

ALD/ALE 2023 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
TS	Tutorial

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 2023 Program Overview

Room /Time	Evergreen Ballroom & Foyer	Grand Ballroom A-C	Grand Ballroom A-G	Grand Ballroom E-G	Grand Ballroom H-K	Regency Ballroom A-C
SuA					TS-SuA: Tutorial Session	
SuP	Poster Sessions (ALE Only)					
MoM			PS-MoM: Plenary Session			
MoA			ALD+ALE-MoA2: Student Awards AF-MoA: Precursors and Processes		ALE-MoA: Metal ALE	NS-MoA: 2D Growth
MoP	Poster Sessions					
TuM		ALD+ALE-TuM: ALD/ALE Session ALE-TuM: Modeling of ALE		AF1-TuM: Pre- cursors & Proc I AF2-TuM: Precursors and Processes II	AA1-TuM: ALD for Batteries AA2-TuM: MEMS, Actuators, Hard Films	AS1-TuM: Surfaces and ASD AS2-TuM: Inhibitors and ASD
TuA		ALE1-TuA: Plasma & Energy- Enhanced ALE ALE2-TuA: Low- Temp and SiN ALE		AF1-TuA: Plasma ALD I AF2-TuA: Plasma ALD II	AA1-TuA: Energy: Catal & Fuel Cells AA2-TuA: Emerging Materials	AS1-TuA: Polymers NS-TuA: Nanostructures and Membranes
TuP	Poster Sessions					
WeM		ALE1-WeM: Si and SiO ₂ ALE ALE2-WeM: Plasma & Energy- Enhanced ALE		AF1-WeM: In Situ Measurement AF2-WeM: High Aspects	AA1-WeM: Mem- ory RRAM, Neuro- morphic, NVM AA2-WeM: Memory DRAM	AM-WeM: Manufacturing EM-WeM: EUV Litho Materials
WeA				AF1-WeA: Comp- utational ALD I AF2-WeA: Computational ALD II	AA1-WeA: ULSI, Display, Optics, Metamatls & Bio Applications/AA2- WeA: Energy Solar	EM1-WeA: Mole- cular Layer Depo- sition/EM2-WeA: Infiltration Processes

Sunday Afternoon, July 23, 2023

Tutorial Room Grand Ballroom H-K - Session TS-SuA Tutorial Session Moderators: Seán Barry, Carleton University, Canada, Scott Clendenning, Intel Corporation		
1:00pm	INVITED: TS-SuA-1 Understanding ALD Mechanisms for Successful Precursor Design, Controlled Surface Reactions, and Effective ALD Processes., Adam Hock , Illinois Institute of Technology	
1:15pm		
1:30pm		
1:45pm	INVITED: TS-SuA-4 A Brief Introduction to Low-Temperature Plasmas: Physics, Diagnostics, and Applications in Atomic Layer Processing, Mari Napari , King's College London, UK	
2:00pm		
2:15pm		
2:30pm	INVITED: TS-SuA-7 Invited Paper, Lei Cheng , Argonne National Laboratory	
2:45pm		
3:00pm		
3:15pm	BREAK	
3:30pm	INVITED: TS-SuA-11 Surface Reaction Mechanisms of Thermal and Plasma-Enhanced Atomic Layer Etching (Ale) Processes, Satoshi Hamaguchi , Osaka University, Japan	
3:45pm		
4:00pm		
4:15pm	INVITED: TS-SuA-14 Surface Functionalization of Powder Materials using Fluidized Bed Reactor ALD, Se-Hun Kwon , Pusan National University, Republic of Korea	
4:30pm		
4:45pm		
5:00pm	INVITED: TS-SuA-17 Atomic Layer Deposition of Active and Passive Films for Electronic Devices, John Ekerdt , University of Texas at Austin	
5:15pm		
5:30pm		

Atomic Layer Etching

Room Evergreen Ballroom & Foyer - Session ALE-SuP

Atomic Layer Etching Poster Session

6:00pm

ALE-SuP-1 Chemical Approaches to Atomically Controlled Etching of Tertiary Materials and van der Waals Solids, *Marissa Pina, M. Whalen, J. Xiao, A. Teplyakov*, University of Delaware

ALE-SuP-2 Electron-Assisted Silicon Etching in an Inductively Coupled CF₄ Plasma via Low-Energy Electron Beam, *Jiwon Jung, C. Lim, C. Chung*, Hanyang University, Republic of Korea

ALE-SuP-3 Damage-Free Graphene Etching by Ultra-Low Electron Temperature Plasma, *Junyoung Park, J. Jung, M. Kim, C. Lim, B. Seo, C. Chung*, Hanyang University, Korea

ALE-SuP-4 Anisotropic Atomic Layer Etching of Molybdenum by Formation of Chloride/Oxychloride, *Yun Jong Jang, D. Kim, H. Kwon, H. Gil, G. Kim, D. Kim, G. Yeom*, Sungkyunkwan University (SKKU), Republic of Korea

ALE-SuP-5 New Oxidants for Cu ALE, *Persi Panariti, A. Hock*, Illinois Institute of Technology

ALE-SuP-6 Atomic Layer Etch Development of Noble Metals Cu and Pt for Mram Technologies, *Omar Melton, R. Opila*, University of Delaware

ALE-SuP-7 Layer-by-Layer Etching of 2D Palladium Diselenide, *Ji Eun Kang, Y. Ji, S. Choi, G. Yeom*, Sungkyunkwan University (SKKU), Republic of Korea

ALE-SuP-8 Cyclic Dry Etch Process of SiO₂ using H/F radicals and Methanol Vapor, *HaeIn Kwon, H. Gil, D. Kim, Y. Jang, D. Kim, G. Kim, D. Kim, G. Yeom*, Sungkyunkwan University, Republic of Korea

ALE-SuP-9 Quantum Chemistry Modeling of Plasmaless Anisotropic Etching of Silicon by F₂ Molecule, *Yuri Barsukov, O. Dwivedi, S. Jubin, I. Kaganovich*, Princeton University Plasma Physics Lab

ALE-SuP-10 Atomic Layer Etching of Mo with Surface Fluorination and Ion Bombardment, *Yongjae Kim, H. Kang, H. Ha, H. Chae*, Sungkyunkwan University (SKKU), Republic of Korea

ALE-SuP-11 Thermal Atomic Layer Etching of Palladium with Chlorination and Ligand Volatilization, *Hojin Kang*, School of Chemical Engineering, Sungkyunkwan University (SKKU), Korea (Democratic People's Republic of); *Y. Kim*, SKKU Advanced Institute of Nanotechnology (SAINT), Sungkyunkwan University (SKKU), Korea (Democratic People's Republic of); *A. Cho*, Department of Chemical and Biomolecular Engineering Korea Advanced Institute of Science and Technology (KAIST), Korea (Democratic People's Republic of); *H. Jung*, Department of Chemical and Biomolecular Engineering Korea Advanced Institute of Science and Technology (KAIST) Daejeon, 34141, Republic of Korea, Korea (Democratic People's Republic of); *S. Cho, H. Chae*, School of Chemical Engineering, Sungkyunkwan University (SKKU), Korea (Democratic People's Republic of)

ALE-SuP-12 Plasma Enhanced Atomic Layer Etching of Zirconium Oxide using Plasma Fluorination and Ligand Exchange with TiCl₄, *Hyeongwu Lee, Y. Kim, H. Ha, H. Chae*, Sungkyunkwan University (SKKU), Republic of Korea

Monday Morning, July 24, 2023

<p>Plenary Session Room Grand Ballroom A-G - Session PS-MoM Plenary Session Moderators: Seán Barry, Carleton University, Canada, Jane P. Chang, University of California, Los Angeles, Scott Clendenning, Intel Corporation, Steven M. George, University of Colorado at Boulder, Thorsten Lill, Lam Research Corporation</p>		
8:45am	PS-MoM-1 ALD Opening Remarks, <i>S. Barry</i> , Carleton University, Canada; <i>S. Clendenning</i> , Intel	
9:00am	INVITED: PS-MoM-2 ALD Plenary Lecture: Decades of ALD Research – Targets Upside Down, <i>Markku Leskela</i> , University Helsinki, Finland	
9:15am		
9:30am		
9:45am	BREAK & EXHIBITS	
10:00am		
10:15am	PS-MoM-7 ALE Opening Remarks,	
10:30am	INVITED: PS-MoM-8 ALE Plenary Lecture: The Need for Atomic Layer Etching in the Angstrom Era, <i>Tristan Tronic</i> , Intel Corporation	
10:45am		
11:00am		
11:15am	INVITED: PS-MoM-11 ALD 2023 Innovator Awardee Talk: Not Like an Apple - Progress in Understanding Atomic Level Processing at the Atomic Scale, <i>Simon Elliott</i> , Schrödinger, Ireland	
11:30am		
11:45am	PS-MoM-13 Sponsor Preview,	

Monday Afternoon, July 24, 2023

Room Grand Ballroom A-G		
1:30pm	ALD+ALE-MoA2-1 Student Award Finalist Talk: Thermal characterization and Area Selective Deposition of NHCs, <i>Eden Goodwin</i> , Carleton University, Canada; <i>J. Lomax</i> , University of Western Ontario, Canada; <i>M. Aloisio</i> , <i>C. Crudden</i> , Queen's University, Canada; <i>P. Ragogna</i> , University of Western Ontario, Canada; <i>S. Barry</i> , Carleton University, Canada	ALD & ALE Session ALD+ALE-MoA2 Student Awards Moderators: Simon Elliot , Schrödinger, Inc., Markku Leskela , University of Helsinki, Finland
1:45pm	ALD+ALE-MoA2-2 Student Award Finalist Talk: Reaction Mechanism on ALD Process of Ru and Pt, <i>Heta-Elisa Nieminen</i> , <i>M. Putkonen</i> , <i>M. Ritala</i> , University of Helsinki, Finland	
2:00pm	ALD+ALE-MoA2-3 Student Award Finalist Talk: Thermal Atomic Layer Etching of Gold Using Sulfuryl Chloride for Chlorination and Triethylphosphine for Ligand Addition, <i>Jonathan Partridge</i> , <i>J. Murdzek</i> , <i>S. George</i> , University of Colorado at Boulder	
2:15pm	ALD+ALE-MoA2-4 Student Award Finalist Talk: Conformality of Atmospheric-Pressure Plasma-Enhanced Spatial Atomic Layer Deposition of SiO ₂ and TiO ₂ , <i>Mike van de Poll</i> , Eindhoven University of Technology, Netherlands; <i>H. Jain</i> , TNO-Holst Centre & Eindhoven University of Technology, The Netherlands; <i>B. Macco</i> , <i>P. Poedt</i> , <i>E. Kessels</i> , Eindhoven University of Technology, Netherlands	
2:30pm	ALD+ALE-MoA2-5 Student Award Finalist Talk: "Inverted ASD" with High Selectivity: Polymer on SiO ₂ vs. Si-H and Polymer on Si-OH vs. SiO ₂ , <i>Nicholas Carroll</i> , <i>H. Margavio</i> , <i>G. Parsons</i> , North Carolina State University	
2:45pm	ALD+ALE-MoA2-6 Student Award Finalist Talk: Plasma Isotropic ALE of GaN Using SF ₆ Plasma and TMA, <i>Nicholas Chittock</i> , <i>W. Kessels</i> , Eindhoven University of Technology, The Netherlands; <i>H. Knoops</i> , Oxford Instruments Plasma Technology, Netherlands; <i>S. Elliott</i> , Schrödinger, Ireland; <i>A. Mackus</i> , Eindhoven University of Technology, The Netherlands	
3:00pm	ALD+ALE-MoA2-7 Student Award Finalist Talk: Competition between Deposition and Etching Reactions in ALD of Indium Gallium Zinc Oxide (IGZO), <i>Iaen Cho</i> , Hongik University, Republic of Korea; <i>J. Cho</i> , <i>J. Jeong</i> , Hanyang University, Republic of Korea; <i>B. Shong</i> , Hongik University, Republic of Korea	
3:15pm	ALD+ALE-MoA2-8 Student Award Finalist Talk: Atomic Layer Deposition of Semimetallic TiS ₂ Contact Layer on MoS ₂ -based Thin Film Transistor for Contact Resistance Reduction, <i>Jeongwoo Seo</i> , <i>H. Yoon</i> , <i>S. Lee</i> , <i>J. Yoo</i> , Yonsei University, Korea; <i>Y. Nam</i> , <i>J. Lim</i> , Samsung Display Co., Ltd., Republic of Korea; <i>S. Chung</i> , <i>H. Kim</i> , Yonsei University, Korea	
3:30pm	BREAK & EXHIBITS	
3:45pm		
4:00pm	INVITED: AF-MoA-11 Precursors for Photoassisted Area Selective Deposition on Self Assembled Monolayers, <i>B. Das</i> , <i>R. Singh</i> , <i>C. Brewer</i> , University of Florida; <i>R. Holliday</i> , <i>A. Walker</i> , University of Texas at Dallas; <i>Lisa McElwee-White</i> , University of Florida	ALD Fundamentals Session AF-MoA Precursors and Processes Moderators: Seán Barry , Carleton University, Canada, Scott Clendenning , Intel Corporation
4:15pm		
4:30pm	AF-MoA-13 Reductive Thermal ALD of Pd and Au Thin Films, <i>Anton Vihervaara</i> , <i>T. Hatanpää</i> , <i>H. Nieminen</i> , <i>K. Mizohata</i> , <i>M. Chundak</i> , <i>M. Ritala</i> , University of Helsinki, Finland	
4:45pm	AF-MoA-14 Phosphorus Zintl Species as ALD precursors for Metal Phosphide Thin Films, <i>Paul Ragogna</i> , <i>J. Bentley</i> , Western University, Canada; <i>E. Goodwin</i> , Carleton University, Canada; <i>J. Lomax</i> , Western University, Canada; <i>B. Van Ijendoorn</i> , <i>M. Mehta</i> , University of Manchester, UK; <i>S. Barry</i> , Carleton University, Canada	
5:00pm	AF-MoA-15 Investigation of Discrete Reactant Feeding for Atomic Layer Deposition of In ₂ O ₃ Using Novel Liquid Alkyl-Cyclopentadienyl Indium Precursor, <i>Hae Lin Yang</i> , <i>H. Kim</i> , Hanyang University, Republic of Korea; <i>T. ONO</i> , <i>S. KAMIMURA</i> , <i>A. EIZAWA</i> , <i>T. TERAMOTO</i> , <i>C. DUSSARRAT</i> , Air Liquide Laboratories, Japan; <i>J. Park</i> , Hanyang University, Republic of Korea	
5:15pm	AF-MoA-16 Synthesis and Precursor Property Evaluation of Er Enaminolate Complexes and Deposition of Er ₂ O ₃ Thin Film using Thermal Atomic Layer Deposition (ALD), <i>Chamod Dharmadasa</i> , <i>C. Winter</i> , <i>N. Jayakodiarachchi</i> , Wayne State University; <i>P. Evans</i> , University of Wisconsin-Madison; <i>R. Liu</i> , University of Wisconsin - Madison	
5:30pm	AF-MoA-17 Deposition of CsSnI ₃ Perovskite Thin Films by Atomic Layer Deposition and Pulsed Chemical Vapor Deposition, <i>Alexander Weiß</i> , <i>M. Terletskaja</i> , <i>G. Popov</i> , <i>M. Leskelä</i> , <i>M. Ritala</i> , <i>M. Kemell</i> , University of Helsinki, Finland	

