Burke Stevens</i> , SLAC National Accelerator Laboratory, USA; <i>M. Ritala</i> , University of Helsinki, Finland; <i>S. Bent</i> , Stanford University, USA	ALD Applications Session AA2-TuA Energy: Catalysis and Fuel Cells Moderators: Riikka Puurunen , Aalto University, Finland, Ruud van Ommen , Delft University of Technology, Netherlands
4:15pm	AA2-TuA-12 Diffusion–Reaction Modeling for Atomic Layer Deposition on Spheres: Comparison with Experimental Data, <i>Niko Heikkinen</i> , VTT Technical Research Centre of Finland; <i>J. Yim, J. Järvilehto</i> , Aalto University, Finland; <i>S. Saedy</i> , Delft University of Technology, Netherlands; <i>P. Brüner, T. Grehl</i> , IONTOF GmbH, Netherlands; <i>E. Haimi, J. Velasco, C. Gonsalves</i> , Aalto University, Finland; <i>R. van Ommen</i> , Delft University of Technology, Netherlands; <i>J. Lehtonen</i> , VTT Technical Research Centre of Finland; <i>R. Puurunen</i> , Aalto University, Finland	
4:30pm	AA2-TuA-13 Highly Durable Pt Based Fuel Cell Catalysts via Atomic Layer Deposition, <i>Xiao Liu, H. Liu, Y. Gao</i> , State Key Laboratory of Intelligent manufacturing Equipment and Technology, School of Mechanical Science and Engineering, Huazhong University of Science and Technology, China; <i>B. Shan</i> , State Key Laboratory of Materials Processing and Die & Mould Technology, School of Materials Science and Engineering, Huazhong University of Science and Technology, China; <i>R. Chen</i> , State Key Laboratory of Intelligent manufacturing Equipment and Technology, School of Mechanical Science and Engineering, Huazhong University of Science and Technology, China	
4:45pm	AA2-TuA-14 Catalyst on Top? Importance of the Final Layer of an ALD Deposited Catalyst. Ni-Fe Catalysts Deposited by ALD, <i>Ruben Blomme</i> , Ghent University, Belgium; <i>R. Ramesh</i> , Ghent University, Belgium, India; <i>L. Henderick, M. Minjauw, P. Vereecke, M. Adriaens, C. Detavernier, J. Dendoven</i> , Ghent University, Belgium	
5:00pm	AA2-TuA-15 Enhanced Oxygen Evolution Reaction Catalysts by PE-ALD: Atomically Dispersed Co ₁ and Fe ₁ Supported on Ultra-thin Films of Doped NiO _x , <i>Ina Oestrom</i> , University of New South Wales, Australia; <i>M. Favaro</i> , Helmholtz Zentrum Berlin, Germany; <i>P. Burr, B. Hoex</i> , University of New South Wales, Australia	
5:15pm	AA2-TuA-16 Optimization of Photocurrent Response of Atomic Layer Deposited Ti _x Fe _{2-x} O ₃ Photoanodes, <i>Anjan Deb, A. Vihervaara, G. Popov, M. Chundak, M. Heikkilä, M. Kemell, M. Ritala, M. Putkonen</i> , University of Helsinki, Finland	

Tuesday Afternoon, August 6, 2024

Room Hall 3E		
1:30pm	NS-TuA-1 Combining ALD Infiltration and Pressure-Assisted Sintering for Fabrication of Electrically Conductive Nanocomposites, <i>Benjamin Greenberg, K. Anderson, A. Jacobs, A. Cendejas, E. Patterson, J. Wollmershauser, B. Feigelson</i> , U.S. Naval Research Laboratory, USA	Nanostructure Synthesis and Fabrication Session NS-TuA 2D Nanomaterials by ALD (Including Transition Metal Dichalcogenides) Moderators: Jeffrey W. Elam , Argonne National Laboratory, USA, Chang-Yong Nam , Brookhaven National Laboratory, USA
1:45pm	NS-TuA-2 ALD on Particulate Materials: A Comprehensive Review of Processes, Support Materials and Applications, <i>Peter M. Piechulla, M. Chen</i> , Delft University of Technology, Netherlands; <i>R. Puurunen</i> , Aalto University, Finland; <i>J. van Ommen, A. Goulas</i> , Delft University of Technology, Netherlands	
2:00pm	NS-TuA-3 Tuning MoCl ₅ Self-Etching Effect for Deposition of 2D MoS ₂ on 300mm Wafer by Thermal ALD, <i>Angelica Azcatl-Zacatzi, N. Vu, D. Lee, T. Ngo, R. Kanjolia</i> , Merck KGaA, Darmstadt, Germany	
2:15pm	NS-TuA-4 Low-Temperature ALD of SbO _x /Sb ₂ Te ₃ Multilayers with Boosted Thermoelectric Performance, <i>J. Yang</i> , IFW Dresden, Germany; <i>S. Mukherjee</i> , Iio Institute, India; <i>Sebastian Lehmann, K. Nielsch</i> , IFW Dresden, Germany	
2:30pm	NS-TuA-5 Enhancing Electrical Properties of 2D WS ₂ Grown by ABC PE-ALD with Ion Energy Dose Control, <i>Cindy Lam, E. Kessels, B. Macco</i> , Eindhoven University of Technology, Netherlands	
2:45pm	NS-TuA-6 Impact of ALD Precursor Choice on Nucleation and Growth of Dielectrics on 2D Materials, <i>A. Shearer, J. Ko, K. Saraswat, E. Pop, Stacey Bent</i> , Stanford University, USA	
3:00pm	NS-TuA-7 Noble Metal Nanoparticles Functionalized 2D Transition Metal Dichalcogenides by Atomic Layer Deposition for Enhanced Sensing Properties Toward Amino Acids, <i>Jisang Yoo, S. Lee, J. Kim, I. Sohn, S. Jung, H. Kim</i> , Yonsei University, Korea	
3:15pm	NS-TuA-8 Surface Modification of Polyolefin Nonwoven Fabric Through Atomic Layer Deposition (ALD) and Molecular Layer Deposition (MLD), <i>Jae Seok Lee, S. Song, B. Choi</i> , Korea University, Republic of Korea	
3:30pm	Break & Exhibits	
3:45pm		
4:00pm	EM-TuA-11 Selective Deposition of Al ₂ O ₃ on Patterned Polymer Substrates using Vapor Phase Infiltration, <i>Maggy Harake, Y. Lee</i> , Stanford University, USA; <i>B. Yu</i> , Lawrence Berkeley National Laboratory, USA; <i>G. D'Acunto</i> , Stanford University, USA; <i>R. Ruiz</i> , Lawrence Berkeley National Laboratory, USA; <i>S. Bent</i> , Stanford University, USA	Emerging Materials Session EM-TuA Vapor Phase Infiltration Moderators: Jolien Dendooven , Ghent University, Belgium, Sang In Lee , Synos Foundation, USA
4:15pm	EM-TuA-12 Sequential Infiltration Synthesis of Al ₂ O ₃ in PMMA and PLA Thin Films: Convergence of Results Across Experimental Data and Theoretical Studies, <i>Michele Perego</i> , CNR-IMM, Agrate unit, Italy; <i>A. Motta, G. Seguíni, C. Wiemer</i> , CNR-IMM, Agrate Unit, Italy; <i>K. Ronnby, M. Nolan</i> , Tyndall National Institute, University College Cork, Ireland	
4:30pm	INVITED: EM-TuA-13 Expanding the Toolbox of Vapor Phase Infiltration Processes, <i>Tamar Segal-Peretz</i> , Technion Israel Institute of Technology, Israel	
4:45pm		
5:00pm	EM-TuA-15 Organic-Inorganic Hybrid Thermoelectric Materials Through Vapor Phase Infiltration, <i>Kristina Ashurbekova</i> , CIC nanoGUNE, Spain; <i>M. Naumochkin, H. Reith, K. Nielsch</i> , Leibniz Institute for Solid State and Materials Research (IFW), Germany; <i>M. Knez</i> , CIC nanoGUNE, Spain	
5:15pm	EM-TuA-16 Surprising, Simultaneously Enhanced H ₂ /CO ₂ Selectivity and H ₂ Permeability in Polymer Gas Separation Membranes by 1-Cycle Alumina Atomic Layer Deposition: The Effects of Inadvertent Vapor-Phase Infiltration, <i>L. Hu</i> , University at Buffalo, USA; <i>W. Lee, A. Subramanian</i> , Stony Brook University, USA; <i>E. Deng</i> , University at Buffalo, USA; <i>K. Kisslinger</i> , Brookhaven National Laboratory, USA; <i>S. Fan</i> , University of Colorado Boulder, USA; <i>V. Bui</i> , University at Buffalo, USA; <i>Y. Ding</i> , University of Colorado Boulder, USA; <i>H. Lin</i> , University at Buffalo, USA; Chang-Yong Nam , Brookhaven National Laboratory, USA	

Tuesday Afternoon, August 6, 2024

Room Hall 3F		
1:30pm	INVITED: ALE1+AM-TuA-1 Centering Sustainability in Future Plasma-Enhanced ALE Processes, <i>Nathan Marchack</i> , IBM Research, USA	Atomic Layer Etching Session ALE1+AM-TuA ALE & Sustainability Moderators: Keun Hee Bai , Samsung Electronics Co., Republic of Korea, Leila Ghorbani , KU Leuven and Imec, Belgium
1:45pm		
2:00pm	ALE1+AM-TuA-3 Life Cycle Assessment of GaN ALD, <i>Houyem Hafdi</i> , A. Carlson, H. Pedersen, Linköping University, IFM, Sweden	
2:15pm	ALE1+AM-TuA-4 Specialization of Atomic Layer Etching to Address Sustainability Challenges, <i>Philippe BEZARD</i> , IMEC, Belgium; A. Fathzadeh, KU LEUVEN, Belgium	
2:30pm	ALE1+AM-TuA-5 Thermal Al ₂ O ₃ Atomic Layer Etching Using HF and Hacac Reactants: Etch Enhancement from Re-fluorination by Product HF During Hacac Reaction, <i>Andrew S. Cavanagh</i> , T. Colleran, A. Abdulagatov, S. George, University of Colorado at Boulder, USA	
2:45pm	ALE1+AM-TuA-6 Elucidating Gas Phase and Surface Reactions of Atomic Layer Etching, <i>Taylor G. Smith</i> , University of California, Los Angeles, USA; E. Crumlin, Lawrence Berkeley National Laboratory, USA; J. Chang, University of California, Los Angeles, USA	
3:00pm	ALE1+AM-TuA-7 Thermal Atomic Layer Etching of Ta with NbCl ₅ and O ₂ , <i>Juha Ojala</i> , M. Chundak, M. Vehkamäki, A. Vihervaara, M. Ritala, University of Helsinki, Finland	
3:15pm	ALE1+AM-TuA-8 Atomic Layer Etching of Tantalum: Unlocking the Etching Mechanism by in-Vacuo XPS Studies, <i>Mykhailo Chundak</i> , J. Ojala, M. Putkonen, M. Ritala, University of Helsinki, Finland	
3:30pm	Break & Exhibits	
3:45pm		
4:00pm	INVITED: ALE2+AM-TuA-11 Application of Machine Learning to Atomic-Scale Process Development, <i>Satoshi Hamaguchi</i> , Osaka University, Japan	Atomic Layer Etching Session ALE2+AM-TuA A.I. for ALD and ALE, AND Wet-Chemical ALE Moderators: Eric Liu , Tokyo Electron America, USA, Kazunori Shinoda , Hitachi, Ltd., Japan
4:15pm		
4:30pm	ALE2+AM-TuA-13 Surrogate Models for One-Shot ALD and ALE Process Transfer Across Reactors and High Aspect Ratio Substrates, <i>Angel Yanguas-Gil</i> , J. Elam, Argonne National Laboratory, USA	
4:45pm	ALE2+AM-TuA-14 Ligand-Assisted Surface Layer Formation in Wet Atomic Layer Etching of Molybdenum, <i>Tulashi Dahal</i> , K. Abel, Tokyo Electron America Inc., USA; N. Levtschin, TEL Manufacturing and Engineering of America, Inc., USA; T. Hurd, Tokyo Electron America Inc., USA; A. Rotondaro, Tokyo Electron America Inc., USA	
5:00pm	ALE2+AM-TuA-15 Wet Atomic Layer Etching of Ruthenium, <i>Kate Abel</i> , Tokyo Electron America, Inc., USA	
5:15pm	ALE2+AM-TuA-16 Combined Dry-Wet ALE for Tungsten: A Surface Characterization Study, <i>Cinzia Chan</i> , KULeuven, Imec, Italy; J. de Marneffe, IMEC, Belgium; C. Gort, TU Darmstadt, Germany; J. Serron, M. Agati, IMEC, Belgium; J. Hofmann, TU Darmstadt, Germany; S. De Gendt, KULeuven, Imec, Belgium; D. van Dorp, IMEC, Belgium	