Monday Afternoon, July 24, 2023

Atomic Layer Etching Room Grand Ballroom H-K - Session ALE-MoA Metal ALE Moderators: Thorsten Lill, Lam Research Corporation, Tristan Tronic, Intel Corporation		Nanostructure Synthesis and Fabrication Room Regency Ballroom A-C - Session NS-MoA 2D Growth Moderators: John Conley, Oregon State University, Xiangbo Meng, University of Arkansas	
1:30pm			
1:45pm			
2:00pm			
2:15pm			
2:30pm			
2:45pm			
3:00pm			
3:15pm			
3:30pm	BREAK & EXHIBITS		BREAK & EXHIBITS
3:45pm			
4:00pm	INVITED: ALE-MoA-11 Wet Atomic Layer Etching of Metals, <i>Paul Abel</i> , Tokyo Electron America, Inc.		INVITED: NS-MoA-11 A Modified ALD-like Approach to Demonstrate Exceptionally Thin Dielectric Layer Growth on 2D Materials, <i>Daire Cott, S. Sergeant, R. Rennen, G. Benjamin</i> , IMEC Belgium; <i>D. Lin</i> , IMEC, Belgium; <i>X. Wu</i> , IMEC Belgium; <i>Z. Lin</i> , IMEC Belgium,, Belgium; <i>T. Schram, Q. Smets, I. Asselberghs, P. Morin</i> , IMEC Belgium
4:15pm			
4:30pm	ALE-MoA-13 Thermal Atomic Layer Etching of Molybdenum Based on Sequential Oxidation and Chlorination Reactions, <i>Taewook Nam, J. Partridge, S. George</i> , University of Colorado at Boulder		NS-MoA-13 Phase Control of Two-Dimensional Tin Sulfide Compounds Deposited by Atomic Layer Deposition, <i>Dong Geun Kim, J. Lee, J. Choi, J. Ahn</i> , Hanyang University, Korea
4:45pm	ALE-MoA-14 Non-Halogen Plasma for Selective Removal of Titanium Compounds Applied in Advanced Atomic Layer Etching, <i>Thi-Thuy-Nga Nguyen</i> , Nagoya University, Japan; <i>K. Shinoda</i> , Hitachi, Ltd., Japan; <i>S. Hsiao</i> , Nagoya University, Japan; <i>H. Hamamura</i> , Hitachi, Ltd., Japan; <i>K. Maeda, K. Yokogawa, M. Izawa</i> , Hitachi High-Tech Corp., Japan; <i>K. Ishikawa, M. Hori</i> , Nagoya University, Japan		NS-MoA-14 Controlled Van der Waals Heterostructures Composed of Hexagonal Boron Nitride Layers on Graphitic Carbon Supports, <i>Ali Hossain</i> , Laboratoire des Multimatériaux et Interfaces, UMR CNRS 5615, Univ Lyon, Université Claude Bernard Lyon 1; IRIG/MEM/LEMMA, CEA-Grenoble, France; <i>H. Okuno</i> , IRIG/MEM/LEMMA, CEA-Grenoble, France; <i>S. Forel, C. Journet, C. Marichy</i> , Laboratoire des Multimatériaux et Interfaces, UMR CNRS 5615, Univ Lyon, Université Claude Bernard Lyon 1, France
5:00pm	ALE-MoA-15 Leveraging Surface Nitridation to Enable Plasma-Thermal Atomic Layer Etching of Ni Based Metals, <i>Taylor Smith, J. Chang</i> , University of California, Los Angeles		NS-MoA-15 300 mm Wafer-Scale and Self-limiting Layer Synthesis of 2D MoSe ₂ by Atomic Layer Deposition, <i>A. Zacatzi, M. Miller, R. Kanjolia, Thong Ngo</i> , EMD Electronics
5:15pm	ALE-MoA-16 Plasma Atomic Layer Etching of Ruthenium with Surface Fluorination and Ion Bombardment for Next-generation Interconnect Metal, <i>Yongjae Kim, H. Kang, M. Choi, H. Ha, H. Chae</i> , Sungkyunkwan University (SKKU), Republic of Korea		NS-MoA-16 Wafer-Scale Controlled Growth of Two-Dimensional Metal Dichalcogenides Through Atomic Layer Deposition and Top-Bottom Epitaxy, <i>Chanyoung Yoo, W. Choi, J. Jeon, B. Park, G. Jeon, S. Jeon, C. Hwang</i> , Department of Materials Science and Engineering and Inter-University Semiconductor Research Center, Seoul National University, Republic of Korea
5:30pm	ALE-MoA-17 Comparison of Ruthenium ALE based on ICP and Ion Beam, <i>Doo San Kim, H. Kwon, Y. Jang, H. Gil, D. Kim, G. Kim, G. Yeom</i> , Sungkyunkwan University, Republic of Korea		NS-MoA-17 2D FeS _x Nanosheets by ALD: Electrocatalytic Properties Towards Hydrogen Evolution Reaction, <i>Raul Zazpe, J. Rodriguez Pereira, S. Thalluri, L. Hromadko</i> , University of Pardubice, Czechia; <i>D. Pavlišák, E. Kolíbalová</i> , Brno University of Technology, Czechia; <i>H. Sopa, J. Macak</i> , University of Pardubice, Czechia

ALD for Manufacturing

Room Evergreen Ballroom & Foyer - Session AM-MoP

ALD for Manufacturing Poster Session

5:45pm

AM-MoP-1 Numerical Analysis on Gas Flow Field for a Sustainable ALD Process Chamber, **Kyung-Hoon Yoo**, Korea Institute of Industrial Technology (KITECH), Republic of Korea; **G. Song**, KUMYOUNG ENG Inc., Republic of Korea; **C. Kim**, TNG Inc., Republic of Korea; **J. Hwang, H. Lee, S. Lee**, Korea Institute of Industrial Technology, Republic of Korea; **K. Lee**, SAMSUNG DISPLAY, Republic of Korea

AM-MoP-2 Atomic Layer Deposition Reactor for Fixed-Bed Powder Processing with Inert Sample Transfer, **S. Andsten, J. Velasco, S. Larkiala**, Aalto University, Finland; **K. Salonen**, Elabs Oy engineering, Finland; **C. Gonsalves, J. Rask, J. Stang, V. Miikkulainen, S. Jääskeläinen, Riikka Puurunen**, Aalto University, Finland

AM-MoP-3 Reverse Templating Effects of Low-Resistivity Ru Ald on Sputtered Ru, **Chenghsuan Kuo**, UCSD, Taiwan; **V. Wang**, UCSD; **R. Ravindra, M. Moinpour, J. Jacob**, EMD Electronics; **H. Simka**, Samsung Electronics; **A. Kummel**, UCSD

AM-MoP-4 Thermal Evaporation Enhanced Atomic Layer Deposition for Far Ultraviolet Mirror Coatings, **Robin Rodriguez, J. Hennessy**, Jet Propulsion Laboratory (NASA/JPL)

AM-MoP-5 Computation Fluid Dynamics Analysis of Cyclone-Type Vaporizer for Atomic Layer Deposition, **Donggeon Shin**, Sejong University, Republic of Korea; **S. Seo**, GO Element Co., Ltd., Republic of Korea; **C. Kim, O. Kim**, Sejong University, Republic of Korea; **Y. Lee, K. Jeong, D. Kim**, GO Element Co., Ltd., Republic of Korea; **W. Lee**, Sejong University, Republic of Korea

AM-MoP-6 Technical Analysis and Solution of Critical Electrostatic Chuck Problem in High Temperature CVD Process through Estimation Model of the Johnsen-Rahbek Chucking Force, **Youngbok Lee, S. Han, S. Cho**, Samsung Electronics, Republic of Korea; **Y. Kim**, Samsung Electronics

ALD Fundamentals

Room Evergreen Ballroom & Foyer - Session AF-MoP

ALD Fundamentals Poster Session

5:45pm

AF-MoP-1 Low-Temperature ALD of Elemental Antimony Films Through the Reaction of Silylamide with Alkoxide and Alkylamide Precursors, **Amin Bahrami, S. He**, Leibniz Institute for Solid State and Materials Research, Germany; **J. Julin, M. Laitinen**, University of Jyväskylä, Finland; **S. Lehmann, K. Nielsch**, Leibniz Institute of Solid State and Materials Science, Germany

AF-MoP-2 Atomic Layer Deposition of hfo₂ Thin Film Using a Novel Heteroleptic Ethylenediamine Based Hf Precursor, **Chael Wan Park, E. Shin, E. Cho, H. Kim, K. Mun, K. Lee, J. Park**, Hansol Chemical Co., Ltd., Republic of Korea

AF-MoP-3 Novel In/Ga Precursors for Atomic Layer Deposition of Igzo Thin Film Transistors, **Hyunkyung Lee, K. Mun**, Hansol Chemical Co., Ltd., Republic of Korea; **T. Hong**, Hanyang University, Korea; **K. Yeom, H. Kim, D. Ryu, K. Lee, J. Park**, Hansol Chemical Co., Ltd., Republic of Korea; **J. Park**, Hanyang University, Korea

AF-MoP-4 Al Precursor with Low Growth Rate for Conformal Al₂O₃ Thin Film, **Kyuhyun Yeom, H. Lee, K. Mun, D. Ryu, J. Seok**, Hansol chemical, Republic of Korea

AF-MoP-5 Low-Temperature HfO₂ Gate Dielectric for Topological Insulator Devices, **P. Shekhar, S. Shamim, V. Hock**, Physikalisches Institut (EP3) and Institute for Topological Insulators, Universität Würzburg, Germany; **H. Buhmann, Johannes Kleinlein**, Physikalisches Institut and Institute for Topological Insulators, Universität Würzburg, Germany; **L. Molenkamp**, Physikalisches Institut (EP3) and Institute for Topological Insulators, Universität Würzburg, Germany

AF-MoP-6 Silicon Nitride ALD Process Using High Purity Hydrazine for Low Temperature Deposition, **Hayato Murata, Y. Koda, Y. Wada, T. Kameoka**, Taiyo Nippon Sanso Corporation, Japan; **J. Spiegelman**, RASIRC; **N. Tomita**, Taiyo Nippon Sanso Corporation, Japan

AF-MoP-7 ALD Precursor Design for Post-Transition Metal Films, **Atsushi Sakurai, N. Yamada, T. Yoshino, A. Nishida, M. Hatase, M. Enzu, A. Yamashita, Y. Oae, C. Mitsui**, ADEKA CORPORATION, Japan

AF-MoP-8 Correlating In-Situ Photoluminescence and Ellipsometry: A Novel approach to Analyze and Optimize ALD Materials for Photovoltaic Applications, **N. HARADA, A. LEVTCHENKO**, IPVF, France; **D. COUTANCIER**, CNRS, France; **F. DONSANTI**, IPVF, France; **J. GUILLEMOLES**, CNRS, France; **D. SUCHET**, Ecole Polytechnique - CNRS, France; **G. DELPORT, Nathanaelle SCHNEIDER**, CNRS, France

AF-MoP-9 Chemistry of Boronic Acids on Semiconductor Surfaces: Pathways to Organic Monolayer Resists and Single Molecule Inhibitors for AS-ALD, **Dhamelyz Silva Quinones, A. Tepyakov**, University of Delaware

Monday Afternoon, July 24, 2023

AF-MoP-10 Trench Coverage Properties of Oxide Films Deposited at Low Temperature by Pure Ozone ALD, **Naoto Kameda, T. Hagiwara, S. Motoda**, MEIDEN NANOPROCESS INNOVATIONS, INC., Japan; **K. Nakamura, H. Nonaka**, AIST, Japan

AF-MoP-11 Novel Volatile and Liquid Sc Precursors for Electronic Applications, **Manuel Kapitein, S. Herritsch, M. Balmer, T. Hepp, E. Schlathoelter, O. Briel, J. Koch**, Dockweiler Chemicals, Germany

AF-MoP-12 PEALD Growth of Doped Indium Oxide Films with Control Over the Film Composition and Properties by Supercycle Approach Implementation, **M. Zered, Valentina Korchnoy, K. Weinfeld, G. Frey, M. Eizenberg**, Technion - Israel Institute of Technology, Israel

AF-MoP-13 Using Glow-Discharge Optical Emission Spectroscopy to Characterize Polymers Treated Through Vapor Phase Infiltration, **Seancarlos Gonzalez, Y. Choe, D. Bergsman**, University of Washington

AF-MoP-14 New Approaches for the Thermal Atomic Layer Deposition of Elemental Antimony Thin Films, **Daniel Beh**, Wayne State University; **Z. Devereaux, T. Knisley**, Applied Materials; **C. Winter**, Wayne State University

AF-MoP-15 Electron Beam Generation and Precise Control of Beam Energy for Large Area Electron Enhanced Atomic Layer Deposition, **MINSEOK KIM, J. Jung, J. Park, C. Lim, B. Seo, C. Chung**, Hanyang University, Republic of Korea

AF-MoP-16 Development of Piezo Controlled Vapour Delivery System for Ru ALD Application, **Hiroshi Nishizato**, HORIBA STEC, Co., Ltd., Japan; **G. Krunal**, HORIBA STEC, Co., Ltd., India; **T. Moriyama**, HORIBA STEC, Co., Ltd., Japan; **K. Uesugi**, Hiroshima University, Japan; **G. Rahman**, Hiroshima University, Bangladesh; **P. Lowery, T. Freeman**, HORIBA Reno Technology Center; **Y. Amemiya, A. Teramoto**, Hiroshima University, Japan

AF-MoP-17 Realization of Conductive Electrodes for Solar Cells by Spatial ALD Using New Coinage Metal Precursors, **Nils Boysen**, Ruhr University Bochum, Germany; **T. Hasselmann, B. Misimi**, University of Wuppertal, Germany; **M. Karppinen**, Aalto University, Finland; **T. Riedl**, University of Wuppertal, Germany; **A. Devi**, Ruhr University Bochum, Germany

AF-MoP-18 Tunable Sulfur Incorporation into ALD Films using Solution Anion Exchange, **Julia D. Lenef, A. Gayle, J. Jo, K. Fuelling, S. Yadavalli, A. Ortiz Ortiz, K. Sun, R. Peterson, N. Dasgupta**, University of Michigan, Ann Arbor

AF-MoP-19 Comparative Study of the Surface Reactivity and PEALD of Monoaminosilanes and Cyclic Azasilanes, **Chad Brick, T. Ogata, J. Collins**, Gelest, Inc

AF-MoP-20 Atomic Layer Deposition of Strontium Oxide on Different Materials, **Marek Eliáš**, CEITEC, Brno University of Technology, Czechia; **A. Harunningtyas**, Osaka University, Japan; **D. Nečas, L. Janů, E. Dvořáková**, CEITEC, Czechia; **T. Ito, P. Vinchon, S. Hamaguchi**, Osaka University, Japan; **L. Zajíčková**, CEITEC BUT & Masaryk University, Czechia

AF-MoP-21 Plasma Enhanced Atomic Layer Deposition of Scandium Nitride, **Mark Sowa**, Veeco Instruments Inc.; **M. Chowdhury**, Department of Materials Science and Engineering, Lehigh University; **A. Kozen**, Department of Materials Science & Engineering, University of Maryland; **N. Strandwitz**, Department of Materials Science and Engineering, Lehigh University

AF-MoP-22 Effects of Silicon Surface Termination on the Initial Stages of TiO₂ Deposition by ALD, **Tyler Parke, A. Tepyakov**, University of Delaware

AF-MoP-23 The Roles of *in-situ* Atomic Layer Annealing on Tungsten Nitride Thin Films Synthesized by Low Temperature ALD, **D. Le, Md. Musfiqur Rahman, M. Mamun, J. Kim**, The University of Texas at Dallas; **J. Spiegelman**, RASIRC; **M. Markevitch**, NASA; **J. Kim**, The University of Texas at Dallas; **M. Benham**, RASIRC

AF-MoP-24 Deposition Characteristics Evaluation of New In Precursor for IGZO TFT, **Yong Hee Kwone, S. Jeon, S. Lee, T. Byun, Y. Im, S. Lee**, DNF Co. LTD., Republic of Korea

AF-MoP-25 Growth Mechanism of Ge-Sb-Te Thin Films by Supercycles of ALD GeTe and Sb₂Te₃, **Okhyeon Kim, Y. Kim**, Sejong University, Republic of Korea; **H. Kim**, sejong University, Republic of Korea; **C. Park, D. Ahn, B. Kuh**, Samsung Electronics Co., Ltd., Republic of Korea; **W. Lee**, Sejong University, Republic of Korea

AF-MoP-26 Annealing Modulated Microstructural and Electrical Properties of PEALD-derived HfO₂/SiO₂ Nanolaminates on AlGaIn/GaN, **B. Wang, M. Chen, Y. Li, Duo Cao, F. Liu, W. Shi**, Shanghai Normal University, China

AF-MoP-27 Atomistic Study of Amorphous Si-O-X Networks for Plasma Enhanced Atomic Layer Deposition-Produced SiO₂ Films: Illuminating the Structure-Composition-Mechanical and Electrical Property Connections, **A. Dervov**, University of Minnesota, USA; **P. Agarwal, R. Kumar**, Lam Research Corporation; **Traian Dumitrica**, University of Minnesota, USA

AF-MoP-28 Surface Modification of 2,6 Diamino-Pyrazine-1-Oxide by Atomic Layer Deposition of Al₂O₃, *John Miller, R. Reeves*, Lawrence Livermore National Laboratory

AF-MoP-29 Precise Interface Engineering for High Thermoelectric Performance in CuNi Alloys Using Powder ALD, *S. He*, Leibniz Institute for Solid State and Materials Research, Germany; *Amin Bahrami*, Helmholtzstraße 20, Germany; *S. Lehmann, K. Nielsch*, Leibniz Institute for Solid State and Materials Research, Germany

AF-MoP-30 High-Throughput SiO₂ PEALD Using a Novel Si Precursor, *Jin Sik Kim, B. Kim, J. Choi, W. Koh*, UP Chemical Co., Ltd., Republic of Korea

AF-MoP-31 Oxidation Mechanism of Atomic Layer Deposition of HfO₂ Using O₃, *Soo Hyun Lee, B. Shong*, Hongik University, Republic of Korea

AF-MoP-32 Eggshell-Type Catalysts by Atomic Layer Deposition: Distribution of Zinc Oxide Within Mesoporous Alumina Spheres, *Jihong Yim*, Aalto University, Finland; *N. Heikkinen*, VTT Technical Research Centre of Finland; *E. Haimi, C. Gonsalves, A. Chahal, J. Velasco, R. Karinen*, Aalto University, Finland; *J. Lehtonen*, VTT Technical Research Centre of Finland; *R. Puurunen*, Aalto University, Finland

AF-MoP-33 Numerical Simulation of Surface Reactions During Plasma-Enhanced Atomic-Layer Deposition (PE-ALD) of Silicon Nitride (SiN), *J. Tercero*, Osaka University, Japan; *M. Krstić*, Karlsruhe Institute of Technology (KIT), Germany; *A. Jaber, E. Tinacba, N. Mauchamp, M. Isobe, T. Ito, K. Karahashi, Satoshi Hamaguchi*, Osaka University, Japan

AF-MoP-34 Effect of Precursor Temperature of 1,4-Phenylene Diisocyanate (PPDI) on the Growth Rate of Polyurea Using Molecular Layer Deposition (MLD), *Jae Seok Lee, S. Song, B. Choi*, Korea University, Republic of Korea

AF-MoP-35 Multicomponent RuTiO_x Thin Films through Atomic Layer Modulation, *Ngoc Le Trinh, C. Nguyen, B. Gu, H. Lee*, Incheon National University, Republic of Korea

AF-MoP-36 Fine-Tuning of Low Surface Energy Substrate Functionality to Lower the Nucleation Delay Inherent for ALD of Noble Metals, *Sitaramanjaneya Thalluri, R. Zazpe, J. Rodriguez-Pereira, H. Sopha, J. Macak*, University of Pardubice, Czechia

AF-MoP-37 Growth Behaviors and Structural Characterization of PEALD In₂O₃ thin films using Amide-based and Alkyl-Based Novel Indium Precursors, *Gyeong Min Jeong, Y. Kim, H. Yang*, Hanyang University, Republic of Korea; *M. Kim, S. Lee, Y. Kwone, S. Jeon, Y. Im, DNF*, Republic of Korea; *J. Park*, Hanyang University, Republic of Korea

AF-MoP-38 Evaluation of a Zr Precursor and Hf Precursor with Higher Thermal Stability for the Atomic Layer Deposition of zro2 and hfo2 Films, *Randall Higuchi*, EMD Electronics; *R. Waldman, P. Arab, C. Chen, D. Lee*, EMD Electronics, USA

AF-MoP-39 Hybrid PEALD/PEVCD Reactor Design for Depositing Thick GaN Films on Si, *Biral Kuyel, A. Alphonse, J. Marshall*, NANO-MASTER, Inc.