ALD Applications

Room Hall 3 - Session AA-TuP

ALD Applications Poster Session

5:45 – 7:00pm

AA-TuP-1 Scalable Fabrication of Catalysts for Proton Exchange Membrane Water Electrolysis, *P. Piechulla, M. Chen*, Delft University of Technology, Netherlands; *M. Kräenbring, F. Özcan, D. Segets*, University of Duisburg-Essen, Germany; **J. Ruud van Ommen**, Delft University of Technology, Netherlands

AA-TuP-3 Synergetic Effects of Nanoscale ALD-HfO₂ Coatings and Bionic Microstructures for Anti-Adhesive Surgical Electrodes: Improved Cutting Performance, Antibacterial Property, and Biocompatibility, *Jahra Mariam*, Picosun Oy, Finland

AA-TuP-4 Plasma Enhanced Atomic Layer Deposition of Hafnium Oxide (HfO₂) Thin Films for MIS and MIM Devices, *Pallabi Paul, E. Brusaterra, I. Ostermay, E. Bahat Treidel, F. Brunner, O. Krüger*, Ferdinand-Braun-Institut, Leibniz-Institut für Höchstfrequenztechnik (FBH), Germany

AA-TuP-5 Improving the Thermoelectric Properties of α -Mgagsb Through Powder Atomic Layer Deposition, *Irene Garcia, A. Bahrami, P. Ying, K. Nielsch*, Leibniz Institute for Solid State and Materials Research, Germany

AA-TuP-6 Industrially Scalable Atomic Layer Deposition of Superconducting Thin Films of Tin on Large Area Wafer Substrates with Applied® Picosun® Morpher™, *Shashank Shukla, A. Ghosh, J. Mariam, S. Datta, S. Muhammad, S. Younis, A. Soad*, Applied Materials Inc., Finland

AA-TuP-7 High-performance Dichroic Filters by Atomic Layer Deposition for Large-Scale Neutrino Detectors, *Y. Hu*, Raytum Photonics, Inc, USA; **Feng Niu**, S. Lekarz, W. Lu, Raytum Photonics, inc., USA

AA-TuP-8 Remarkable Productivity and Performance of Flexible Indium Zinc Oxide Thin Film Transistors through Composition Engineering via Atmospheric Pressure Spatial Atomic Layer Deposition, *Chi-Hoon Lee, K. Yoo, D. Kim, C. Park, J. Park*, Hanyang University, Korea

AA-TuP-9 Investigation into ALD-Cu_x as a Precatalyst for Electrochemical CO₂ Reduction, *M. Suominen*, Aalto University, Finland; *Miia Mäntymäki, M. Mattinen*, University of Helsinki, Finland; *J. Sainio*, Aalto University, Finland; *M. Putkonen*, University of Helsinki, Finland; *T. Kallio*, Aalto University, Finland

AA-TuP-11 *In-Situ* Crystallization of Atomic Layer Deposited TiO₂/MoO_x Stack for Metal-Insulator-Metal Capacitor Application, *Chaeyeong Hwang, W. Jeon*, Kyung Hee University, Republic of Korea

AA-TuP-13 ALD SiO₂ Provides Efficient Ge Surface Passivation with a Tailorable Charge Polarity, *Oskari Leiviskä*, Aalto University, Finland; *H. Liu*, Aalto University, Finland, China; *J. Fung*, Aalto University, Finland, Hong Kong; *J. Isometsä, V. Vähänissi, H. Savin*, Aalto University, Finland

AA-TuP-14 Optimization of Thin Film Encapsulation Layers by ALD and SALD for Perovskite-Silicon Tandem Solar Cells, *Aubin Parmentier, D. Coutancier*, Institut Photovoltaïque d'Île de France (IPVF), France; *T. Bejat, S. Cros*, Commissariat aux Energies Atomique et Alternatives (CEA) Liten, France; *D. Muñoz-Rojas*, Université Grenoble Alpes, CNRS, Grenoble INP, LMGP, France; *N. Schneider*, Institut Photovoltaïque d'Île de France (IPVF), France

AA-TuP-15 Atomic Layer Deposition of Thermoelectric Al -Doped ZnO (AZO) Films on Flexible Ion Track Etched PET Templates, *Esa Alakoski*, JAMK University of Applied Sciences, Institute of New Industry, Jyväskylä Finland; *S. Kinnunen*, University of Jyväskylä, Department of Physics, Jyväskylä, Finland; *T. Laine*, JAMK University of Applied Sciences, Institute of New Industry, Jyväskylä, Finland; *T. Girish*, Aalto University, Department of Chemistry and Materials Science, Finland; *J. Julin*, University of Jyväskylä, Department of Physics, Jyväskylä, Finland; *M. Karppinen*, Aalto University, Department of Chemistry and Materials Science, Finland

AA-TuP-16 Improvement of Interfacial Properties of ZrO₂/Al₂O₃/TiN Capacitors Grown by Atomic Layer Deposition through Ar Plasma Treatment, *Hyeonjun Kim, H. Yang, W. Lee*, Soongsil University, Republic of Korea

AA-TuP-17 Enhancing Resistive Switching Properties of TiO₂ Thin Films Grown by Atomic Layer Deposition through Pyramid-Structured PDMS Substrate, *Jaeeun Lee, K. Lyu, W. Lee*, Soongsil University, Republic of Korea

AA-TuP-19 Nucleation of Ald Grown Gate Dielectrics on WS₂ Using Low Temperature Oxygen Plasma Pretreatment, *Robert Grubbs, D. Cott, J. Swerts, B. Groven, T. van Pelt, S. Nemeth, P. Morin, C. de la Rosa, G. Kar*, IMEC, Belgium

AA-TuP-21 New Method for Ohmic Metal to Si Contact Formation Utilizing Highly Charged ALD Dielectric, *Lassi Lahtiluoma, O. Setälä, H. Savin, V. Vähänissi*, Aalto University, Finland

AA-TuP-22 Co metal ALD on Cu with Cyclic clean by Peroxide and Hydrazine for Inverse Hybrid Metal Bonding, *Cheng-Hsuan Kuo, A. Kummel*, University of California at San Diego, USA

AA-TuP-23 Atomic Layer Deposition of Titanium-Sulfide Films- a Study of Growth, Crystallinity, and Electric Properties, *Zsófia Baji*, Centre for Energy Research, Hungary

AA-TuP-25 Improved Mechanical Integrity of Li-ion Battery Anode Materials Coated with Al₂O₃ by ALD, *Liliana Stan, X. Zhou, D. Hou*, Argonne National Laboratory, USA; *H. Xiong*, Boise State University, USA; *L. Zhu*, Purdue University, USA; *Y. Liu*, Argonne National Laboratory, USA

AA-TuP-27 Superior Reproducibility of Forming-Free Memristive Operation in Carbon Doped HfO_x Film, *Minjong Lee, Y. Hong, J. Kim, D. Le, D. Kim*, University of Texas at Dallas, USA; *R. Choi*, Inha University, Republic of Korea; *J. Rohan, G. Yeric*, Cerfe Labs, USA; *J. Kim*, University of Texas at Dallas, USA

AA-TuP-28 Atomic Layer Deposition of Niobium Oxide using (Tert-butylimido)tris(diethylamino)niobium and Anhydrous Hydrogen Peroxide for Ferroelectric Hafnia Applications, *Jin-Hyun Kim, T. Ford, M. Lee, D. Le, T. Chu, D. Kim*, University of Texas at Dallas, USA; *M. Benham, J. Spiegelman*, RASIRC, USA; *S. Kim*, Kangwon University, USA; *J. Kim*, University of Texas at Dallas, USA

AA-TuP-29 Atomic Layer Deposition of Cobalt Phosphide for Efficient Water Splitting, *Haojie Zhang, S. Parkin*, Max Planck Institute of Microstructure Physics, Germany; *R. Wehrspohn*, Institute of Physics, Martin Luther University Halle-Wittenberg, Germany

AA-TuP-30 SnS₂ Thin Film with in-Situ and Controllable Sb Doping via Atomic Layer Deposition for Optoelectronic Applications, *Dongho Shin*, IFW Dresden, Republic of Korea; *J. Yang*, IFW Dresden, China; *A. Bahrami*, IFW Dresden, Iran (Islamic Republic of); *S. Lehmann, K. Nielsch*, IFW Dresden, Germany

AA-TuP-31 Effects of Alkali-Metal Doping on Current Amplification of Titanium Oxide Thin Film Transistors Prepared by Atomic Layer Deposition, *Ryo Miyazawa, H. Suzuki, H. Takeda, M. Miura, B. Ahmad Arima, F. Hirose*, Graduate School of Science and Engineering, Yamagata University, Japan

AA-TuP-32 Area-selective Deposition μ DALP™. Precision Coatings for Next Gen Devices, *Mira Baraket*, ATLANT 3D Nanosystems, Denmark

AA-TuP-33 Development of Antibacterial Neurostimulation Electrodes via Hierarchical Surface Restructuring and Atomic Layer Deposition, *Shahram Amiri*, Pulse Technologies Inc.; *H. Khosla*, Villanova University; *W. Seche*, Pulse Technologies Inc.; *D. Ammerman*, Rowan University; *M. Maniscalco, A. Blagojevic, H. Choi, P. Tavousi*, University of Connecticut; *S. Elyahoodayan*, University of Southern California; *G. Caputo, J. Hettinger*, Rowan University; *S. Shahbazmohamadi*, University of Connecticut; *G. Feng*, Villanova University

AA-TuP-34 Construction of PDMS/Al₂O₃ Hybrid Encapsulation for Wearable Electronics via Atomic Layer Infiltration and UV Curing, *Fan Yang, D. Wen, R. Yuan, R. Chen*, State Key Laboratory of Intelligent Manufacturing Equipment and Technology, School of Mechanical Science and Engineering, Huazhong University of Science and Technology, China

AA-TuP-35 Stabilization of Ni-YSZ Fuel Electrodes using an ALD-Grown Aluminum Titanate Interlayer, *Katherine Hansen*, Radiation Monitoring Devices, USA; *Z. Feng*, University of Pennsylvania, USA; *H. Bhandari*, Radiation Monitoring Devices, USA; *J. Vohs*, University of Pennsylvania, USA; *R. Hayden*, Radiation Monitoring Devices, USA

AA-TuP-36 ALD-NiOx Thin Film Growth using Ni(dmb)₂ Precursor for FaPbI₃-based Perovskite Solar Cells, *HYO SIK CHANG*, Chungnam National University, Republic of Korea

AA-TuP-37 Atomic Layer Deposition of Ultra Low-K Amorphous Boron Nitride for Futuristic Inter Metal Dielectric, *Inkyu Sohn, J. Park, S. Lee, J. Seo, J. Yoo, S. Chung, H. Kim*, Yonsei University, Korea

AA-TuP-38 Approach to Quantitatively Imaging the Equivalent Oxide Thickness of a High-K Oxide Film on Silicon: A DC-Free Scanning Capacitance Microscopic Method, *Mao-Nan CHANG*, Department of Physics, NCHU, Taiwan; *C. WANG*, Institute of Nanoscience, NCHU, Taiwan

AA-TuP-39 Investigation of Thermal Atomic Layer Deposition for Vertical-Channel IGZO FET with Good Performance and Thermal Stability, *J. Xiang*, Beijing Superstring Academy of Memory Technology, China; *Xinlv Duan*, Institute of Microelectronics of the Chinese Academy of Sciences, China; *X. Ma, P. Yuan, Y. Chen, L. Chai, Z. Jiao, Y. Shen, G. Wang*, Beijing Superstring Academy of Memory Technology, China; *D. Geng*, Institute of Microelectronics of the Chinese Academy of Sciences, China; *C. Zhao*, Beijing Superstring Academy of Memory Technology, China

AA-TuP-40 Improved Stability of Pt Catalyst for Sustainable Hydrogen Generation, **Mingliang Chen**, P. Piechulla, TU Delft, Netherlands; M. Kräenbring, F. Özcan, D. Segets, University of Duisburg-Essen, Germany; J. van Ommen, TU Delft, Netherlands

AA-TuP-41 Atomic Layer Deposition of Palladium Nanoparticles for Catalytic Applications, **Bilal Bawab**, R. Razpe, J. Rodriguez-Pereira, J. M. Macak, University of Pardubice, Czechia

AA-TuP-43 Optimizing Izo Tft Performance Through Al Doping Cycle Control via Atmospheric Pressure Spatial Atomic Layer Deposition, K.S. Yoo, D. Kim, C. Lee, D. Kim, **Chang-kyun Park**, J. Park, Hanyang University, Korea

AA-TuP-44 Effect of One ZrO₂/HfO₂ Thickness of ZrO₂/HfO₂ (Zr/Hf=1/1) Laminate on Characteristics for Non-volatile DRAM, **Tomomi Sawada**, T. Nabatame, National Institute for Materials Science, Japan; T. Onaya, The University of Tokyo, Japan; H. Miura, M. Miyamoto, K. Tsukagoshi, National Institute for Materials Science, Japan

AA-TuP-45 Plasma-enhanced Atomic Layer Deposition of Niobium Carbide using a New Nb Precursor and H₂ Plasma and its Application to Diffusion Barrier for Cu and Ru Interconnects, **Chaehyun Park**, M. Kweon, S. Kim, S. Kim, Ulsan National Institute of Science and Technology (UNIST), Republic of Korea

AA-TuP-46 Ultrahigh Plasma Resistance of Y₂O₃ Thin Films Prepared by Atomic Layer Deposition for Uniform 3D Coatings, **Jun-Hyeok Jeon**, H. Kim, S. Jang, H. Kim, Korea Electronics Technology Institute (KETI), Republic of Korea; C. Park, Y. Lee, KoMiCo Ltd., Republic of Korea; G. Yeom, J. Choi, Sungkyunkwan University (SKKU), Republic of Korea; S. Kim, S. Kim, H. Kim, Korea Electronics Technology Institute (KETI), Republic of Korea

AA-TuP-47 Atomic Layer Deposition of Copper Metal: Promising Cathode in Thin-Film Lithium-Ion Batteries, **Niloofar Soltani**, A. Bahrami, M. Hantusch, E. Dmitrieva, K. Nielsch, D. Mikhailova, Leibniz-Institut für Festkörper- und Werkstoffforschung Dresden, Germany

AA-TuP-48 Novel Nitride Conversion for Low-Temperature Thermal ALD of Titanium Nitride and Effect on Film Properties and Morphology, D. Lindblad, M. Weimer, S. Harris, **Arrelaine Dameron**, Forge Nano, USA

AA-TuP-49 Phosphite Doping of ALD SiO₂ Membranes Significantly Enhances Proton Conductivity for PEM Water Electrolysis, M. Weimer, **Sara Harris**, Forge Nano, USA; J. Jin, Z. Lin, K. Yim, L. Cohen, D. Esposito, Columbia University, USA; A. Dameron, Forge Nano, USA

AA-TuP-50 Deposition of Pt Nanodot on Carbon Powder Using Noble Pt Precursor and Stabilization of Nanodots, **Takashi Teramoto**, C. Dussarrat, K.K. Air Liquide Laboratories, Japan; N. Blasco, Air Liquide Advanced Materials, France

AA-TuP-52 Hydrophilic Treatment of Porous PTFE Filter Membranes for Aggressive Chemical Environments, **Rubab Zahra**, P. Kauranen, LUT University, Finland; M. Putkonen, University of Helsinki, Finland

AA-TuP-54 Atomic Layer Deposition of Copper-Zinc Catalysts on Gas Diffusion Layers for the Electrochemical Reduction of CO₂, **Lovelle Manpatlan**, S. Bianco, E. Tresso, S. Porro, J. Zeng, Politecnico di Torino, Italy

AA-TuP-56 New ALD Materials for DRAM/3D-DRAM Scaling, **Tejinder Singh**, Eugenius, Inc., USA

AA-TuP-57 Low Temperature Plasma-Enhanced Atomic Layer Deposited Boron Nitride Thin Films for Low-κ Dielectric Applications, D. Le, S. De, T. Chu, J. Kim, D. Kim, M. Lee, M. Markevitch, **Jiyoung Kim**, University of Texas at Dallas, USA

AA-TuP-59 Promising ALD Precursor for 1 nm Process: Ru-Based ALD Precursors, Z. Yan, **Bryan Yong-Jay Lee**, Y. Pao, Industrial Technology Research Institute, Taiwan

AA-TuP-60 Ultra-Thin Magnesium Oxide as a Hydroxyl ‘Reservoir’ for Enhancing Ruthenium Nucleation via Atomic Layer Deposition Technique, M. YANG, X. WU, S. DING, B. LUO, **Bo Wen WANG**, Fudan University, China

AA-TuP-61 Carrier Conduction Mechanisms in MIS Capacitors with Ultra-Thin Al₂O₃ at Cryogenic Temperatures, **Joel Molina-Reyes**, National Institute of Astrophysics, Optics and Electronics, Mexico

AA-TuP-63 Alumina Coating of Diamond Filler Using Atomic Layer Deposition to Produce Thermal Interface Material, **Hiroya Ishida**, K. Shibuta, Sekisui Chemical Co., Ltd., Japan; M. Groner, J. Gauspohl, FORGE NANO, Inc., USA

AA-TuP-64 Modulation Acceptor Doping of Silicon Nanowires using a SiO₂-shell doped with ALD Metal Oxide Monolayers, **Daniel Hiller**, Institute of Applied Physics (IAP), TU Bergakademie Freiberg, Germany; S. Nagarajan, Nanoelectronic Materials Laboratory (NaMLab) gGmbH, Dresden, Germany; I. Ratschinski, S. Shams, Institute of Applied Physics (IAP), TU Bergakademie Freiberg, Germany; M. Venzke, Physikalisch-Technische Bundesanstalt (PTB), Berlin, Germany; P. Hönicke, Helmholtz-Zentrum Berlin (HZB), Berlin & Physikalisch-Technische Bundesanstalt (PTB), Berlin, Germany; T. Mikolajick, Nanoelectronic Materials Laboratory (NaMLab) gGmbH, Dresden & Institute of Semiconductors and Microsystems, TU Dresden, Germany; J. Trommer, Nanoelectronic Materials Laboratory (NaMLab) gGmbH, Dresden, Germany; D. König, Integrated Materials Design Lab (IMDL), Australian National University (ANU), Canberra, Australia

AA-TuP-65 Hf-Doped IGZO/IZO Heterojunction Thin-Film Transistors Fabricated by Atomic Layer Deposition for OLED Display, T. Kim, **Kang Min Lee**, Korea University, Republic of Korea

AA-TuP-66 Precise Tuning of Tamm Plasmon-Polaritons Resonances with sub-Nanometer Accuracy by Atomic Layer Deposition, **Mantas Drazdys**, E. Bužavaitė-Vertelienė, D. Astrauskytė, Z. Balevičius, Center for Physical Sciences and Technology, Lithuania

AA-TuP-67 Rotating Drum ALD – an Alternative Approach for ALD Coating of Powders, **Mario Krug**, M. Radehaus, M. Höhn, Fraunhofer Institute for Ceramic Technologies and Systems IKTS, Germany; P. Heizmann, University of Freiburg, Germany

AA-TuP-69 Improving Ferroelectricity of Hafnia-Based Ferroelectrics by Adopting Anti-Ferroelectric Interfacial Layer, **Dae Haa Ryu**, J. Lee, T. Choi, Sejong University, Republic of Korea

AA-TuP-70 Atomic Layer Deposited p-type SnO Thin Film Transistors: Effect of Deposition Temperature on Device Performance and Stability, **Kham M. Niang**, B. Bakht, University of Cambridge, UK; J. Parish, University of Bath, U.K.; J. Driscoll, University of Cambridge, UK; A. Johnson, University of Bath, UK; A. Flewitt, University of Cambridge, UK

AA-TuP-72 Oxide Based Neuron Devices Employing ALD Grown Dielectrics and Channel Layer, **Jung Wook Lim**, YUSEONG-GU GAJEONGDONG 218 ETRI, Republic of Korea; J. Lee, C. Yu, UST, Republic of Korea

AA-TuP-73 MgF₂-Based Conformal Anti-Reflection Coatings on Highly Curved Lenses by Atomic Layer Deposition, **Yuma Sugai**, Shincron Co., Ltd., Japan; H. Sugata, T. Sugawara, Shincron Co. Ltd., Japan; S. Muhammad, J. Hämäläinen, N. Lamminmäki, J. Kostamo, Picosun Oy, an Applied Materials company, Finland

AA-TuP-74 Enhanced Uniformity of Optical Films on Highly Curved Lenses using Atomic Layer Deposition for Small to Mid-Sized Batch Production, **Hironori Sugata**, Y. Sugai, R. Sugawara, T. Sugawara, Shincron Co., Ltd., Japan; S. Muhammad, J. Hämäläinen, N. Lamminmäki, J. Kostamo, Picosun Oy, an Applied Materials company, Finland

AA-TuP-75 Enhancing the Stability of p-Type Tin Monoxide Thin Film Transistor Through 2D Structure Optimization via Discrete Feeding Method, **Haklim Koo**, H. Kim, S. Choi, W. Lee, S. Kim, J. Park, Hanyang University, Korea

AA-TuP-76 Resistive Switching in Hafnium-Titanium-Oxide Thin Films Grown by Atomic Layer Deposition, **Toomas Daniel Viskus**, J. Merisalu, A. Kasikov, L. Aarik, K. Kukli, University of Tartu, Estonia

AA-TuP-78 Comparative Study of ZrAl_xO_y - based MIM Decoupling Capacitors with high-κ Dielectric Grown by 3 Generations of Metalorganic ALD Zr-precursors, **Konstantinos Efstathios Falidas**, K. Kühnel, A. Viegas, M. Czernohorsky, Fraunhofer Institute for Photonic Microsystems (IPMS), Germany

AA-TuP-79 ALD Capping Layers for Copper Redistribution Lines, **Ritwik Bhatia**, Veeco, USA; E. Chery, imec, Belgium; G. Sundaram, Veeco, USA; N. Pinho, E. Beyne, imec, Belgium

AA-TuP-80 Incipient Ferroelectric Properties in as-Deposited Hafnium Zirconium Oxide for BeOL Applications, **Alison Erlene Viegas**, Fraunhofer Institute for Photonic Microsystems (IPMS) - CNT, Germany; K. Kuehnel, Fraunhofer Institute for Photonic Microsystems (IPMS) - CNT, Germany; S. Yang, K. Falidas, Fraunhofer Institute for Photonic Microsystems (IPMS) - CNT, Germany; M. Czernohorsky, Fraunhofer Institute for Photonic Microsystems (IPMS) - CNT, Germany

AA-TuP-81 Enhanced Transmittance of Stacked 3D Micro-Optics by Atomic Layer Deposition, **Darija Astrauskyte**, Center for Physical Sciences and Technology, Lithuania; K. Galvanauskas, D. Gailevičius, Vilnius University, Lithuania; M. Drazdys, Center for Physical Sciences and Technology, Lithuania; M. Malinauskas, Vilnius University, Lithuania; L. Grineviciute, Center for Physical Sciences and Technology, Lithuania