AF-MoP-40 Non-Langmuir Adsorption in O₃ in the TMA-O₃ ALD process, *David Kane, J. McHugh*, Arradance LLC

AF-MoP-41 ALD Infilling of Macroscopic Nanoporous Solids: Expanding Beyond Al₂O₃, *Benjamin Greenberg, K. Anderson, A. Jacobs, J. Wollmershauser, B. Feigelson*, U.S. Naval Research Laboratory

AF-MoP-42 Properties of VHF PEALD Silicon Nitride Film Deposited by Precursors with Different Amino Ligands, *Seung Yup Choi, Y. Ji, H. Kim, J. Kang*, Sungkyunkwan University, Republic of Korea; *A. Ellingboe*, Dublin City University, Ireland; *H. Chandra*, EMD Electronics; *C. Lee*, Merck Korea; *G. Yeom*, sungkyunkwan University, Republic of Korea

AF-MoP-43 Influence of Metal Precursors on the Low-Temperature Crystalline Vanadium Oxide Synthesis Using Oxygen Plasmas, *Adnan Mohammad, K. Joshi, D. Rana, S. Ilhom, B. Wells, B. Sinkovic*, University of Connecticut; *A. Okyay*, Stanford University; *N. Biyikli*, University of Connecticut

AF-MoP-44 Low-Temperature Atomic Layer Deposition of Hafnium Oxide for Gating Applications, *P. Shekhar, S. Shamim, V. Hock*, Physikalisches Institut (EP3) and Institute for Topological Insulators, Universität Würzburg, Germany; *H. Buhmann*, Physikalisches Institut and Institute for Topological Insulators, Universität Würzburg, Germany; *Johannes Kleinlein, L. Molenkamp*, Physikalisches Institut (EP3) and Institute for Topological Insulators, Universität Würzburg, Germany

AF-MoP-45 Electric characteristics for HfO₂/SiO₂ Interface Control by Neutral Beam Enhanced Atomic Layer Deposition, *Daisuke Otori, T. Ozaki, K. Endo*, Tohoku University, Japan; *Y. Li, S. Samukawa*, National Yang Ming Chiao Tung University, Taiwan

AF-MoP-46 Low Temperature Atomic Layer Deposition of Al₂O₃ Thin films Using Trimethylaluminum and 1-Butanol, *B. Liu, Chi-Chung Kei, C. Su*, Taiwan Instrument Technology Institute, National Applied Research Laboratories, Taiwan

AF-MoP-47 Characterizing TEMAZ and TBTEMT for ALD, *Marjorie Sarad, J. Daubert, K. Cheatham, T. Adam, J. Kelliher*, Northrop Grumman

AF-MoP-48 ALD Film Closure and Thickness by Low Energy Ion Scattering, *Rik ter Veen, K. Lamann, M. Fartmann, B. Hagenhoff*, Tascon, Germany

AF-MoP-49 Development of HF-Free YF₃ ALD Process and Its Dry Etch Resistance, *Sunao Kamimura, T. Teramoto*, Air Liquide Laboratories, Japan; *T. Ono*, Air Liquide Advanced Materials; *C. Dussarrat*, Air Liquide Laboratories, Japan; *N. Blasco*, Air Liquide Advanced Materials, France; *N. Gosset*, Air Liquide Laboratories, Japan; *G. Nikiforov*, Air Liquide Advanced Materials

AF-MoP-50 Role of Ga Doping in IZO Films Grown by Atomic Layer Deposition, *Ae-Rim Choi, I. Oh, Y. Jeong, D. Lim*, Ajou University, Republic of Korea; *S. Kim, S. Ryu, D. Kim*, SK Hynix, Korea

AF-MoP-51 The Effects of in-situ Atomic Layer Annealing on Thermal Atomic Layer Deposited Silicon Nitride, *Dan Le, S. Hwang, J. Kim*, University of Texas at Dallas; *J. Spiegelman, RASIRC; J. Kim*, University of Texas at Dallas; *M. Benham, RASIRC*

Emerging Materials

Room Evergreen Ballroom & Foyer - Session EM-MoP

Emerging Materials Poster Session

5:45pm

EM-MoP-1 Conformal ALD of Ferromagnetic ε-Fe₂O₃ Thin Films, *T. Jussila*, Aalto University, Finland; *Anish Philip, J. Kinnunen, M. Utriainen*, Chipmetrics Oy, Finland; *M. Karppinen*, Aalto University, Finland

EM-MoP-2 Investigation of Epsilon Near Zero Response in Doped ZnO Ultrathin Films, *Emily Duggan, M. Modreanu, J. Lin*, Tyndall National Institute, University College Cork, Ireland; *H. Caglayan*, Tampere University, Finland; *I. Povey*, Tyndall National Institute, University College Cork, Ireland

EM-MoP-3 In-situ FTIR Analysis of Molecular Atomic Layer Deposited Hybrid Thin Films for EUV Resist Applications, *Dan Le, S. Hwang, J. Veyan, T. Park, J. Kim*, University of Texas at Dallas; *R. Choi*, Inha University, Republic of Korea; *W. Lee, A. Subramanian*, Stony Brook University; *N. Tiwale, C. Nam*, Brookhaven National Laboratory; *J. Kim*, University of Texas at Dallas

EM-MoP-4 Exploring the Benefits of Reduced Cycle Time in Molecular Layer Deposition (MLD) of Metal-linked 7-(trioxysilyl)heptanoate (M-TOSH), *Jesse Kalliomäki, J. Binte Mariam, R. Ritasalo, T. Sarnet*, Applied Materials, Finland

EM-MoP-5 Low-Temperature Atomic Layer Annealing Deposition of Crystallized Gallium Nitride on Oxide-Free Si (111), *SeongUk Yun, A. Kummel, P. Lee, A. Mcleod, J. Fammels, J. Watson, H. Kashyap*, University of California at San Diego; *J. Spiegelman, RASIRC; W. Aigner, T. Metzger*, Qualcomm Germany RFFE GmbH, Germany

EM-MoP-6 Vapor Deposited MOFs as Low-K Dielectrics for Logic and RF, *J. Watson, Dohyun Go, A. Kummel*, UCSD

Tuesday Morning, July 25, 2023

Room Grand Ballroom A-C	
8:00am	INVITED: ALD+ALE-TuM-1 Intensified Atomic Layer Deposition and Atomic Layer Etching, <i>Greg Parsons</i> , North Carolina State University
8:15am	
8:30am	ALD+ALE-TuM-3 Mass Changes During and After Al(CH ₃) ₃ Exposures for Thermal Al ₂ O ₃ ALE at Low Temperatures Using HF and Al(CH ₃) ₃ as Reactants, <i>Andrew S. Cavanagh, S. George</i> , University of Colorado at Boulder
8:45am	ALD+ALE-TuM-4 Crystallinity of Sacrificial Etch Layer Influences Resulting Structure During Simultaneous Deposition and Etching, <i>Hannah R. M. Margavio, L. Keller</i> , North Carolina State University; <i>N. Arellano, R. Wojtecki</i> , IBM Almaden Research Center; <i>G. Parsons</i> , North Carolina State University
9:00am	INVITED: ALD+ALE-TuM-5 There's no Place like a Surface: How Deposition and Etch Chemistry Depend on the Nature of the Surface, <i>Michael Nolan</i> , Tyndall National Institute, University College Cork, Ireland
9:15am	
9:30am	ALD+ALE-TuM-7 Substrate Dependent HfO ₂ Atomic Layer Etch Rate Evolution Observed by In-situ Quartz Crystal Microbalance during Integrated ALD+ALE, <i>Landon Keller, G. Parsons</i> , North Carolina State University
9:45am	ALD+ALE-TuM-8 Al Mirror Passivation with Atomic Layer Etching of Native Oxide and in-Situ Passivation with Atomic Layer Deposition of AlF ₃ or MgF ₂ , <i>Hoon Kim, J. Du, J. Wang, D. Allen, E. Pierce, M. Huang, N. Borgharkar, K. Wao</i> , Corning Research and Development Corporation
10:00am	BREAK & EXHIBITS
10:15am	
10:30am	
10:45am	INVITED: ALE-TuM-12 Understanding the Reaction Mechanism of Thermal ALE from Atomistic Simulations, <i>Xiao Hu, J. Schuster</i> , Center for Microtechnologies, Chemnitz University of Technology, Germany; Fraunhofer Institute for Electronic Nano Systems, Germany
11:00am	
11:15am	ALE-TuM-14 Plasma Oxidation of Copper: Molecular Dynamics Study with Neural Network Potentials, <i>Yantao Xia</i> , University of California at Los Angeles; <i>S. Philippe</i> , University of California, Los Angeles
11:30am	ALE-TuM-15 Multi-scale Simulation Study for the Role of High C/F ratio Plasma on Etch Selectivity of SiO ₂ and Si ₃ N ₄ in q-ALE, <i>Hojin Kim, D. Zhang, T. Hisamatsu, A. Ko</i> , TEL Technology Center, America, LLC, USA
11:45am	ALE-TuM-16 Selecting a Method for ALE Modeling, <i>Y. Barsukov, S. Jubin, S. Ethier, Igor Kaganovich</i> , Princeton University Plasma Physics Lab

ALD & ALE
Session ALD+ALE-TuM
ALD/ALE Session
Moderators:
Steven M. George, University of Colorado at Boulder,
Anil Mane, Argonne National Laboratory

Atomic Layer Etching
Session ALE-TuM
Modeling of ALE
Moderators:
Michael Nolan, University College Cork, Ireland,
Thomas Tillocher, GREMI CNRS/Orleans University, France

Tuesday Morning, July 25, 2023

Room Grand Ballroom E-G		
8:00am	INVITED: AF1-TuM-1 Precursor Design Enabling Angstrom Era Semiconductor Manufacturing, <i>Charles Mokhtarzadeh, E. Mattson, S. Lee, S. Clendenning, P. Theofanis</i> , Intel Corporation	ALD Fundamentals Session AF1-TuM Precursors and Processes I Moderators: Henrik Pedersen , Linköping University, Sweden, Charles H. Winter , Wayne State University
8:15am		
8:30am	AF1-TuM-3 Atomic Layer Deposition of Silver Halides, <i>Georgi Popov, T. Hatanpää, A. Weiß, M. Chundak, M. Ritala, M. Kemell</i> , University of Helsinki, Finland	
8:45am	AF1-TuM-4 Novel Metal Fluoride ALD Processes, <i>Elisa Atosuo, M. Mäntymäki, M. Heikkilä, K. Mizohata, M. Leskelä, M. Ritala</i> , University of Helsinki, Finland	
9:00am	AF1-TuM-5 Halide-free, Low Melting, Volatile, Thermally Stable Mo(0) Precursors for ALD of Mo films, <i>Chandan Kr Barik, A. Leoncini</i> , Applied Materials – National University of Singapore Corporate Lab, Singapore; <i>F. Liu</i> , Applied Materials, Inc.; <i>J. Tang, J. Sudijono</i> , Applied Materials – National University of Singapore Corporate Lab, Singapore; <i>M. Saly</i> , Applied Materials, Inc.	
9:15am	AF1-TuM-6 Thermal Atomic Layer Deposition of MoC Thin Films, <i>Paloma Ruiz Kärkkäinen, T. Hatanpää, M. Heikkilä, K. Mizohata, M. Chundak, M. Putkonen, M. Ritala</i> , University of Helsinki, Finland	
9:30am	AF1-TuM-7 Precursors and Processes for the Atomic Layer Deposition of Bismuth Metal Thin Films, <i>Daniel Beh</i> , Wayne State University; <i>Z. Devereaux, T. Knisley</i> , Applied Materials; <i>C. Winter</i> , Wayne State University	
9:45am	AF1-TuM-8 Atomic Layer Deposition of Tin Oxide Thin Films Using a New Liquid Precursor Bis(ethylcyclopentadienyl) Tin, <i>Makoto Mizui, N. Takahashi, F. Mizutani</i> , Kojundo Chemical Laboratory Co., Ltd., Japan; <i>T. Nabatame</i> , National Institute for Materials Science, Japan	
10:00am	BREAK & EXHIBITS	
10:15am		
10:30am		
10:45am	AF2-TuM-12 On the Limitations of Thermal ALD of InN Using Ammonia, <i>Henrik Pedersen, K. Rönby, G. Damas, L. Ojamäe</i> , Linköping University, Sweden	ALD Fundamentals Session AF2-TuM Precursors and Processes II Moderators: Paul Poodt , Holst Centre / TNO, Netherlands, Paul J. Ragogna , University of Western Ontario, Canada
11:00am	AF2-TuM-13 Influence of Plasma Species on the Growth Kinetics, Morphology, and Crystalline Properties of Epitaxial InN Films Grown by Plasma-Enhanced Atomic Layer Deposition, <i>Jeffrey Woodward, D. Boris</i> , U.S. Naval Research Laboratory; <i>M. Johnson</i> , Huntington Ingalls Industries; <i>S. Walton, J. Hite, M. Mastro</i> , U.S. Naval Research Laboratory	
11:15am	AF2-TuM-14 Towards Self-Limiting III-Nitride Epitaxy via Hollow-Cathode Nitrogen Plasmas, <i>N. Ibrahimli, S. Ilhom, A. Mohammad, J. Grasso, B. Willis</i> , University of Connecticut; <i>A. Okyay</i> , Stanford University; <i>Necmi Biyikli</i> , University of Connecticut	
11:30am	AF2-TuM-15 Thermal Atomic Layer Deposition of Gallium Nitride at 150 - 300°C using Tris(dimethylamido)gallium Precursor and Hydrazine, <i>Adam Bertuch</i> , Veeco Instruments; <i>J. Casamento, J. Maria</i> , Pennsylvania State University	
11:45am	AF2-TuM-16 Crystalline Gallium Nitride Deposition on SiO ₂ /Si by RF-Biased Atomic Layer Annealing, <i>Ping-che Lee, A. Mcleod</i> , Univ. of Cal., San Diego; <i>S. Ueda</i> , Materials Science and Engineering Program, Univ. of Cal., San Diego; <i>J. Spiegelman</i> , Rasirc; <i>R. Kanjolia, M. Moinpou</i> , EMD Electronics; <i>A. Kummel</i> , Department of Chemistry and Biochemistry, Univ. of Cal., San Diego	