AA-TuP-82 Exploring Brookite Phase Formation in Vanadium Oxides by Atomic Layer Deposition for Uncooled Infrared Sensor Applications, **Hyeonho Seol**, S. Lee, Kyung Hee university, Republic of Korea; W. Jeon, Kyung Hee University, Republic of Korea

AA-TuP-83 In-Situ ALD Fabrication of Heterogeneous Gate Insulators for Improved Reliability in High-Mobility IGZO Transistors, *T. Hwang, Y. Kim, H. Oh, Jin-Seong Park*, Hanyang University, Korea

AA-TuP-84 Broadband Anti-Reflective Coatings with Graded Refractive Index on Plastic Optics, *Philip Klement, M. Zscherp, H. Spielvogel, A. Henss, S. Chatterjee*, Justus Liebig University Giessen, Germany

AA-TuP-85 Effects of Gamma Radiation on the Electrical and Structural Properties of Ferroelectric Hafnium Oxide-Based Capacitors, *Samantha Jaszewski, M. Henry*, Sandia National Laboratories, USA

AA-TuP-86 Effect of Sn-doping on Atomic-Layer-Deposited Ultrathin In-Sn-O Thin-Film Transistors, *Binbin Luo, S. Ding*, Fudan University, China

AA-TuP-87 Processing and Performance of Piezoelectric Lead Hafnate-Titanate Thin Films Grown by Atomic Layer Deposition for 3D MEMS Actuators, *Nicholas Strnad*, DEVCOM Army Research Laboratory, USA; *R. Knight, R. Rudy*, DEVCOM Army Research Laboratory, USA; *A. Parrish, D. Wang, A. Shkel*, University of California, Irvine, USA; *J. Pulskamp*, DEVCOM Army Research Laboratory, USA

AA-TuP-88 Stacked ALD Deposited Metal Oxide Films as Reliable Sensing Films for Organic Semiconductor-Based LAPS, *Chia-Ming Yang, Y. Yang*, Chang Gung University, Taiwan; *B. Jiang, C. Chen*, Ming-Chi University of Technology, Taiwan

AA-TuP-89 Effects of TiO₂ Incorporation via Atomic Layer Deposition on Yttria-Stabilized Zirconia Electrolyte for Energy Storage, *Jorge Luis Vazquez Arce*, El Centro de Investigación Científica y de Educación Superior de Ensenada, Baja California, Mexico; *C. Bohórquez Martínez*, UNAM, Mexico; *A. Bahrami*, Leibniz Institute for Solid State and Materials Research, Germany; *E. Blanco*, Universidad de cadiz, Spain; *M. Dominguez*, Universidad de Cadiz, Spain; *K. Nielsch*, Leibniz Institute for Solid State and Materials Research, Germany; *G. Soto Herrera, H. Tiznado*, UNAM, Mexico

AA-TuP-90 Dynamic Color Shifting of Green Organic Light-Emitting Diodes Utilizing Distributed Bragg Reflector Mirror Fabricated via Atomic Layer Deposition, *Junbeom Song, J. Bi*, Korea University, Republic of Korea; *Y. Park*, Sun Moon University, Republic of Korea; *B. Ju*, Korea University, Republic of Korea

AA-TuP-91 Ultrathin TiN/TiO₂/Ti Solar Absorbers Enabled by Atomic Layer Deposition, *Luca Mascaretti*, Czech Technical University in Prague, Czech Republic; *A. Naldoni*, University of Turin, Italy; *L. Kalvoda, I. Richter*, Czech Technical University in Prague, Czech Republic

AA-TuP-92 Simultaneous Enhancement in Performance and Stability of LSCF Air Electrode of Reversible Solid Oxide Cell by Atomic Layer Deposited CeO₂ Coating, *Sung Eun Jo, K. Ju, H. Kim, W. Park, J. An*, Pohang University of Science and Technology (POSTECH), Republic of Korea

AA-TuP-93 Comparison of Thermal and Remote-Plasma ALD to Prepare Schottky Diodes to Gallium Nitride, *Suzanne Mohney, J. Clark, C. Chiu, T. Larrabee, N. Banner, N. Redwing, J. Gray*, Penn State University

AA-TuP-94 Y₂O₃ Thin Film Deposition Via Atomic Layer Deposition Utilizing Y(EtCp)₂(iPr-amd)And O₃, *S. Cho, Seunghwa Choi*, Sungkyunkwan University (SKKU), Republic of Korea

AA-TuP-95 Microstructure and Environmental Stability of Plasma-Enhanced ALD TiO₂/SiO₂ Multilayer Anti-Reflective Films on PMMA Substrates, *D. Cu, J. Ho*, Department of Optics and Photonics, National Central University, Taiwan; *W. Cho, C. Kei*, Taiwan Instrument Research Institute, National Applied Research Laboratories, Taiwan; *Chien-Cheng Kuo*, Department of Optics and Photonics, National Central University, Taiwan

AA-TuP-96 Optimization of Atomic Layer Deposition Process for Tin Oxide Thin Films at Low Deposition Temperatures for Halide Perovskite Solar Cells, *Saurabh Gupta, L. Laxmi, A. Paul, V. G. Chityala, S. Nayak, M. Misra, D. Kabra*, Indian Institute of Technology Bombay, India

AA-TuP-97 Atomic Layer Deposition for Proton-exchange Membrane Water Electrolyzers, *Bhavesh Chavan, A. Tzavara Roussi, V. van Steijn, R. Kortlever, R. van Ommen*, Delft University of Technology, Netherlands

AA-TuP-98 Mitigating Competing Reactions: Atomic Layer Deposition of Ultrathin Overlayers for Anode Protection in Direct Seawater Electrolysis, *Katherine Encalada, J. van Ommen, R. Kortlever*, Delft University of Technology, Netherlands

AA-TuP-99 Monolayer Engineering and Novel Annealing Techniques to Enhance the Ferroelectricity of HfO₂-Based Thin Films with a Low Thermal Budget, *Ting-Yun Wang, C. Mo, C. Chuang, Y. Yin, M. Chen*, National Taiwan University, Taiwan

AA-TuP-100 2D Transition Metal Chalcogenide Films Synthesized by ALD as Diffusion Barriers in Interconnects, *Sanne Deijkers, H. Thepass, A. de Jong*, Eindhoven University of Technology, The Netherlands; *H. Sprey, J. Maes*, ASM, Belgium; *E. Kessels, A. Mackus*, Eindhoven University of Technology, The Netherlands

AA-TuP-101 Rational Design of a Full Plasma-Enhanced ALD Super-Cycle Process for Indium Gallium Zinc Oxide Based on in-Situ Characterization, *P. Plate*, Sentech Instruments GmbH, Germany; *C. Morales, A. Mahmoodinezhad*, BTU Cottbus, Germany; *L. Marth, Bodo Kalkofen*, Sentech Instruments GmbH, Germany; *M. Zoellner*, IHP - Leibniz Institut fuer innovative Mikroelektronik, Germany; *K. Henkel, J. Flege*, BTU Cottbus, Germany

AA-TuP-102 Fabrication of ZnO Metal-Semiconductor-Metal Photodetectors on Cotton via Thermal-ALD, *H. Mousa, H. Saleh, L. Antoine, J. Goosen, F. Bayansal*, University of Connecticut; *M. Aboelkheir, T. Uyar*, Cornell University; *Ali K. Okyay*, OkyayTechALD, Turkey; *N. Biyikli*, University of Connecticut

AA1-TuP-103 Enhancing Charge Trapping Performance of Hafnia Thin Films by using Sequential Plasma Atomic Layer Deposition, *SoWon Kim, J. Yu, W. Park, H. Lee*, Tech University of Korea

Area Selective ALD

Room Hall 3 - Session AS-TuP

Area Selective ALD Poster Session

5:45 – 7:00pm

AS-TuP-1 Selective Metal Blocking using Vapor-Phase Self-Assembled Monolayers for Area-Selective Atomic Layer Deposition of Dielectrics, *Jeong-Min Lee, W. Kim*, Hanyang University, Republic of Korea

AS-TuP-2 Area-Selective ALD of Transparent Conductive Oxides by Using Polymer Patterns Generated with High-Precision Capillary Printing, *Ludovic Hahn*, CEA-LETI, France; *M. Pascual, A. Guittou, K. Farmand, A. M'Barki*, Hummink, France; *T. Jullien, L. Golanski, C. Guerin, V. Jousseume*, CEA-LETI, France

AS-TuP-3 Photo-Enhanced Selective Area Atomic Layer Deposition, *Paul Butler*, Walter Schottky Institut, Technische Universität München, Germany; *L. Sortino*, Ludwig-Maximilians-University of Munich, Germany; *S. Maier*, Monash University, Australia; *I. Sharp*, Walter Schottky Institut, Technische Universität München, Germany

AS-TuP-4 Area-Selective Atomic Layer Deposition of Bilayer Materials Using Polymethylmethacrylate Thin Films as Blocking Layers, *Aditya Chalishazar, N. Poonkottil, C. Detavernier, J. Dendooven*, Ghent University, Belgium

AS-TuP-5 Density Functional Theory Study on Selective Silylation of SiO₂ Against Cu Using Dimethylaminotrimethylsilane, *Misoo Kim, K. Khumaini, R. Hidayat, H. Kim, W. Lee*, Sejong University, Republic of Korea

AS-TuP-6 Self-Aligned Patterning of Tantalum Oxide on Cu/SiO₂ with Inherent Selective Atomic Layer Deposition, *Kun Cao, Z. Qi*, State Key Laboratory of Intelligent manufacturing Equipment and Technology, School of Mechanical Science and Engineering, Huazhong University of Science and Technology, China; *B. Shan*, State Key Laboratory of Materials Processing and Die & Mould Technology, School of Materials Science and Engineering, Huazhong University of Science and Technology, China; *R. Chen*, State Key Laboratory of Intelligent manufacturing Equipment and Technology, School of Mechanical Science and Engineering, Huazhong University of Science and Technology, China

AS-TuP-7 Bottom-up Plasma-Enhanced Atomic Layer Deposition of SiO₂ in High Aspect Ratio Trenches using NF₃ Inhibitor, *Martial Santorelli*, Université Grenoble Alpes, CNRS, LTM, STMicroelectronics, France; *J. Tortai*, Université Grenoble Alpes, CNRS, LTM, France; *M. Querré*, STMicroelectronics, France; *M. Bonvalot*, Université Grenoble Alpes, CNRS, LTM, J-FAST, Institute of Applied Physics, Faculty of Pure and Applied Sciences, University of Tsukuba, Japan

AS-TuP-8 What Happens to Small Molecule Inhibitors after the Selectivity Is Lost: 4-Fluorophenylboronic Acid Functionalization of Silicon Surface to Inhibit TiO₂ Deposition, *Andrew Teplyakov, D. Silva-Quinones, J. Mason, R. Norden*, University of Delaware, USA

AS-TuP-9 Modelling the Reactivity of Small Molecule Inhibitors by Density Functional Theory, *Fabian Pieck, R. Tonner-Zech*, Wilhelm-Ostwald Institut for Physical and Theoretical Chemistry, Leipzig University, Germany

AS-TuP-12 The Formation of a Bottomless ZnO Barrier Using Inherent ZnO AS-ALD Process for Advanced Metallization, *Yuki Mori*, TANAKA Precious Metals, Japan; *Y. Son, S. Kim, S. Kim*, Ulsan National Institute of Science and Technology (UNIST), Republic of Korea

AS-TuP-13 Area-Selective Atomic Layer Deposition by Sputter Yield Amplification on Heavy Elements, *Arthur de Jong, M. Bär, M. Merx, E. Kessels, A. Mackus*, Eindhoven University of Technology, Netherlands

AS-TuP-14 Theoretical Investigation on Impurity Formation Mechanism During Area-Selective Atomic Layer Deposition Using Organic Inhibitors, *Jiwon Kim, B. Shong*, Hongik University, Republic of Korea