Tuesday Morning, July 25, 2023

Room Grand Ballroom H-K	
8:00am	INVITED: AA1-TuM-1 Nanoscale Surface Engineering for Battery Electrode and Solid Ionic Electrolytes, <i>Chunmei Ban</i> , CU Boulder
8:15am	
8:30am	AA1-TuM-3 Flexible Hybrid Coating on Positive Electrode Enabling High Energy and Power Density for Lithium-Ion Batteries, <i>Zahra Ahaliabadeh</i> , <i>V. Miikkulainen</i> , Aalto University, Finland; <i>M. mäntymäki</i> , Helsinki University of Technology, Finland; <i>T. Kallio</i> , Aalto University, Finland
8:45am	AA1-TuM-4 Aluminum Doping of Lithium Phosphate using Atomic Layer Deposition, <i>Daniela Fontecha</i> , <i>K. Gregorczyk</i> , <i>A. Kozen</i> , <i>G. Rubloff</i> , University of Maryland, College Park
9:00am	AA1-TuM-5 Developing High-Performance Nickel-Rich Cathodes of Lithium-ion Batteries via Atomic Layer Deposition, <i>Xiangbo Meng</i> , <i>X. Wang</i> , <i>K. Velasquez Carballo</i> , <i>A. Shao</i> , University of Arkansas; <i>Y. Liu</i> , <i>H. Zhou</i> , Argonne National Laboratory; <i>X. Xiao</i> , Brookhaven National Laboratory
9:15am	AA1-TuM-6 Molecular-Layer-Deposited Zincone Films Induce the Formation of LiF-Rich Interphase for Lithium Metal Anodes, <i>Wei-Min Li</i> , Jiangsu Leadmicro Nano-Technology Co., Ltd., China; <i>S. Chang</i> , <i>A. Li</i> , Nanjing University, China
9:30am	AA1-TuM-7 Deconvoluting the Impacts of Lithium Morphology and SEI Stability on Battery Cyclability Using ALD-Grown Thin Films, <i>Sanzeeda Baig Shuchi</i> , <i>S. Oyakhire</i> , <i>Y. Cui</i> , <i>S. Bent</i> , Stanford University
9:45am	AA1-TuM-8 Enabling Fast Charging of Lithium-ion Batteries by Coating of Graphite with ALD, <i>E. Kazyak</i> , <i>K. Chen</i> , <i>Y. Chen</i> , <i>T. Cho</i> , <i>Neil P. Dasgupta</i> , University of Michigan, Ann Arbor
10:00am	BREAK & EXHIBITS
10:15am	
10:30am	
10:45am	INVITED: AA2-TuM-12 ALD for MEMS Sensors and Actuators, <i>Luca Lamagna</i> , STMicroelectronics, Italy
11:00am	
11:15am	AA2-TuM-14 Applications of Piezoelectric, Ferroelectric, and Antiferroelectric Thin Films Grown by Atomic Layer Deposition, <i>Nicholas Strnad</i> , DEVCOM Army Research Laboratory; <i>G. Fox</i> , Fox Materials Consulting, LLC; <i>T. Tharpe</i> , Oak Ridge Associated Universities; <i>R. Knight</i> , <i>R. Rudy</i> , <i>J. Pulskamp</i> , DEVCOM Army Research Laboratory
11:30am	AA2-TuM-15 Effect of RF Substrate Biasing in Tuning the Tribological Properties of Plasma Enhanced Atomic Layer Deposited Titanium Vanadium Nitride Thin Films, <i>Md Istiaque Chowdhury</i> , Lehigh University; <i>M. Sowa</i> , Veeco Instruments Inc.; <i>K. Van Meter</i> , Florida International University; <i>A. Kozen</i> , University of Maryland, College Park; <i>S. Lazarte</i> , <i>B. Krick</i> , Florida International University; <i>N. Strandwitz</i> , Lehigh University
11:45am	AA2-TuM-16 Towards ALD of hard AlTiN coatings, <i>Pamburayi Mpofo</i> , Linköping University, Sweden; <i>J. Lauridsen</i> , <i>O. Alm</i> , <i>T. Larsson</i> , Seco Tools AB, Sweden; <i>H. Högberg</i> , <i>H. Pedersen</i> , Linköping University, Sweden

ALD Applications Session AA1-TuM
ALD for Batteries
Moderators:
Hyeontag Jeon, Hanyang University, Republic of Korea,
Markku Leskela, University of Helsinki, Finland

ALD Applications Session AA2-TuM
MEMS, Actuators, Hard Films
Moderators:
Anjana Devi, Ruhr University Bochum, Germany,
Viljami Pore, ASM, Finland

Tuesday Morning, July 25, 2023

Room Regency Ballroom A-C		
8:00am	INVITED: AS1-TuM-1 Invited Paper, <i>David Thompson</i> , Applied Materials, Inc.	Area Selective ALD Session AS1-TuM Surfaces and ASD Moderators: Jeffrey W. Elam , Argonne National Laboratory, Adrie Mackus , Eindhoven University, Netherlands
8:15am		
8:30am	AS1-TuM-3 Control of Silanol Density in Silicon Oxide Surfaces via Gas-Phase Treatments to Control Metal Atomic Layer Deposition, Mohammed Alam , University of California at Riverside; <i>F. Zaera</i> , University of California - Riverside	
8:45am	AS1-TuM-4 Inherently Area-Selective Atomic Layer Deposition of Device-Quality $\text{Hf}_{1-x}\text{Zr}_x\text{O}_2$ Thin Films through Catalytic Local Activation, Hyo-Bae Kim , <i>J. Lee, W. Kim, J. Ahn</i> , Hanyang University, Korea	
9:00am	AS1-TuM-5 Targeted Dehydration as a Route to Site-Selective Atomic Layer Deposition at TiO_2 Defects, Jessica Jones , <i>E. Kamphaus, A. Martinson</i> , Argonne National Laboratory	
9:15am	AS1-TuM-6 Inhibitor-Free Area Selective Atomic Layer Deposition based on Atomic Layer Nucleation Engineering and Surface Recovery with a Feature Size of Nearly 10 nm, Yu-Tung Yin , <i>C. Chou</i> , National Taiwan University, Taiwan; <i>W. Lee, C. Chuu</i> , TSMC, Taiwan; <i>C. Hou</i> , Academia Sinica, Taiwan; <i>T. Wang</i> , National Taiwan University, Taiwan; <i>J. Shyue</i> , Academia Sinica, Taiwan; <i>M. Chen</i> , National Taiwan University, Taiwan	
9:30am	AS1-TuM-7 Dopant-selective Choreography of Metal Deposition for Bottom-up Nanoelectronics, Nishant Deshmukh , <i>D. Aziz, A. Brummer, S. Kurup</i> , Georgia Institute of Technology, USA; <i>M. Filler</i> , Georgia Institute of Technology	
9:45am	AS1-TuM-8 Effect of Surface Pretreatment to reduce the Incubation Period of Iridium Thin Film grown by ALD on the Oxide Surface, Myung-Jin Jung , <i>J. Baek, S. Lee, S. Kwon</i> , Pusan National University, Republic of Korea	
10:00am	BREAK & EXHIBITS	
10:15am		
10:30am		
10:45am	AS2-TuM-12 Consequences of Random Sequential Adsorption of Inhibitor Molecules for Loss of Selectivity During ALD, Joost Maas , Eindhoven University of Technology, Netherlands; <i>I. Tezsevin</i> , Eindhoven University of Technology, Turkey; <i>M. Merckx, 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	Area Selective ALD Session AS2-TuM Inhibitors and ASD Moderator: Stacey Bent , Stanford University
11:00am	AS2-TuM-13 In-Situ Formation of Inhibitor Species Through Catalytic Surface Reactions During Area-Selective Tan ALD, Marc Merckx , <i>T. Janssen, I. Tezsevin, R. Heinemans, R. Lengers, 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	
11:15am	AS2-TuM-14 Area Selective Atomic Layer Deposition of Ru and W Using W Precursor Inhibitor, Mingyu Lee , <i>T. Nguyen Chi, L. Trinh Ngoc, B. Gu, H. Lee</i> , Incheon National University, Republic of Korea	
11:30am	AS2-TuM-15 Partial Surface Passivation for Controlled Growth and Conformality Improvement on High Aspect Ratio Features Using Small Molecule Inhibitors, Kok Chew Tan , <i>C. Yeon</i> , Soulbrain, Republic of Korea; <i>J. Kim</i> , Hongik University, Republic of Korea; <i>J. Jung, S. Lee, T. Park, Y. Park</i> , Soulbrain, Republic of Korea; <i>B. Shong</i> , Hongik University, Republic of Korea	
11:45am	AS2-TuM-16 Fundamental Surface Chemistry Considerations for Selecting Small Molecule Inhibitors for AS-ALD, <i>A. Mameli</i> , TNO Science and Industry, the Netherlands; Andrew Teplyakov , University of Delaware	

Tuesday Afternoon, July 25, 2023

Room Grand Ballroom A-C	
1:30pm	INVITED: ALE1-TuA-1 In-Situ Analysis of Surface Reactions on Thin Films in Plasma-Assisted Thermal-Cyclic Atomic Layer Etching, <i>Kazunori Shinoda, N. Miyoshi, H. Kobayashi</i> , Hitachi, Ltd., Japan; <i>M. Izawa</i> , Hitachi High-Tech Corp., Japan; <i>K. Ishikawa, M. Hori</i> , Nagoya University, Japan
1:45pm	
2:00pm	ALE1-TuA-3 Isotropic Atomic Layer Etching Process for HfO ₂ Film, <i>Jun Hyuck Kwon, C. Kim, B. Cho, J. Park, S. Park, J. Chun</i> , Semiconductor R&D Center, WONIK IPS Co., Ltd., Republic of Korea
2:15pm	ALE1-TuA-4 Thermal Atomic Layer Etching of CoO by an "Oxidation-Reduction" Mechanism Using Sequential Reactions of Ozone and Acetylacetone, <i>Aziz Abdulagatov, J. Partridge</i> , University of Colorado at Boulder; <i>V. Sharma</i> , ASM Microchemistry Ltd., Finland; <i>J. Murdzek, A. Cavanagh, S. George</i> , University of Colorado at Boulder
2:30pm	ALE1-TuA-5 Surface Modification with Neutral Gas Cluster Beams and Its Application to Atomic Layer Etching, <i>Noriaki Toyoda, H. Tanaka, M. Takeuchi</i> , University of Hyogo, Japan
2:45pm	ALE1-TuA-6 Development Plasma-Based Atomic Layer Etching of Zinc Oxide by Using Tetrafluoromethane Plasma and Dimethylaluminum Chloride, <i>Chien-Wei Chen, C. Chang</i> , Taiwan Instrument Research Institute, National Applied Research Laboratories, Taiwan; <i>Y. Jhang</i> , Taiwan Instrument Research Institute, National Applied Research Laboratories, Hsinchu, Taiwan
3:00pm	INVITED: ALE1-TuA-7 Resistive Capillary Array Calorimetry Method for ALD and ALE Processes, <i>Anil Mane, J. Elam</i> , Argonne National Laboratory, USA
3:15pm	
3:30pm	BREAK & EXHIBITS
3:45pm	
4:00pm	INVITED: ALE2-TuA-11 Atomic Layer Etching at Cryogenic Temperature, <i>Thomas Tillocher, G. Antoun, J. Nos</i> , GREMI CNRS/Orleans University, France; <i>C. Cardinaud, A. Girard</i> , IMN CNRS/Nantes University, France; <i>P. Lefauchoux, R. Dussart</i> , GREMI CNRS/Orleans University, France
4:15pm	
4:30pm	ALE2-TuA-13 SiO ₂ ALE based on High Boiling Point Fluorocarbon Physisorption, <i>Dain Sung, G. Yeom, H. Tak, D. Kim</i> , Sungkyunkwan University, Republic of Korea
4:45pm	ALE2-TuA-14 Cryogenically Cooled, Saturating Quasi-ALE of Silicon Nitride, <i>Frank Greer, D. Shanks, R. Ahmed, J. Femi-Oyetoro, A. Beyer</i> , Jet Propulsion Laboratory (NASA/JPL)
5:00pm	INVITED: ALE2-TuA-15 High Throughput SiN ALE and Its Damage Control, <i>Akiko Hirata</i> , Sony Semiconductor Solutions Corporation, Japan
5:15pm	