AS-TuP-16 Effect of N₂ Co-Flow During Area-Selective Atomic-Layer-Deposition of Al₂O₃, *Sangjun Lee*, Sungkyunkwan University (SKKU), Republic of Korea; *C. Park, Y. Choi, S. Jeong, S. Hong*, Sungkyunkwan University, Republic of Korea; *Y. Cho, H. Lee, H. Kim, A. Klipp*, BASF, Republic of Korea; *P. Yoo*, Sungkyunkwan University, Republic of Korea; *H. Kim*, Sungkyunkwan University (SKKU), Republic of Korea

AS-TuP-17 Selective Growth Mechanisms in Nickel-based Systems using Ni^(tBuDAD)₂, *Gabriele Botta*, BRTA nanoGUNE, Italy

Emerging Materials

Room Hall 3 - Session EM-TuP

Emerging Materials Poster Session

5:45 – 7:00pm

EM-TuP-1 Atomic Layer Memory Switching for Power-Efficient Neuromorphic Computing, *Hyunho Seok, S. Son, T. Kim*, Sungkyunkwan University, Republic of Korea

EM-TuP-2 Electron-Enhanced Atomic Layer Deposition (EE-ALD) of TiCN Ternary Nitrides with Tunable Composition, *Z. Sobell, Michael Collings, S. George*, University of Colorado at Boulder, USA

EM-TuP-3 Low-Temperature Atomic-Molecular Layer Deposition of Air-Stable and Conformal Zn-Benzenedithiol Thin Films, *Anish Philip, T. Jussila*, Aalto University, Finland; *J. Obenluenschloss, D. Zanders, F. Preischel*, Ruhr University Bochum, Germany; *J. Kinnunen*, Chipmetrics Ltd, Finland; *A. Devi*, Ruhr University Bochum, Germany; *M. Karppinen*, Aalto University, Finland

EM-TuP-4 Tin Oxide-Organic Superlattices for Flexible Thermoelectric Applications by Atomic/Molecular Layer Deposition, *Mari Heikkinen*, Aalto University, Finland; *N. Huster, A. Devi*, Ruhr-University Bochum, Germany; *M. Karppinen*, Aalto University, Finland

EM-TuP-5 Low Temperature Plasma Synthesis of Layer controlled MoS₂ for Flexible AI Accelerator, *Sihoon Son, H. Seok, D. Lee, H. Choi, T. Kim*, Sungkyunkwan University (SKKU), Republic of Korea

EM-TuP-6 Efficient Scaling of Ruthenium Thin Films by ALD for High-Volume Manufacturing, *Parmish Kaur, B. Eychenne, M. Käärä, A. Sood*, Picosun Oy, Finland

EM-TuP-7 Luminescent Lanthanide-Organic Hybrid Materials by Atomic/Molecular Layer Deposition, *Melania Rogowska, P. Hansen, O. Nilsen*, University of Oslo, Norway

EM-TuP-10 Structural and Electrical Properties of Ta-Doped TiO₂ Prepared by Supercycle Atomic Layer Deposition, *Iqtidar Wasif*, FHR Anlagenbau GmbH, Semiconductor Physics, Chemnitz University of Technology, Germany; *H. Bryja, A. Muhammad, S. Simon*, FHR Anlagenbau GmbH, Germany; *N. Balayeva*, Semiconductor Physics, Chemnitz University of Technology, Germany; *J. Barzola Quiquia, M. Reinfried*, FHR Anlagenbau GmbH, Germany; *D. Zahn*, Semiconductor Physics, Chemnitz University of Technology, Center for Materials, Architectures, and Integration of Nanomembranes (MAIN), Chemnitz University of Technology, Germany

EM-TuP-11 Molecular Layer Deposition of Ferrocene-Based Thin Films, *Justin Lomax*, University of Western Ontario, Canada; *E. Goodwin*, Carleton University, Canada; *J. Bentley, J. Bosso*, University of Western Ontario, Canada; *C. Crudden*, Queen's University, Canada; *S. Barry*, Carleton University, Canada; *P. Ragogna*, University of Western Ontario, Canada

EM-TuP-12 Epsilon Near Zero Doped ZnO Films Grown via Atomic Layer Deposition, *Emily Duggan, J. Lin*, Tyndall National Institute, University College Cork, Ireland; *I. Povey*, tyndall National Institute, University College Cork, Ireland

EM-TuP-13 Atomic-Layer Deposition Techniques to the Deposition and Post-Synthesis Modification of Metal-Organic Frameworks, *Catherine Marichy, B. Gikonyo, S. De, A. Fateeva, C. Journet*, laboratoire des multimatériaux et interfaces (LMI), France

EM-TuP-14 A New Step Towards Crystalline III/V Semiconductors by ALD, *Thilo Hepp*, Philipps Universität Marburg / Dockweiler Chemicals GmbH, Germany; *P. Ludewig*, Philipps-Universität Marburg / Dockweiler Chemicals GmbH, Germany; *O. Briel, J. Koch*, Dockweiler Chemicals GmbH, Germany; *K. Volz*, Philipps-Universität Marburg, Germany

EM-TuP-15 Pushing the Boundaries: Advancing Resist Technology for Beyond EUV Lithography Application, *Dan Le, T. Chu*, University of Texas at Dallas, USA; *W. Lee*, stony Brook University, USA; *N. Tiwale*, Brookhaven National Laboratory, USA; *J. Veyan, J. Kim, D. Kim, M. Lee*, University of Texas at Dallas, USA; *C. Nam*, Stony Brook University/Brookhaven National Laboratory, USA; *J. Kim*, University of Texas at Dallas, USA

EM-TuP-16 Multistep Inorganic Synthesis of Redox-Active THz Phononic Structure, *Norifusa Satoh*, National Institute for Materials Science, Japan; *R. Gordon*, Harvard University, USA

EM-TuP-17 Modelling the Growth of Zinc Oxide ALD/MLD Hybrid Thin Films: A DFT Study, *Mario Mäkinen, K. Laasonen*, Aalto University, Finland

EM-TuP-19 Tuning the Diffusivity of DEZ During Vapor Phase Infiltration in Photopatternable Polyacrylates by Increasing the Polymer Network's Flexibility, *Lisanne Demelius, A. Coclite*, Graz University of Technology, Austria; *M. Losego*, Georgia Institute of Technology, USA

EM-TuP-20 Tailoring Pore Size and Surface Hydrophilicity in Ceramic Membranes: The Case of MLD-Grown Titanic Oxide Layers, *Harpreet Sodhi, A. Nijmeijer*, Inorganic Membranes, University of Twente, Netherlands; *A. Kovalgin*, Integrated Devices and Systems, University of Twente, Netherlands; *F. Roozeboom, M. Luiten-Olieman*, Inorganic Membranes, University of Twente, Netherlands

EM-TuP-21 Flexible Conductive Hybrid: Indium Oxide-ParyleneC Obtained by Optimized Vapor Phase Infiltration, *Oksana Yurkevich*, CIC NanoGUNE, Spain; *E. Modin*, CIC nanoGUNE, Spain; *I. Šarić Janković, R. Peter, M. Petravić*, Department of Physics and Centre for Micro- and Nanosciences and Technologies University of Rijeka, Croatia; *M. Knez*, CIC nanoGUNE, IKERBASQUE Basque Foundation for Science, Department of Physics and Centre for Micro- and Nanosciences and Technologies University of Rijeka, Spain

EM-TuP-22 ALD Ternary Films and Nanolaminates Based on Al₂O₃, ZrO₂ and ZnO, *Piotr Polak, J. Jankowska-Sliwińska, L. Stańko, J. Maleszyk, A. Łaszcz, Łukasiewicz* Research Network - Institute of Microelectronics and Photonics, Poland; *A. Wolska, M. Klepka, K. Jabłońska*, Institute of Physics, Polish Academy of Sciences, Poland; *H. Stadler*, Bruker Nano Surfaces, Germany; *K. Kosiel, Łukasiewicz* Research Network - Institute of Microelectronics and Photonics, Poland

EM-TuP-23 Some Physical Properties and Comparison of Atomic Layer Deposited and Thermally Grown Silicon Oxides, *Taivo Jõgiaas, O. Vanker, T. Viskus, S. Tolbin, A. Tarre, K. Kukli*, University of Tartu, Estonia

EM-TuP-24 Thin Film Composite Desalination Membranes by Molecular Layer Deposition, *Brian Welch, R. Cai*, Technion Israel Institute of Technology, Israel; *V. Rozyyev, J. Elam*, Argonne National Laboratory, USA; *T. Segal-Peretz*, Technion Israel Institute of Technology, Israel

EM-TuP-25 Complex Materials for Next Generation Electronics and Photonics - ALD will Prevail!, *Henrik H. Sønsteby*, University of Oslo, Norway

EM-TuP-26 Nanomolecularly-Induced Effects on the Synthesis and Stability of Multilayered Titania/Organophosphonate Interfaces, *C. Rowe*, Rensselaer Polytechnic Institute, USA; *A. Kashyap*, Indian Institute of Technology, Mandi, India; *G. Sharma*, Rensselaer Polytechnic Institute, USA; *N. Goyal*, Indian Institute of Science, Bangalore, India; *J. Alauzun*, University of Montpellier, France; *S. Barry*, Carleton University, Canada; *N. Ravishankar*, Indian Institute of Science, Bangalore, India; *A. Soni*, Indian Institute of Technology, Mandi, India; *P. Eklund, H. Pedersen*, Linköping University, Sweden; *Ganpati Ramanath*, Rensselaer Polytechnic Institute, USA

EM-TuP-27 Comparative Analysis of Film Growth in Molecular Layer Deposition: Siloxane-Bridged Silane Precursor vs. Methylene-Bridged Silane Precursor, *Man Hou Vong, M. Dickey, G. Parsons*, North Carolina State University, USA

EM-TuP-28 Atomic Layer Deposition within Polymers Templates for Doped Materials, *Rotem Azoulay, T. Segal-Peretz*, Israel Institute of Technology, Israel

EM-TuP-29 III-Nitride Group Semiconductor Materials Made by Low Temperature Plasma Atomic Layer Deposition, *Noureddine Adjeroud*, LIST, Luxembourg