**Atomic Layer Etching
Session ALE1-TuA
Plasma and Energy-Enhanced ALE
Moderators:**
Paul Abel, Tokyo Electron America, Inc.,
Jane P. Chang, University of California, Los Angeles

**Atomic Layer Etching
Session ALE2-TuA
Low-Temperature and SiN ALE
Moderators:**
Xiao Hu, Chemnitz University of Technology, Fraunhofer
Institute for Electronic Nano Systems, Germany,
Kazunori Shinoda, Hitachi, Ltd., Japan

Tuesday Afternoon, July 25, 2023

Room Grand Ballroom E-G		
1:30pm	AF1-TuA-1 Plasma Enhanced Atomic Layer Deposition of Silicon Carbonitride, <i>S. Johnson, T. Yang</i> , University of Texas at Austin; <i>J. Zhao, T. Iwao, C. Schlechte, J. Carroll, G. Blankemeyer, P. Ventzek</i> , Tokyo Electron America Inc.; <i>J. Resasco, G. Hwang, John Ekerdt</i> , University of Texas at Austin	ALD Fundamentals Session AF1-TuA Plasma ALD I Moderators: Erwin Kessels , Eindhoven University of Technology, Netherlands, Christophe Vallee , SUNY POLY, Albany
1:45pm	AF1-TuA-2 Boron-Carbon Thin Films Deposited via PE-ALD, <i>Neil Richard Innis, C. Marichy, C. Bousige, C. Journet</i> , Laboratoire des Multimateriaux et Interfaces, UMR CNRS 5615, France	
2:00pm	AF1-TuA-3 Area-Selective Atomic Layer Deposition of Silicon Nitride for Nand Flash Memory with a Very High-Frequency Plasma Source, <i>Min-Jeong Rhee</i> , Ajou University, Republic of Korea; <i>W. Lee</i> , Pukyong National University, Republic of Korea; <i>I. Oh</i> , Ajou University, Republic of Korea	
2:15pm	AF1-TuA-4 ALD of Transition Metal Chalcogenide TaS _x Using TBTDMT Precursor and H ₂ S Plasma, <i>Sanne Deijkers, H. Thepass</i> , Eindhoven University of Technology, The Netherlands; <i>H. Sprey, J. Maes</i> , ASM Belgium; <i>E. Kessels, A. Mackus</i> , Eindhoven University of Technology, The Netherlands	
2:30pm	AF1-TuA-5 High Deposition Rate NbN and TiN for Superconducting Resonators for Quantum Devices by PEALD, <i>Louise Bailey, D. Besprozvanny</i> , Oxford Instruments Plasma Technology, UK; <i>R. Renzas</i> , Oxford Instruments Plasma Technology; <i>H. Knoops</i> , Oxford Instruments Plasma Technology, Netherlands; <i>M. Powell</i> , Oxford Instruments Plasma Technology, UK	
2:45pm	AF1-TuA-6 PEALD Black TiO ₂ , <i>S. Berriel, Terrick McNealy-James, B. Butkus, T. Currie, C. Chen, L. Shultz, C. Feit, K. Davis, T. Jurca, P. Banerjee</i> , University of Central Florida	
3:00pm	AF1-TuA-7 Optimizing for the Neutral Radicals in Plasma Enhanced ALD, <i>Lauren Otto</i> , Laminera	
3:15pm	AF1-TuA-8 SiO ₂ Electron-Enhanced Atomic Layer Deposition (EE-ALD) at Low Temperature Using Disilane and Ozone or Water as Reactants, <i>J. Gertsch, Z. Sobell, A. Cavanagh</i> , University of Colorado Boulder; <i>H. Simka</i> , Samsung Semiconductor, Inc.; <i>Steven George</i> , University of Colorado Boulder	
3:30pm	BREAK & EXHIBITS	
3:45pm		
4:00pm	AF2-TuA-11 Electron-Enhanced ALD and CVD at Low Temperature Using Reactive Background Gas, <i>Zachary Sobell, S. George</i> , University of Colorado at Boulder	ALD Fundamentals Session AF2-TuA Plasma ALD II Moderators: Christophe Detavernier , Ghent University, Belgium, Harm C.M. Knoops , Oxford Instruments Plasma Technology, Netherlands
4:15pm	AF2-TuA-12 ALD of Multicomponent Films Using Precursor Co-Dosing, <i>Paul Poedt</i> , Eindhoven University of Technology, The Netherlands	
4:30pm	AF2-TuA-13 Controlling the Nucleation and Growth in Atomic Layer Deposition of Ruthenium: The Role of Surface Diffusion, <i>Amnon Rothman, A. Werbrouck, S. Bent</i> , Stanford University	
4:45pm	AF2-TuA-14 Combining Atomic Layer Deposition Routes and Solvothermal Conversion: Towards Access to Layer Stacking of Porphyrin-Based Mofs, <i>B. Gikonyo, Catherine Marichy, S. Forel, A. Fateeva</i> , Laboratoire des Multimateriaux et Interfaces, CNRS/Université Claude Bernard Lyon 1, France	
5:00pm	AF2-TuA-15 Effect of Purging Time on Interface Quality and Interfacial Polarization Mechanism in Atomic Layer Deposited Al ₂ O ₃ /TiO ₂ Nanolaminates for High-Density Energy Storage Applications, <i>Partha Sarathi Padhi</i> , Raja Ramanna Centre for Advanced Technology, Indore, India	
5:15pm	AF2-TuA-16 Crystal Phase Transition of Atomic Layer Deposited Antimony Telluride Thin Films with Thickness and Substrate-Dependent Orientations, <i>Sangyoon Lee, J. Seo, I. Sohn</i> , Yonsei University, Korea; <i>Y. Kang, C. Lee, W. Yang</i> , Samsung Advanced Institute of Technology, Republic of Korea; <i>S. Chung, H. Kim</i> , Yonsei University, Korea	

Tuesday Afternoon, July 25, 2023

Room Grand Ballroom H-K		
1:30pm	AA1-TuA-1 Novel Phosphite Doping into ALD SiO ₂ to Improve H ⁺ and H ₂ Permeability in Water Electrolyzers, <i>Sara Harris</i> , <i>M. Weimer</i> , Forge Nano; <i>K. Yim</i> , <i>L. Cohen</i> , <i>D. Esposito</i> , Columbia University; <i>A. Dameron</i> , Forge Nano	ALD Applications Session AA1-TuA Energy: Catalysis and Fuel Cells Moderators: Chang-Yong Nam , Brookhaven National Laboratory, Ruud van Ommen , Delft University of Technology, Netherlands
1:45pm	AA1-TuA-2 Stabilization of ALD-grown Iridium Species for the OER Activity, <i>Muhammad Hamid Raza</i> , Humboldt-Universität zu Berlin, 2-Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (HZB), Germany; <i>M. Frisch</i> , <i>R. Kraehnert</i> , Department of Chemistry, Technische Universität Berlin, Germany; <i>N. Pinna</i> , Institut für Chemie and IRIS Adlershof, Humboldt-Universität zu Berlin, Germany	
2:00pm	AA1-TuA-3 Atomic Layer Deposited Nickel Sulfide as a (Pre)Catalyst for Oxygen Evolution Reaction, <i>Miika Mattinen</i> , <i>T. Hatanpää</i> , <i>K. Mizohata</i> , University of Helsinki, Finland; <i>S. Bent</i> , Stanford University; <i>M. Ritala</i> , University of Helsinki, Finland	
2:15pm	AA1-TuA-4 Surface Texture Design of Pt/C Catalyst to Enhance Oxygen Reduction Reaction by FBR-ALD, <i>Ji-Hu Baek</i> , <i>M. Jung</i> , <i>S. Lee</i> , <i>S. Kwon</i> , Pusan National University, Republic of Korea	
2:30pm	AA1-TuA-5 Atomic Layer Deposition of Copper Catalysts for Electrochemical Recycling of Carbon Dioxide, <i>Julia D. Leneff</i> , <i>S. Lee</i> , <i>K. Fuelling</i> , <i>K. Rivera Cruz</i> , University of Michigan, Ann Arbor; <i>A. Prajapati</i> , <i>C. Hahn</i> , Lawrence Livermore National Laboratory; <i>C. McCrory</i> , <i>N. Dasgupta</i> , University of Michigan, Ann Arbor	
2:45pm	AA1-TuA-6 Stability of Molecular Layer Deposited (MLD) Alucone in Acetonitrile for Photoelectrochemical CO ₂ Reduction Applications, <i>Hyuenwoo Yang</i> , North Carolina State University, Republic of Korea; <i>H. Margavio</i> , <i>L. Keller</i> , <i>G. Parsons</i> , North Carolina State University	
3:00pm	AA1-TuA-7 Enhanced Green Hydrogen Production Using ALD-based Catalysts for Ammonia Decomposition, <i>Yu-Jin Lee</i> , <i>H. Sohn</i> , <i>H. Jeong</i> , <i>S. Nam</i> , Korea Institute of Science and Technology (KIST), Republic of Korea; <i>J. Park</i> , Seoul National University, Republic of Korea; <i>Y. Kim</i> , Korea Institute of Science and Technology (KIST), Republic of Korea	
3:15pm	AA1-TuA-8 Atomic Layer Deposited Silver Catalysts for Anion Exchange Membrane Fuel Cells, <i>Gwon Deok Han</i> , <i>H. Han</i> , <i>F. Prinz</i> , Stanford University; <i>J. Shim</i> , Korea University, Republic of Korea	
3:30pm	BREAK & EXHIBITS	
3:45pm		
4:00pm	INVITED: AA2-TuA-11 Unfolding the Challenges to Prepare Epitaxial Complex Oxide Membranes by Chemical Methods, <i>Mariona Coll</i> , <i>P. Salles</i> , ICMAB-CSIC, Spain	ALD Applications Session AA2-TuA Emerging Materials Moderators: Joel Molina Reyes , Instituto Nacional de Astrofísica, Óptica y Electrónica (INAOE), Mexico, Tero Pilvi , Picosun Oy, Finland
4:15pm		
4:30pm	AA2-TuA-13 Tailoring Lattice Match by Cation Substitution in a Functional Ternary Oxide, <i>M. Rogowska</i> , <i>L. Rykkje</i> , <i>Henrik Sønsteby</i> , University of Oslo, Norway	
4:45pm	AA2-TuA-14 <i>In situ</i> Atomic Layer Doping of Epitaxially Grown β-Ga ₂ O ₃ Films via Plasma-enhanced ALD at 240 °C, <i>Saidjafarzoda Ilhom</i> , University of Connecticut; <i>A. Mohammad</i> , <i>N. Ibrahimli</i> , <i>J. Grasso</i> , <i>B. Willis</i> , University of Connecticut; <i>A. Okyay</i> , Stanford University; <i>N. Biyikli</i> , University of Connecticut	
5:00pm	AA2-TuA-15 Plasma Enhanced Atomic Layer Deposition of Niobium Nitride for Scalable Quantum Device Fabrication, <i>Yi Shu</i> , Oxford Instruments Plasma Technology, UK; <i>C. Lennon</i> , University of Glasgow, UK; <i>Z. Ren</i> , Oxford Instruments Plasma Technology, UK; <i>H. Knoops</i> , Oxford Instruments Plasma Technology, UK, Eindhoven University of Technology, Netherlands; <i>F. Morini</i> , <i>A. Kurek</i> , <i>T. Hemakumara</i> , Oxford Instruments Plasma Technology, UK; <i>R. Hadfield</i> , University of Glasgow, UK	
5:15pm	AA2-TuA-16 Superconducting NbN Thin Films Deposited by Plasma Enhanced Atomic Layer Deposition, <i>Jakob Zessin</i> , SENTECH Instruments GmbH, Germany; <i>M. Hagel</i> , <i>T. Reindl</i> , <i>L. Freund</i> , SF Nanostructuring Lab, Max Planck Institute for Solid State Research, Germany; <i>P. Plate</i> , SENTECH Instruments GmbH, Germany; <i>J. Weis</i> , SF Nanostructuring Lab, Max Planck Institute for Solid State Research, Germany	

Tuesday Afternoon, July 25, 2023

Room Regency Ballroom A-C		
1:30pm	AS1-TuA-1 The Role of Co-Reactant Reactivity and Surface Passivation During Cu-Doping of NiO ALD, Matthias Minjauw , Ghent University, Belgium; B. Vermeulen , Ferroelectric Memory Company, Germany; A. Illiberi , ASM, Belgium; V. Sharma , ASM Microchemistry Ltd., Finland; M. Givens , ASM, Belgium; J. Dendooven , C. Detavernier , Ghent University, Belgium	Area Selective ALD Session AS1-TuA Polymers Moderator: Han-Bo-Ram Lee , Incheon National University, Republic of Korea
1:45pm	AS1-TuA-2 Elucidating the Role of Functional Groups of Ligands for Selective Metal Blocking via Vapor-Phase Sam Deposition, Chandan Das , Applied Materials Inc., Singapore; B. Bhuyan , Applied Materials Inc.; Z. Li , J. Wu , National University of Singapore; J. Sudijono , Applied Materials Inc., Singapore; M. Saly , Applied Materials Inc.	
2:00pm	AS1-TuA-3 Integrating Area-Selective Ald with Electrohydrodynamic-Jet Printing to Enable Additive Nanomanufacturing, Tae Cho , N. Farjam , T. Newsom , C. Allemang , R. Peterson , K. Barton , N. Dasgupta , University of Michigan, Ann Arbor	
2:15pm	AS1-TuA-4 Enhanced ALD Nucleation on Polymeric Separator for Improved Li Batteries, Giulio D'Acunto , S. Shuchi , M. Mattinen , S. Bent , Stanford University	
2:30pm	AS1-TuA-5 Surface-Initiated Polymers: A Versatile Platform for Area Selective Atomic Layer Deposition, Thomas Pattison , N. Arellano , H. Bui , T. Topuria , E. Lofano , E. Delenia , R. Wojtecki , IBM Research Division, Almaden Research Center	
2:45pm	AS1-TuA-6 Self-Aligned Patterning by Area-Selective Etching of Polymers and ALD, V. Lasonen , C. Zhang , M. Vehkamäki , A. Vihervaara , University of Helsinki, Finland; L. Mester , attocube systems AG, Germany; M. Karimi , AlixLabs AB, Sweden; Y. Ilarinova , AlixLabs, Sweden; R. Jafari Jam , J. Sundqvist , AlixLabs AB, Sweden; Mikko Ritala , University of Helsinki, Finland	
3:00pm	AS1-TuA-7 Area-Selective Dielectric-on-Metal Deposition for CFET Fabrication Enabled by Plasma Polymer Passivation, Mikhail Krishtab , T. Conard , S. Armini , IMEC, Belgium	
3:15pm	AS1-TuA-8 Improved Metal Selectivity via Inherent Orthogonal ASD: Polymer ASD Improves Nucleation Inhibition for Metal ASD, Hwan Oh , North Carolina State University, Republic of Korea; H. Margavio , North Carolina State University; H. Yang , North Carolina State University, Republic of Korea; G. Parsons , North Carolina State University	
3:30pm	BREAK & EXHIBITS	
3:45pm		
4:00pm	NS-TuA-11 Chemical Vapor Functionalization of Polymer Membranes for Water Treatment, Jeffrey Elam , A. Mane , R. Pathak , R. Shevate , V. Rozyyev , Argonne National Laboratory	Nanostructure Synthesis and Fabrication Session NS-TuA Nanostructures and Membranes Moderators: Christian Dussarat , Air Liquide Laboratories, Japan, Michelle Paquette , University of Missouri-Kansas City
4:15pm	NS-TuA-12 The Molecular Structure of Desalination Polyamides Made by Molecular Layer Deposition, Brian Welch , Technion, Israel; E. Antonio , T. Chaney , O. McIntee , University of Colorado at Boulder; J. Strzalka , Argonne National Laboratory; V. Bright , A. Greenberg , M. Toney , University of Colorado at Boulder; T. Segal-Peretz , Technion, Israel; S. George , University of Colorado at Boulder	
4:30pm	NS-TuA-13 Deposition of an Atomic Layer Inside Microfluidic Channel, Albert Santoso , J. van Ommen , V. van Steijn , M. David , Y. Hounat , R. Zheng , N. Wijers , J. de Roeck , TU Delft, Netherlands	
4:45pm	NS-TuA-14 Tunable and Scalable Synthesis of ZnO Nanostructures using ALD Seed Layers, Alondra M. Ortiz-Ortiz , A. Gayle , J. Wang , D. Delgado , D. Penley , H. Faustyn , K. Fuelling , University of Michigan, Ann Arbor; A. Bielinski , Argonne National Laboratory; C. Sherwood , N. Dasgupta , University of Michigan, Ann Arbor	
5:00pm	NS-TuA-15 Block Copolymer Templated HfOx Nanowires – From Fundamental Understanding to Rational Design, Ruoke Cai , T. Segal-peretz , Technion, Israel	
5:15pm	NS-TuA-16 Compressible Polymer Sponge Electrodes via oMLD of PEDOT onto Polyurethane Sponge Supports, Mahya Mehregan , G. Luebbert , K. Brathwaite , Q. Wyatt , E. Thom , D. Stalla , M. Young , University of Missouri	

ALD Applications

Room Evergreen Ballroom & Foyer - Session AA-TuP

ALD Applications Poster Session

5:45pm

AA-TuP-1 Improved Properties of the SrRuO₃ Electrode by Controlling Annealing Conditions and Adopting Al-doping, **Junil Lim, C. Hwang**, Seoul National University, Republic of Korea

AA-TuP-2 Yttrium-doping in TiO₂ Films for DRAM Capacitor Applications, **Tae Kyun Kim, C. Hwang**, Seoul National University, South Korea

AA-TuP-3 Non-Diffusive Phenomenon of Al and Y Doping in the ZrO₂/Al₂O₃ and ZrO₂/Y₂O₃ Bilayer Thin-Films and Its Influence on the Field-Induced Ferroelectric Properties, **Haengha Seo, J. Shin, J. Lim, T. Kim, H. Paik, C. Hwang**, Seoul National University, Republic of Korea

AA-TuP-4 Promoted Crystallization of SrTiO₃ Thin Film for DRAM Capacitor by Inserting GeO_x Buffer Layer in Ru/SrTiO₃/RuO₂ Capacitor, **Heewon Paik, C. Hwang**, Seoul National University, Korea

AA-TuP-5 Laterally Resolved LEIS for Surface Coverage Analysis in Porous Materials, **Thomas Grehl, P. Brüner**, IONTOF GmbH, Germany; **S. Saedy**, Chemical Engineering Department, Delft University of Technology, Netherlands; **J. Järvillehto, C. Gonsalves, J. Velasco**, Department of Chemical and Metallurgical Engineering, Aalto University, Finland; **J. van Ommen**, Chemical Engineering Department, Delft University of Technology, Netherlands; **R. Puurunen**, Department of Chemical and Metallurgical Engineering, Aalto University, Finland

AA-TuP-6 Group III-Nitride Semiconductor Materials Made by Plasma Atomic Layer Deposition, **Noureddine Adjeroud**, Luxembourg Institute of Science and Technology (LIST), Luxembourg

AA-TuP-7 High-Temperature High-GPC SiO₂ Gap-Filling by Thermal ALD Using Novel Si Precursors, **Wonyong Koh, J. Kim, B. Kim, J. Choi**, UP Chemical Co., Ltd., Republic of Korea

AA-TuP-8 Low Toxicity Electron Transport Layer of Atomic Layer Deposited TiO₂ and SnO₂ for Sb₂S₃ Thin Film Solar Cells, **Yong Tae Kim, P. Pawar, J. Heo**, Chonnam National University, Republic of Korea

AA-TuP-9 Molecular Layer Deposition of Lithium-Containing Polymeric Coatings for Superior Lithium Metal Batteries, **Xin Wang, X. Meng**, University of Arkansas

AA-TuP-10 Suppression of Interfacial Layer Formation in ZrO₂-Based Capacitors with TiN Electrode by Adopting MgO Thin Films as an Oxygen Diffusion Barrier, **Seungwoo Lee, D. Han, H. Seol, M. Nam**, Kyung Hee University, Republic of Korea; **D. Kim, H. Oh, H. Kim, Y. Park**, SK Trichem, Republic of Korea; **W. Jeon**, Kyung Hee University, Republic of Korea

AA-TuP-11 Improvement in Dielectric Properties of ZrO₂ Thin Film by Employing Thermal Stability Enhanced Zr Precursor in High-Temperature Atomic Layer Deposition, **Yoona Choi, A. Lee**, Kyunghee univ., Republic of Korea; **H. Oh, Y. Park**, SK trichem, Republic of Korea; **W. Jeon**, Kyunghee univ., Republic of Korea

AA-TuP-12 Enhancing the Electrical Characteristics of ZrO₂-TiSiN Based MIM Capacitor by Introducing Y₂O₃ Inserting Layer, **JongHwan Jeong, A. Lee, W. Jeon**, Kyung Hee University, Republic of Korea

AA-TuP-13 Atomic Layer Deposited Vanadium Oxides with Various Crystallinity for Uncooled IR Sensor Application, **Hyeon Ho Seol**, Kyung Hee University, Republic of Korea; **S. Lee, W. Jeon**, Kyung Hee university, Republic of Korea

AA-TuP-14 Self-Isolation Electrode Formation by Selective Deposition Behavior of MoO₂/MoO₃ Thin Films by Atomic Layer Deposition, **Yewon Kim, J. Park**, Kyunghee university, Korea; **S. Moon, T. Youn, Y. Jung, E. Han, Y. Jang, M. Lee, SK Hynix**, Korea; **W. Jeon**, Kyunghee university, Korea

AA-TuP-15 Formation of Mo Thin Film from ALD-Mo₂N Using Subsequent Reduction Process with Introducing a Mechanical Strain Applying Layer, **Jeong Hyeon Park, Y. Kim, W. Jeon**, Kyunghee university, Republic of Korea

AA-TuP-16 Novel Cyclopentadienyl-Based Yttrium Precursor for Atomic Layer Deposition of Y₂O₃ Thin Films, **Han Sol Oh, H. Kim**, SK Trichem Co. Ltd, Republic of Korea; **S. Lee, Y. Ryu, W. jeon**, Kyung Hee University, Republic of Korea; **Y. Park**, SK Trichem co. ltd, Republic of Korea

AA-TuP-17 Novel Amidinate-Based Yttrium Precursor for Atomic Layer Deposition of Y₂O₃ Thin Films, **Hanbyul Kim, H. Oh**, SK Trichem Co. Ltd., Republic of Korea; **S. Lee, Y. Ryu, W. jeon**, Kyung Hee University, Republic of Korea; **Y. Park**, SK Trichem Co. Ltd., Republic of Korea

AA-TuP-18 Tailoring the Surfaces of Atomic Layer Deposited Metal Oxides for Metal Ion Removal from Aqueous Solutions, **Vepa Rozyyev, R. Pathak, R. Shevate, A. Mane, J. Elam**, Argonne National Laboratory, USA

AA-TuP-19 On the Origin of Negative Fixed Charges at the SiO₂/ALD-Al₂O₃ interface, **Daniel Hiller**, Institute of Applied Physics (IAP), TU Bergakademie Freiberg, Germany; **D. König**, Integrated Materials Design Lab (IMDL), Australian National University (ANU), Canberra, Australia

AA-TuP-20 ALD for Lead-Free Microchannel Plate Fabrication: Optimization of the Thermal Coefficient of Resistance by Modification of the Resistive Layer, **Stefan Cwik, M. Aviles, S. Clarke, M. Foley, C. Hamel, A. Lyashenko, M. Popecki, D. Mensah, S. Shin, M. Stochaj**, Incom Inc.; **A. Mane, J. Elam**, Argonne National Laboratory, USA; **A. Tremsin, O. Siegmund**, UC Berkeley; **M. Minot**, Incom Inc.