Wednesday Morning, August 7, 2024

Room Hall 3A		
8:00am	AF1-WeM-1 Conformality of Ternary Oxides by Spatial ALD: Monte Carlo Simulations and Experimental Study, Mike van de Poll , S. van der Heijden, P. Poodt, E. Kessels, B. Macco, Eindhoven University of Technology, Netherlands	ALD Fundamentals Session AF1-WeM Growth and Characterization: High Aspect Ratio/High Surface Area/Powder ALD and Characterization of ALD Films Moderators: Noureddine Adjeroud , Luxembourg Institute of Science and Technology (LIST), Luxembourg, Viljami Pore , ASM, Finland
8:15am	AF1-WeM-2 Reusable Macroscopic HAR Test Kit Enabling Fast, Routine Characterization of Film Conformality, Jesse Kalliomaki , I. Manninen, J. Järvillehto, Applied Materials, Finland	
8:30am	AF1-WeM-3 Superconformal ALD Using a Heavy Inert Diffusion Additive, Arun Haridas Choolakkal , P. Mpofo, P. Niiranen, J. Birch, H. Pedersen, Linköping University, Sweden	
8:45am	AF1-WeM-4 Ald of Alumina-Silica Multilayers on Carbon Microfiber Fabrics: Microstructure and Potential as Refractory Oxygen Diffusion Barriers, Elise des Ligneris , D. Samélor, CIRIMAT-INPT, France; A. Sekkat, CNRS, France; C. Vahlas, CIRIMAT-INPT, France; B. Caussat, CNRS, France	
9:00am	AF1-WeM-5 Pillarhall Lateral High Aspect Ratio Assisted Unveiling of Secondary Growth Front and Background Reaction Mechanism in Atomic Layer Deposition, Anish Philip , Chipmetrics Ltd, Finland; S. Elliott, Schrödinger, Germany; J. Kinnunen, Chipmetrics Ltd, Finland; A. Mirhamed, Park Systems GmbH, Germany; M. Zaheer, M. Utraiainen, Chipmetrics Ltd, Finland	
9:15am	AF1-WeM-6 Helium Ion Microscopy on ALD Thin Films, Sami Kinnunen , University of Jyväskylä, Finland; E. Alakoski, T. Laine, JAMK University of Applied Sciences, Finland; T. Sajavaara, University of Jyväskylä, Finland	
9:30am	AF1-WeM-7 Understanding the Amorphous Structure of Al- and Zn- Doped TiO ₂ with an Automated 4D-STEM Analysis Pipeline, Andreas Werbrouck , N. Paranamana, X. He, M. Young, University of Missouri-Columbia, USA	
9:45am	AF1-WeM-8 Non-Destructive Characterization of ALD Thin Films Using Angle-resolved XPS and Structure Modeling, K. Artyushkova , N. Biderman, Wolfgang Betz , Physical Electronics USA	
10:00am	Break & Exhibits	
10:15am		
10:30am		
10:45am	AF2-WeM-12 Low-Temperature ALD of Metallic Cobalt for 3D Structures, Mathias Franz , L. KaBner, Fraunhofer ENAS, Germany; C. Thurm, University of Technology Chemnitz, Germany; X. Hu, Fraunhofer ENAS, University of Technology Chemnitz, Germany; M. Daniel, scia systems GmbH, Germany; F. Stahr, Forschungs- und Applikationslabor Plasmatechnik GmbH, Germany; S. Schulz, Fraunhofer ENAS, Center for Microtechnologies (ZfM), University of Technology Chemnitz, Germany	ALD Fundamentals Session AF2-WeM Growth and Characterization: Low Temperature ALD Moderators: John Conley , Oregon State University, USA, Henrik Pedersen , Linköping University, Sweden
11:00am	AF2-WeM-13 Towards Deposition of Metallic Molybdenum Films from Molybdenum Hexacarbonyl in a Process Involving an Intermediate ALD Step and Subsequent Reduction, Kees van der Zouw , M. Sturm, T. Aarnink, A. Kovalgin, University of Twente, the Netherlands	
11:15am	AF2-WeM-14 Growth of Metallic Ru Film by Oxidant-Free Atomic Layer Deposition Below 100 °C, Kyeongmin Min , H. Lee, Incheon National University, Republic of Korea; C. Nguyen, Incheon National University, Viet Nam	
11:30am	AF2-WeM-15 Unveiling the Effect of the Starting Precursor on Ge ₂ Sb ₂ Te ₅ Atomic Layer Deposition, Jyoti Sinha , KU Leuven, IMEC Belgium; J. Innocent, A. Illiberi, M. Givens, ASM, Belgium; L. Nyns, A. Delabie, IMEC Belgium	
11:45am	AF2-WeM-16 Atomic Layer Deposition Equipment Vendors Market and Technology, Taguhi Yeghoyan , Yole Group, France	

Wednesday Morning, August 7, 2024

Room Hall 3D	
8:00am	INVITED: AA1-WeM-1 Ferroelectric Doped HfO ₂ : From Ald Processing to Device Applications, <i>Uwe Schroeder</i> , Namlab, Germany
8:15am	
8:30am	AA1-WeM-3 Interfacial Layer Engineering by Tungsten Oxide for Ferroelectric La-Doped Hf _{0.5} Zr _{0.5} O ₂ Layer, <i>Dae Seon Kwon, M. Popovici, J. Bizindavyi</i> , imec, Belgium; <i>G. De, A. Delabie</i> , KU Leuven, imec, Belgium; <i>A. Belmonte, G. Sankar Kar</i> , imec, Belgium; <i>J. Van Houdt</i> , KU Leuven, imec, Belgium
8:45am	AA1-WeM-4 Ultrathin HfO ₂ -ZrO ₂ Multilayers Structures by ALD for Embedded Ferroelectric Non-Volatile Memories, <i>Amanda Mallmann Tonelli, J. Mercier, N. Vaxelaire, Y. Mazel, Z. Saghi, N. Gauthier, S. Martin, L. Grenouillet, V. Jousseau, M. Bedjaoui</i> , CEA-Leti, France
9:00am	AA1-WeM-5 In-situ Crystallization of Ferroelectric Hf _{0.5} Zr _{0.5} O ₂ Thin Films with Record-high 2P _r (56μC/cm ²) at Low Thermal Budget (300°C) Towards Full BEOL-compatibility, <i>P. Yuan</i> , Beijing Superstring Academy of Memory Technology, China; <i>L. Tai</i> , Shandong University, China; <i>X. Ma, J. Xiang</i> , Beijing Superstring Academy of Memory Technology, China; <i>G. Wang</i> , Shandong University, China; <i>J. Chen</i> , Shandong University, China; <i>C. Zhao, Yuting Chen</i> , Beijing Superstring Academy of Memory Technology, China
9:15am	AA1-WeM-6 Enhancement of Ferroelectric Phase Formation of HfO ₂ /ZrO ₂ Nanolaminate Films by Tuning HfO ₂ and ZrO ₂ Thicknesses Using Atomic Layer Deposition, <i>Takashi Onaya, Y. Sakuragawa, K. Kita</i> , The University of Tokyo, Japan
9:30am	AA1-WeM-7 Investigating the Impact of Process Parameters on the In-plane Strain of Ultra-Thin H-f _{1-x} Zr _{1-x} O ₂ Films, <i>Florian Wunderwald</i> , Namlab, Germany; <i>B. Xu</i> , Namlab, China; <i>P. Vishnumurthy</i> , Namlab, India; <i>S. Enghardt</i> , TU Dresden, Germany; <i>K. Holsgrove</i> , Queen's University Belfast, UK; <i>A. Kersch</i> , University of Applied Sciences Munich, Germany; <i>T. Mikolajick, U. Schroeder</i> , Namlab, Germany
9:45am	AA1-WeM-8 Thermal ALD IGO Channel Layer with High-thermal Stability (> 800 °C) for New Hybrid (Poly-Si/IGO) Vertical 3D NAND Application, <i>Su-Hwan Choi, J. Sim, C. Park, Y. Song, J. Park</i> , Hanyang University, Korea
10:00am	Break & Exhibits
10:15am	
10:30am	
10:45am	INVITED: AA2-WeM-12 Towards Neuromorphic Computing Using ALD Grown HfO ₂ Based Memristive Devices, <i>Christian Wenger</i> , IHP - Leibniz Institut fuer innovative Mikroelektronik, Germany
11:00am	
11:15am	AA2-WeM-14 Novel Carbon-Doped HfO _x Memristor with Born-ON Characteristics Synthesized via ALD/MLD Combined Technique, <i>Minjong Lee, Y. Hong, J. Kim, D. Le, D. Kim</i> , University of Texas at Dallas, USA; <i>R. Choi</i> , Inha university, Republic of Korea; <i>J. Rohan, G. Yeric</i> , Cerfe Labs, USA; <i>J. Kim</i> , University of Texas at Dallas, USA
11:30am	AA2-WeM-15 Evolution of Structural Order in Doped Hafnia Thin Films by Atomic Layer Deposition for Emerging Device Applications, <i>Mohammad Hassan Sultani, F. Cüppers</i> , Forschungszentrum Juelich GmbH, Germany; <i>A. Dippel, O. Gutowski</i> , Deutsches Elektronen Synchrotron DESY, Germany; <i>A. Besmehn, D. Müller, S. Hoffmann-Eifert</i> , Forschungszentrum Juelich GmbH, Germany
11:45am	AA2-WeM-16 ALD HfZrO ₂ Films from Ferroelectric to High-k Applications, <i>Alessandra Leonhardt</i> , ASM, Finland; <i>R. Ramachandran</i> , ASM, Belgium; <i>M. Surman</i> , ASM, Finland; <i>R. John, F. Tang, M. Balseanu</i> , ASM, USA; <i>A. Illiberi</i> , ASM, Belgium

**ALD Applications
Session AA1-WeM
Flash and Ferroelectric Memories
Moderators:**
Haripin Chandra, EMD Electronics, USA,
Matti Putkonen, University of Helsinki, Finland

**ALD Applications
Session AA2-WeM
Memory Applications: RRAM & Neuromorphic,
MIM Capacitors
Moderators:**
Uwe Schröder, Namlab, Germany,
Seung-Yeol Yang, Samsung, Republic of Korea

Wednesday Morning, August 7, 2024

Room Hall 3E		
8:00am	EM-WeM-1 Resolving Composition and Crystal Structure of Fundamentally Novel MOF-Like Fe-Terephthalate Thin Films, <i>Topias Jussila, A. Philip</i> , Aalto University, Finland; <i>V. Rubio-Giménez</i> , Katholieke Universiteit Leuven, Belgium; <i>K. Eklund</i> , Aalto University, Finland; <i>S. Vasala</i> , ESRF - The European Synchrotron, France; <i>A. J. Karttunen</i> , Aalto University, Finland; <i>R. Ameloot</i> , Katholieke Universiteit Leuven, Belgium; <i>M. Karppinen</i> , Aalto University, Finland	Emerging Materials Session EM-WeM Molecular Layer Deposition of Organic Materials and Organic-Inorganic Hybrid Materials Moderators: Christophe Detavernier, Ghent University, Belgium, Paul Poedt, SparkNano, Netherlands
8:15am	EM-WeM-2 Molecular Layer Deposition of Metal Organophosphonate Thin Films, <i>Aditya Chalisehar, A. Dhara, J. Dendooven, C. Detavernier</i> , Ghent University, Belgium	
8:30am	EM-WeM-3 Europium-Organic Luminescent Thin Films for Bioimaging Applications, <i>Amr Ghazy</i> , Aalto University, Finland; <i>J. Ylönen, N. Subramaniam</i> , Xfold imaging oy, Finland; <i>M. Karppinen</i> , Aalto University, Finland	
8:45am	EM-WeM-4 Inverted Living Molecular Layer Deposition: An Empowering Technique for Biomedical Applications, <i>Karina Ashurbekova, M. Knez</i> , CIC nanoGUNE BRTA, Spain	
9:00am	INVITED: EM-WeM-5 Hybrid Multilayer EUV Photoresist with Vertical Molecular Wire Structure, <i>Myung Mo Sung</i> , Hanyang University, Republic of Korea	
9:15am		
9:30am	EM-WeM-7 Chemical Transformations Mediated by Low-Energy Electrons within Vapor Phase Synthesized Al-based Hybrid Thin Films for Advanced Resist Applications: An In-Situ Investigation, <i>Dan Le, T. Chu</i> , University of Texas at Dallas, USA; <i>W. Lee</i> , Stony Brook University, USA; <i>N. Tiwale</i> , Brookhaven National Laboratory, USA; <i>J. Veyan, J. Kim, D. Kim, M. Lee</i> , University of Texas at Dallas, USA; <i>C. Nam</i> , Stony Brook University/Brookhaven National Laboratory, USA; <i>J. Kim</i> , University of Texas at Dallas, USA	
9:45am	EM-WeM-8 Molecular Layer Deposition of Phosphorus Thin Films Using Bis- α -aminophosphine Chemistry, <i>Justin Lomax, J. Bentley, P. Ragogna</i> , University of Western Ontario, Canada	
10:00am	Break & Exhibits	
10:15am		
10:30am		
10:45am	AA3-WeM-12 Tunable Superconducting Nb _x Ti _{1-x} N by Fast Plasma-enhanced ALD for Quantum Applications, <i>Silke Peeters, L. Nelissen</i> , Eindhoven University of Technology, Netherlands; <i>D. Besprozvanny</i> , Oxford Instruments Plasma Technology, UK; <i>M. Verheijen</i> , Eindhoven University of Technology, Netherlands; <i>M. Powell, L. Bailey</i> , Oxford Instruments Plasma Technology, UK; <i>E. Kessels</i> , Eindhoven University of Technology, Netherlands; <i>H. Knoops</i> , Oxford Instruments Plasma Technology, UK	ALD Applications Session AA3-WeM Other Emerging Applications Moderators: Sumit Agarwal, Colorado School of Mines, USA, Parag Banerjee, University of Central Florida, USA
11:00am	AA3-WeM-13 Atomic Layer Deposited Metal Nitrides (TiN and InN) and Metal Semiconductor Heterojunctions for Quantum Applications, <i>Neeraj Nepal, J. Prestigiacomo, M. Sales, P. Litwin, T. Growden, V. Wheeler</i> , US Naval Research Laboratory, USA	
11:15am	AA3-WeM-14 Ceramic Thin-Film Composite Membranes with Tunable Subnanometer Pores for Molecular Sieving by Atomic Layer Deposition, <i>X. Zhou</i> , Yale University, USA; <i>R. Shevate, A. Mane, Jeffrey Elam</i> , Argonne National Laboratory, USA; <i>J. Kim, M. Elimelech</i> , Yale University, USA	
11:30am	AA3-WeM-15 Recent Developments and Emerging Applications in Atmospheric-Pressure Atomic Layer Deposition of High-Porosity Materials, <i>M. Chen</i> , TU Delft, China; <i>M. Nijboer, A. Kovalgin, A. Nijmeijer, F. Roozeboom, Mieke Luiten-Olieman</i> , University of Twente, The Netherlands	
11:45am	AA3-WeM-16 Atomic Layer Deposition of Self-Healing Protective Coatings for Stone Cultural Heritage Conservation, <i>Aranzazu Sierra Fernández</i> , CIC nanoGUNE, Donostia-San Sebastián, Spain; <i>M. Knez</i> , CIC nanoGUNE, Donostia-San Sebastián and IKERBASQUE, Basque Foundation for Science, Spain	

Wednesday Morning, August 7, 2024

Room Hall 3F		
8:00am	<p>INVITED: ALE1-WeM-1 Anisotropic and Isotropic Plasma-Enhanced Atomic Layer Etching Processes for Metals and Dielectric Materials for Semiconductor Devices, <i>Heeyeop Chae</i>, Sungkyunkwan University (SKKU), Republic of Korea</p>	<p>Atomic Layer Etching Session ALE1-WeM Plasma and Energy-Enhanced ALE Moderators: Dmitri Kioussis, Intel Corporation, USA, Christophe Vallée, University of Albany, USA</p>
8:15am		
8:30am	<p>ALE1-WeM-3 Plasma Atomic Layer Etching of Titanium Nitride with Surface Fluorination or Chlorination and Ar Ion Bombardment, <i>Heeju Ha, H. Lee, M. Jeon, H. Chae</i>, Sungkyunkwan University (SKKU), Republic of Korea</p>	
8:45am	<p>ALE1-WeM-4 Isotropic Plasma Atomic Layer Etching of Nickel Aluminate Binary Intermetallic Using a Super-Cycle Sequence Based on Hhfac and Al(CH₃)₃, <i>Ali Mohamed Ali</i>, IMEC Belgium; <i>G. Krieger</i>, TU / Eindhoven, Netherlands; <i>J. Soulié, C. Pashartis</i>, IMEC Belgium; <i>C. Detavernier</i>, Ghent University, Belgium; <i>H. C. M. Knoops, E. Kessels</i>, TU / Eindhoven, Netherlands; <i>S. De-Gendt, F. Lazzarino, S. Kundu, J. de Marneffe</i>, IMEC Belgium</p>	
9:00am	<p>ALE1-WeM-5 Surface Effects in Quasi-ALE of Si: A Correlation with Ar⁺ Ion Energy, <i>O. Danielsson</i>, Lund University, Sweden; <i>A. Karimi, M. Asif</i>, AlixLabs AB, Sweden; <i>S. Khan</i>, Danish Fundamental Metrology Institute, Denmark; <i>Ivan Maximov</i>, Lund University, Sweden</p>	
9:15am	<p>ALE1-WeM-6 Atomic Layer Etching Study of Polycrystalline, Epitaxial and Doped ZnO Films Using <i>in Situ</i> Spectroscopic Ellipsometry, <i>Terrick McNealy-James, N. Berriel, B. Butkus, T. Currie, T. Jurca, P. Banerjee</i>, University of Central Florida, USA</p>	
9:30am	<p>ALE1-WeM-7 Atomic Layer Etching of Diamond for Epitaxy Preparation, <i>Julian Michaels</i>, University of Illinois at Urbana-Champaign, USA; <i>N. Deegan</i>, Argonne National Laboratory, USA; <i>Y. Tsaturyan</i>, University of Chicago, USA; <i>J. Renzas</i>, Oxford Instruments Plasma Technology, USA; <i>D. Awschalom</i>, University of Chicago, USA; <i>J. Eden</i>, University of Illinois at Urbana-Champaign, USA; <i>F. Heremans</i>, Argonne National Laboratory, USA</p>	
9:45am		
10:00am	<p>Break & Exhibits</p>	
10:15am		
10:30am		
10:45am	<p>INVITED: ALE2-WeM-12 Interest and Potential of Atomic Layer Etching for Selective Deposition, <i>Thierry Chevolleau</i>, CEA/LETI-University Grenoble Alpes, France; <i>M. Jaffal</i>, University Grenoble Alpes, CNRS, LTM, France; <i>R. Gassilloud</i>, CEA/LETI-University Grenoble Alpes, France; <i>N. Possème</i>, ST Microelectronics, France; <i>C. Vallée</i>, University of Albany, USA; <i>M. Bonvalot</i>, University Grenoble Alpes, CNRS, LTM, France</p>	
11:00am		
11:15am	<p>ALE2-WeM-14 Insight into SF₆/H₂ Plasma Mixtures to Expand the Capabilities of ALE, <i>Guillaume Krieger, S. Peeters, B. Vonken, N. Chittock, A. Mackus, E. Kessels</i>, Eindhoven University of Technology, The Netherlands; <i>H. Knoops</i>, Oxford Instruments Plasma Technology, The Netherlands</p>	
11:30am	<p>ALE2-WeM-15 Retarding-Field Energy Analyzer as a Tool to Find the Process Window for Plasma-Assisted Atomic Layer Etching and Quasi-Atomic Layer Etching, <i>Yoana Ilarionova, R. Jam, I. Sharma, O. Danielson, S. Ju, A. Muhammad, D. Suyatin, A. Karimi, J. Sundqvist</i>, AlixLabs AB, Sweden</p>	

Wednesday Afternoon, August 7, 2024

Room Hall 3A		
1:30pm	AF1-WeA-1 Triggering Nucleation of Pt ALD through UV-illumination, <i>J. Santo Domingo Peñaranda, Jolien Dendooven</i> , Ghent University, Belgium; <i>V. Miikkulainen</i> , Aalto University, Finland; <i>S. Klejna</i> , AGH University of Science and Technology, Poland; <i>E. Solano</i> , ALBA synchrotron, Spain; <i>M. Rosenthal</i> , ESRF, Grenoble, France; <i>Z. Hens, C. Detavernier</i> , Ghent University, Belgium	ALD Fundamentals Session AF1-WeA Growth and Characterization: <i>In-situ</i> and <i>in-vacuo</i> Analysis, Surface Science of ALD I Moderators: Seán Barry , Carleton University, Canada, Simon D. Elliott , Schrödinger, Ireland,
1:45pm	AF1-WeA-2 Reaction Pathway of Copper Atomic Layer Deposition via Time-of-Flight Mass Spectrometry, <i>Camilla Minzoni, K. Mackosz, C. Hain</i> , Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland; <i>C. Frege</i> , TOFWERK AG, Switzerland; <i>I. Utke, P. Hoffmann</i> , Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland	
2:00pm	AF1-WeA-3 <i>in vacuo</i> Cluster Tool for Studying Reaction Mechanisms in ALD and ALE Processes, <i>Marko Vehkamäki, M. Chundak, H. Nieminen, M. Putkonen, M. Ritala</i> , University of Helsinki, Finland	
2:15pm	AF1-WeA-4 Understanding the Dual-Source Behavior of LiHMDS for Si-Free Li-Containing Films, <i>Meike Pieters, L. Bartel, C. van Helvoirt, M. Creatore</i> , Eindhoven University of Technology, The Netherlands	
2:30pm	AF1-WeA-5 ALD of Two-Dimensional Gallium Sulfide: Understanding the Nucleation and Strain Evolution During Growth, <i>O. Massmeyer, R. Günkel, S. Kachel</i> , Philipps Universität, Germany; <i>P. Klement</i> , Justus Liebig University Giessen, Germany; <i>J. Belz</i> , Philipps Universität, Germany; <i>S. Chatterjee</i> , Justus Liebig University Giessen, Germany; <i>M. Gottfried, Kerstin Volz</i> , Philipps Universität, Germany	
2:45pm	AF1-WeA-6 Self-Limiting Deposition of Copper from Copper Beta-Diketonates and Plasma Electrons, <i>Premrudee Promdet, P. Niiranen, A. Haridas Choolakkal, D. Lundin, H. Pedersen</i> , Linköping University, IFM, Sweden	
3:00pm	AF1-WeA-7 Exploration of Nucleation Phenomena in Ultra-Thin ALD Films on NMC 811 Substrates: An <i>in Situ</i> Quartz Crystal Microbalance Study, <i>Léo Lapeyre, L. Pethö, J. Michler</i> , Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland; <i>P. Raynaud</i> , LAPLACE, France; <i>I. Utke</i> , Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland	
3:15pm	AF1-WeA-8 The Role of the Oxidizing Co-Reactant in Pt Growth by Atomic Layer Deposition Using MeCpPtMe ₃ and O ₂ /O ₃ /O ₂ -Plasma, <i>Jin Li</i> , Ghent University, Belgium, China; <i>S. Klejna</i> , AGH University of Krakow, Poland; <i>M. Minjauw, J. Dendooven, C. Detavernier</i> , Ghent University, Belgium	
3:30pm	Break	
3:45pm		
4:00pm	AF2-WeA-11 <i>In vacuo</i> XPS Growth Studies During ALD of ErNiO ₃ , <i>Matthias Minjauw</i> , Ghent University, Belgium; <i>A. Illiberi, M. Givens</i> , ASM, Belgium; <i>A. Leonhardt, I. Issah, L. Bottiglieri</i> , ASM, Finland; <i>J. Dendooven, C. Detavernier</i> , Ghent University, Belgium	ALD Fundamentals Session AF2-WeA Growth and Characterization: <i>In-situ</i> and <i>in-vacuo</i> Analysis, Surface Science of ALD II Moderators: Markku Leskelä , University of Helsinki, Finland, Mikko Ritala , University of Helsinki, Finland
4:15pm	AF2-WeA-12 Surface Chemistry of Aluminum Nitride ALD, <i>Pamburayi Mpofo, H. Hafji, H. Pedersen</i> , Linköping University, Sweden	
4:30pm	AF2-WeA-13 Investigating Hf Oxide Growth with Ambient Pressure XPS and Ozone as Co-Reactant, <i>Esko Kokkonen</i> , Max IV Laboratory, Sweden; <i>R. Jones</i> , Lund University, Sweden; <i>V. Miikkulainen</i> , Aalto University, Finland; <i>C. Eads, A. Klyushin</i> , Max IV Laboratory, Sweden; <i>J. Schnadt</i> , Lund University, Sweden	
4:45pm	AF2-WeA-14 ALD/ALE 2024 Closing Remarks, <i>Mikko Ritala, Markku Leskelä</i> , University of Helsinki, Finland, <i>Fred Roozeboom</i> , University of Twente and Carbyon B.V., The Netherlands, <i>Dmitry Suyatin</i> , AlixLabs A.B., Sweden	

Wednesday Afternoon, August 7, 2024

Room Hall 3D		
1:30pm	INVITED: AA1-WeA-1 ALD Solutions for Compound Semiconductor Devices, Mikko Söderlund , A. Voznyi, T. Ivanova, A. Perros, P. Rabinzohn, Beneq Oy, Finland	ALD Applications Session AA1-WeA More than Moore Applications Moderators: Benjamin Greenberg , Naval Research Laboratory, USA, Sami Sneck , Beneq, Finland
1:45pm		
2:00pm	AA1-WeA-3 Plasma Effects on the Epitaxial Growth of Aluminum Nitride Thin Films on (0001)4H-SiC by PE-ALD, Bruno Galizia , P. Fiorenza, C. Bongiorno, Consiglio Nazionale delle Ricerche, Istituto per la Microelettronica e Microsistemi (CNR-IMM), Italy; B. Pécz, Z. Fogarassy, Centre for Energy Research, Institute of Technical Physics and Materials Science, Hungary; G. Greco, F. Giannazzo, Consiglio Nazionale delle Ricerche - Istituto per la Microelettronica e Microsistemi (CNR-IMM), Italy; F. Roccaforte, Consiglio Nazionale delle Ricerche - Istituto per la Microelettronica (CNR-IMM), Italy; R. Lo Nigro, Consiglio Nazionale delle Ricerche - Istituto per la Microelettronica e Microsistemi (CNR-IMM), Italy	
2:15pm	AA1-WeA-4 Novel Low Temperature Thermal ALD of Aluminum Nitride Utilizing a Non-Metal Catalyst, Sara Harris , M. Weimer, D. Lindblad, A. Dameron, Forge Nano, USA	
2:30pm	AA1-WeA-5 Thermal and Plasma Enhanced ALD growth of functional Al ₂ O ₃ /AlN dielectric stacks for silicon carbide MOSFETs, Raffaella Lo Nigro , B. Galizia, P. Fiorenza, E. Schilirò, F. Roccaforte, Consiglio Nazionale delle Ricerche – Istituto per Microelettronica e Microsistemi (CNR-IMM), Italy	
2:45pm	AA1-WeA-6 Reduction of Defects at or Near ALD-Al ₂ O ₃ /GaN Interfaces for Improved Electrical Performance of GaN Power Devices, Caleb Glaser , B. Rummel, J. Klesko, M. Meyerson, P. Dickens, A. Binder, R. Kaplar, Sandia National Laboratories, USA; D. Fezell, University of New Mexico, USA	
3:00pm	AA1-WeA-7 Fabrication of RuS ₂ Photodetector Via Post Sulfurization of Atomic Layer Deposition Ru Thin Film, Jaehyoek Kim , Yonsei University, Korea; N. Tatsuya, TANAKA Kikinzoku Kogyo K.K, Japan; D. Kim, Samsung Advanced Institute of Technology, Republic of Korea; K. Yohei, TANAKA Kikinzoku Kogyo K.K, Japan; S. Chung, Yonsei University, Korea; S. Kim, Ulsan National Institute of Science and Technology, Republic of Korea; H. Kim, Yonsei University, Korea	
3:15pm	AA1-WeA-8 Spatial Atomic Layer Deposition: A New Revolution in Ultra-Fast Production of Conformal and High-Quality Optical Coatings, John Rönn , P. Maydannik, S. Virtanen, K. Niiranen, S. Sneck, Beneq, Finland	
3:30pm	Break	
3:45pm		
4:00pm	AA2-WeA-11 Deposition and Characterization of Electro-Optic ALD K(Ta _x Nb _{1-x})O ₃ Films for Photonics, Eric Martin , Ohio State University, USA; J. Bickford, Army Research Laboratory, USA; H. Sønsteby, University of Oslo, Norway; R. Hoffman, Army Research Laboratory, USA; R. Reano, Ohio State University, USA	ALD Applications Session AA2-WeA Emerging: Optics/Optoelectronics Moderators: Tero Pilvi , Picosun Oy, Finland, Tania Sandoval , Technical University Federico Santa Maria, Chile
4:15pm	AA2-WeA-12 Advances in Plasma-based Atomic Layer Processing of AlF ₃ for the Passivation of FUV Mirrors, Virginia Wheeler , M. Sales, D. Boris, Naval Research Laboratory, USA; L. Rodriguez de Marcos, Catholic University of America and NASA Goddard Space Flight Center, USA; J. del Hoyo, NASA Goddard Space Flight Center, USA; A. Lang, S. Walton, Naval Research Laboratory, USA; E. Wollack, M. Quijada, NASA Goddard Space Flight Center, USA	
4:30pm	AA2-WeA-13 Plasma-Enhanced Atomic Layer Deposition with RF Substrate Biasing to Tune the Performance of Superconducting Nanowire Single-Photon Detectors in the Mid-Infrared, Ciaran Lennon , Oxford Instruments Plasma Technology, University of Glasgow, UK; D. Morozov, University of Glasgow, UK; Y. Shu, Oxford Instruments Plasma Technology, UK; H. Knoops, Oxford Instruments Plasma Technology, UK, Eindhoven University of Technology, Netherlands; K. Hore, Oxford Instruments Plasma Technology, UK; R. Hadfield, University of Glasgow, UK	

Wednesday Afternoon, August 7, 2024

Room Hall 3E		
1:30pm	EM-WeA-1 Atomic-Scale Homogeneous PtRu Alloy Thin Films Prepared by Atomic Layer Modulation (ALM), Yeseul Son , S. Kim, Ulsan National Institute of Science and Technology, Republic of Korea; T. Cheon, Daegu Gyeongbuk Institute of Science and Technology, Republic of Korea; S. Kim, Ulsan National Institute of Science and Technology, Republic of Korea	Emerging Materials Session EM-WeA Other Emerging Materials Moderators: Jiyoung Kim , University of Texas at Dallas, USA, Mato Knez , CIC nanoGUNE, Spain
1:45pm	EM-WeA-2 A New Approach to the Synthesis of Nb@TiO ₂ Core-Shell Composite for Oxide Dispersion Strengthened Alloy via Atomic Layer Deposition, Ji Young Park , E. Lee, M. Jeong, J. Byun, B. Hwang, S. Oh, B. Choi, Seoul National University of Science and Technology, Republic of Korea	
2:00pm	EM-WeA-3 Influence of an Artificial Structure on the Mechanical Properties of Atomic Layer Deposited Al ₂ O ₃ and Ta ₂ O ₅ Composite Thin Films, Helle-Mai Piirsoo , T. Jõgiaas, K. Kukli, University of Tartu, Estonia	
2:15pm	EM-WeA-4 Phosphorus-Rich Metal Phosphide Thin Films Using Zintl Ions, Jordan Bentley , University of Western Ontario, Canada; B. van Ijzendoorn, Manchester Metropolitan University, UK; J. Lomax, University of Western Ontario, Canada; M. Bakiro, S. Barry, Carleton University, Canada; M. Mehta, Manchester Metropolitan University, UK; P. Ragogna, University of Western Ontario, Canada	
2:30pm	EM-WeA-5 Improved Crystallinity and Polarity Determination of Gallium Nitride on Si (111) Using Atomic Layer Annealing, SeongUk Yun , P. Lee, University of California San Diego, USA; A. Mcleod, University of California at San Diego, USA; J. Spiegelman, RASIRC, USA; A. Kummel, University of California at San Diego, USA	
2:45pm	EM-WeA-6 Self-limiting Epitaxy of GaN and InN Films on Sapphire Substrates, S. Allaby, N. Ibrahimli, F. Bayansal, H. Saleh, B. Willis, Necmi BIYIKLI , University of Connecticut, USA	
3:00pm	EM-WeA-7 Epitaxial Rare-Earth Orthoferrites by Atomic Layer Deposition, Linn Rykkje , H. Sønsteby, O. Nilsen, University of Oslo, Norway	
3:15pm	EM-WeA-8 Area Selectivity and Crystallographic Orientation of ZIF-8 Films Deposited by Molecular Layer Deposition, Jorid Smets , V. Rubio-Giménez, KU Leuven, Belgium; S. Armini, IMEC Belgium; R. Ameloot, KU Leuven, Belgium	
3:30pm	Break	
3:45pm		
4:00pm	AA3-WeA-11 Atomic Layer Deposition for Stable On-Chip Quantum Dot LEDs: Hybrid Quantum Dot Pockets, Robin Petit , R. Özdemir, H. Van Avermaet, J. Kuhs, A. Werbrouck, J. Dendooven, Z. Hens, P. Smet, C. Detavernier, Ghent University, Belgium	ALD Applications Session AA3-WeA Display Applications Moderators: Marianna Kemell , University of Helsinki, Finland,
4:15pm	AA3-WeA-12 A Comparative Study on Cation distribution effects in Heterogeneous channel IGZO TFTs via Atomic Layer Deposition Supercycle Design, Hye-Jin Oh , H. Kim, C.-K. Park, J. Park, Hanyang University, Korea	
4:30pm	AA3-WeA-13 Characteristics of PEALD IGZO Films Using Tetrahydrofuran-Adducted In & Ga Precursors, Sang Ick Lee , S. Jeon, S. Lee, Y. Kwone, Y. Im, T. Byun, DNF Co. Ltd., Republic of Korea	

Wednesday Afternoon, August 7, 2024

Room Hall 3F		
1:30pm		Atomic Layer Etching Session ALE-WeA Modeling in Atomic Layer Etching Moderators: Steven M. George , University of Colorado at Boulder, USA, Dmitry Suyatin , AlixLabs A.B., Sweden
1:45pm	ALE-WeA-2 Utilizing Thermodynamic Analysis to Screen Material and Precursor Selection for Selective Thermal Atomic Layer Etching, Landon Keller , North Carolina State University, USA; M. McBriarty , B. Zope , M. Moinpour , R. Kanjolia , Merck KGaA, Darmstadt, Germany, USA; G. Parsons , North Carolina State University, USA	
2:00pm	ALE-WeA-3 Atomistic Surface Processing Simulations: ALE of Transition Metal Dichalcogenides, Suresh Kondati Natarajan , N. Pandey , J. Schneider , J. Wellendorff , Synopsys Denmark ApS, Denmark	
2:15pm	ALE-WeA-4 Gas-Phase Etching Mechanism of Amorphous Hydrogenated Silicon Nitride by Hydrogen Fluoride: A Theoretical Study, Khabib Khumaini , Y. Kim , R. Hidayat , T. Chowdhury , H. Kim , Sejong University, Republic of Korea; B. Cho , S. Park , Wonik IPS, Republic of Korea; W. Lee , Sejong University, Republic of Korea	
2:30pm	ALE-WeA-5 Dynamic Global Model of Cl ₂ /Ar Plasmas for Atomic Layer Etching of GaN, Tojo RASOANARIVO , C. Mannequin , Nantes Université, CNRS, Institut des Matériaux de Nantes Jean ROUXEL, France; F. ROQUETA , M. BOUFNICHEL , STMicroelectronics, France; A. RHALLABI , Nantes Université, CNRS, Institut des Matériaux de Nantes Jean ROUXEL, France	
2:45pm	ALE-WeA-6 A Transient Surface Site Balance Model for Si-Cl ₂ -Ar Atomic Layer Etching, Joseph Vella , Princeton Plasma Physics Laboratory, USA; D. Graves , Department of Chemical and Biological Engineering Princeton University and Princeton Plasma Physics Laboratory, USA	
3:00pm	ALE-WeA-7 Theoretical Analysis on Halogenation of Transition Metal Surfaces toward Thermal Atomic Layer Etching, Hyun Cho , M. Kim , B. Shong , Hongik University, Republic of Korea	
3:15pm		
3:30pm	Break	
3:45pm		
4:00pm	AF3-WeA-11 UHP PEALD Growth and High Field Dielectric Testing of κ-Ga ₂ O ₃ Films, Bangzhi Liu , The Pennsylvania State University, USA	ALD Fundamentals Session AF3-WeA Growth and Characterization: Plasma Enhanced ALD II Moderators: Matti Putkonen , University of Helsinki, Finland, Mikko Söderlund , Beneq Oy, Finland
4:15pm	AF3-WeA-12 Crystalline Phase Control of Manganese Oxide Films by Plasma Enhanced Atomic Layer Deposition, Zhongwei Liu , J. Ren , H. Fang , L. Sang , Beijing Institute of Graphic Communication, China	
4:30pm	AF3-WeA-13 Superconducting Ultrathin Niobium Nitride Films for Quantum Application, Mario Ziegler , E. Knehr , E. Mutsenik , S. Linzen , G. Oeslner , E. Il'ichev , R. Stolz , Leibniz Inst. of Photonic Technology, Germany	

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