AA-TuP-21 New Secondary Electron Emissive Technologies for MCP-PMTs: Optimization of Water and CO₂ Adsorption on Microchannel Plate Surfaces, **Melvin Aviles, S. Clarke, Incom, Inc; S. Cwik, M. Foley, C. Hamel, A. Lyashenko, M. Popecki, D. Mensah, S. Shin, M. Stochaj**, Incom, Inc.; **A. Mane, J. Elam**, Argonne National Laboratory, USA; **M. Minot**, Incom, Inc.

AA-TuP-22 Three-Dimensional Microwave Resonators for Compact Mid- and Far-Infrared Microwave Kinetic Inductance Detector Arrays, **Christine Jhabvala, T. Stevenson, J. Glenn**, NASA Goddard Space Flight Center

AA-TuP-23 ALD-based Catalysts with TiO₂ Interlayer for Ammonia Decomposition and LOHC Dehydrogenation Reactions, **Yu-Jin Lee**, Korea Institute of Science and Technology (KIST), Republic of Korea; **Y. Kwak**, University of Delaware; **S. Moon**, Ecole Polytechnique Fédérale de Lausanne, Switzerland; **H. Sohn, H. Jeong, S. Nam, Y. Kim**, Korea Institute of Science and Technology (KIST), Republic of Korea

AA-TuP-24 A Co-Design Approach to Optimize Neuromorphic Architectures for High Temperature Computing Integrating Novel ALD Materials, **Angel Yanguas-Gil, S. Madireddy, J. Elam, A. Mane**, Argonne National Laboratory

AA-TuP-25 Forming Voltage-Free Memristive Hafnium Oxide Devices for Non-Polar Switching Applications, **Minjong Lee, Y. Hong, J. Kim, H. Hernandez-Arriaga**, University of Texas at Dallas; **R. Choi**, Inha University, Republic of Korea; **J. Kim**, University of Texas at Dallas

AA-TuP-26 Impact of Oxygen Source and Cocktail Precursor on Ferroelectricity of ALD Hf_xZr_{1-x}O₂ Thin Films, **Jin-Hyun Kim, Y. Jung, M. Lee, D. Le, S. Lee**, University of Texas at Dallas; **J. Spiegelman, M. Benham**, RASIRC; **S. Kim**, Kangwon University, Republic of Korea; **R. Choi**, Inha University, Republic of Korea; **J. Kim**, University of Texas at Dallas

AA-TuP-27 Conduction Mechanism of ZrO₂-based Nano-laminates Structure for Suppressing the Leakage Current, **Seung Won Lee, J. Ahn**, Hanyang University, Republic of Korea

AA-TuP-28 High Gain CMOS inverter with Monolithic FinFET and Vertically-Stacked Hybrid IWZO TFT, **Dun-Bao Ruan**, Fuzhou University, China; **K. Chang-Liao, P. Chiu**, National Tsing Hua University, Taiwan

AA-TuP-29 Multifunctional Carbon Textile Prepared by Carbothermic Reduction for Energy Materials, **D. Lam, J. Kim, Seung-Mo Lee**, Korea Institute of Machinery and Materials (KIMM), Republic of Korea

AA-TuP-30 High-Responsivity Plasmon Thin Film Transistor of Nanolaminated Al₂O₃/ZnO/HfO₂ Channel, **Tsong-Sheng Lay, Y. Sow, S. Huang**, National Chung Hsing University, Taiwan

AA-TuP-31 Comparison between Doped and Undoped Ferroelectric HfO₂, **Liliane Alrifai, E. Skopin, N. Guillaume, P. Gonon, A. Bsiesy**, Univ. Grenoble Alpes, CNRS, LTM, France

AA-TuP-32 Control of the Electrical Resistivity and Stress of ALD W for 3d Nand Word Line Applications, **Donguk Kim, C. Suh, I. Sung, W. Choi, S. Jin, C. Kim**, SK Hynix, Korea (Democratic People's Republic of)

AA-TuP-33 Low-Temperature Atomic Layer Deposition of Indium Oxide and Tin Doped Indium Oxide using Ozone, **Huazhi Li, D. Gorelikov**, Arradiance LLC.; **A. Agrawal, W. Zhu**, NIST

AA-TuP-34 Thin Titanium Oxynitride Film as Alternative to ITO for Optoelectronic Devices, **Clemence Badie**, Eindhoven University of Technology, The Netherlands; **V. Astie, J. Decams**, Annealsys SAS, France; **B. Sciacca, O. Margeat, L. Santinacci**, Aix-Marseille University, France

AA-TuP-35 Nanolaminates Layer Deposition Prevents Crack Formation on Plastic Substrates using Plasma Enhanced Atomic Layer Deposition, **C. kuo, Duy Thanh Cu**, National Central University, Taiwan

AA-TuP-36 Advanced LiNi_{0.8}Mn_{0.1}Co_{0.1}O₂ Cathodes by Sulfide Coating via Atomic Layer Deposition, **Xin Wang, X. Meng**, University of Arkansas

AA-TuP-37 Improved Performance of Li||Nmc Batteries by a Novel Polymeric Coating via Molecular Layer Deposition, *Kevin Velasquez Carballo, X. Wang, X. Meng*, University of Arkansas

AA-TuP-39 Resistivity Engineering of Atomic Layer Deposited Tungsten Carbonitride Thin films via Carbon Concentration Control for 3D VXP Electrodes Applications, *Seunggyu Na, T. Kim, S. Park*, Yonsei University, Korea; *M. Kim*, SK Hynix, Korea; *S. Chung, H. Kim*, Yonsei University, Korea

AA-TuP-40 Broadband Anti-Reflective Coatings on Plastic Optics Using Graded Refractive Index Alumina by Atomic Layer Deposition, *Philip Klement, L. Gumbel, I. Müller, J. Schörmann, S. Chatterjee*, Justus Liebig University Giessen, Germany

AA-TuP-41 Revelation of Ferroelectricity of ALD ZrO₂ Thin Films through a Trace of Ge Incorporation, *Seonyeong Park, S. Na*, Yonsei University, Korea; *W. Choi, B. Kim, C. Jung, H. Lim*, Samsung Electronics Co., Inc., Republic of Korea; *S. Chung, H. Kim*, Yonsei University, Korea

AA-TuP-42 The Role of the Crystal Potential in the Formation of Minigaps in Vicinal 2D Superlattices, *Victor Petrov*, Institute of Radio Engineering and Electronics Russian Academy of Sciences, Russian Federation

AA-TuP-43 Atomic Layer Deposited TiN Capping Electrode for sub-10 nm Hf_{0.5}Zr_{0.5}O₂ Gate Oxide in Ferroelectric Transistors with 8 nm Gate Length Defined by Helium Ion Beam Lithography, *Yu-Sen Jiang, C. Wang, T. Chang, Z. Huang, M. Chen*, National Taiwan University, Taiwan

AA-TuP-45 Metal Oxide ALD Overlayers Enhance Thermal Stability and Activity of Platinum Catalysts in Propene Oxidation Reaction, *Bang T. Nhan, S. Bent*, Stanford University

AA-TuP-46 ALD for Spatial Control of Redox Reaction Selectivity, *Wilson McNearry*, National Renewable Energy Laboratory; *W. Stinson, D. Esposito*, Columbia University; *K. Hurst*, National Renewable Energy Laboratory

AA-TuP-47 Influence of Oxygen Source on Ferroelectricity of ALD-Hf_{0.5}Zr_{0.5}O₂ Thin Films With and Without Capping Layer, *Hye Ryeon Park*, Kangwon National University, Republic of Korea; *S. Park*, Kangwon National university, Republic of Korea; *J. Kang*, Kangwon National University, Republic of Korea; *J. Kim, Y. Jung, J. Kim*, The University of Texas at Dallas; *S. Kim*, Kangwon National University, Republic of Korea

AA-TuP-48 The Optimizing Mobility-stability Trade-off by Vertically Stacked IGZO/GZO TFT with Controlling of Indium-free GZO Layer via PEALD, *Hye-Jin Oh, Y. Kim, J. Park*, Hanyang University, Korea

AA-TuP-49 ALD/MLD Protective Coatings for Nickel-rich NMC811 Cathodes, *Konstantin Egorov, W. Zhao*, EMPA (Swiss Federal Laboratories for Materials Science and Technology), Switzerland; *A. Giraldo, K. Knemeyer, A. Filippin*, BASF Schweiz AG, Switzerland; *C. Battaglia*, EMPA (Swiss Federal Laboratories for Materials Science and Technology), Switzerland

AA-TuP-50 Interface Engineering of Porous Cathodes by Spatial ALD for Improved Cycle Retention in Liquid Electrolyte, *Diana Chaykina, N. Huijssen, W. Manders, F. van den Bruele, A. Kronemeijer, M. Ameen*, TNO/Holst Center, Netherlands

AA-TuP-51 Study of Nb₂O₅ high-k Dielectric Material Deposited by Atomic Layer Deposition for Metal-Insulator-Metal Capacitor, *Kou Ihara, C. Labbé, J. Cardin, C. Frilay, M. Philippe*, CIMAP Normandie Université, France; *M. Leménager*, Murata Integrated Passive Solutions, France

AA-TuP-52 Cathode Electrolyte Interphase Development and Residual Lithium Compound Removal via Chemical Vapor Treatment on Nickel-Rich Cathode, *Rajesh Pathak, V. Rozyyev, A. Mane, J. Elam*, Argonne National Laboratory, USA

AA-TuP-53 Pt-Al₂O₃ Metamaterial with Tunable Resistivity, *Ritwik Bhatia*, Veeco Instruments Inc.

AA-TuP-54 Effect of Ar Purge Step Condition on PEALD-TiN Film Properties, *Ju Eun Kang, S. An, S. Hong*, Myongji University, Republic of Korea

AA-TuP-55 Probing the Structural and Chemical Evolution of Interfacial SiO_x Layers Formed During ALD and Post-Deposition Processing, *Ben M. Garland, N. Strandwitz*, Lehigh University

AA-TuP-56 Evaluation of Encapsulation Characteristics of Si_xN_yO_z Thin Film for OLED, *Sang Yong Jeon, Y. Kwone, S. Lee, T. Byun, Y. Im, S. Lee*, DNF Co. LTD., Republic of Korea

AA-TuP-57 Ultraviolet Bandpass and Wedge Filter ALD Coatings for Astrophysics Instruments, *John Hennessy, R. Rodriguez, A. Jewell*, Jet Propulsion Laboratory (NASA/JPL)

AA-TuP-58 Internal Photoemission (IPE) Spectroscopy Measurement of Interfacial Barriers in Fatigued ALD Ferroelectric Hafnium Zirconium Oxide MFM Devices, *Jessica L. Peterson*, Oregon State University; *T. Mimura, J. Ihlefeld*, University of Virginia; *J. Conley*, Oregon State University

AA-TuP-59 Understanding the Reactions of ALD Precursors on Lithium Metal and Its Application to Lithium Metal Batteries, *Donghyeon Kang, A. Mane, J. Elam*, Argonne National Laboratory

Area Selective ALD

Room Evergreen Ballroom & Foyer - Session AS-TuP

Area Selective ALD Poster Session

Moderator: Han-Bo-Ram Lee, Incheon National University, Republic of Korea

5:45pm

AS-TuP-1 iCVD Polymer as Inhibiting Layer for the Area-Selective ALD of Transparent Conducting Oxide Thin Films, *R. Feougier, C. Guerin, Vincent Jousseau*, Univ. Grenoble Alpes, CEA, LETI, France

AS-TuP-2 Direct Patterning of ZnO Deposition by Atomic-Layer Additive Manufacturing Using a Safe and Economical Precursor, *S. Stefanovic, N. Geshlaghi*, Chemistry of Thin Film Materials, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany; *D. Zanders*, Inorganic Materials Chemistry, Ruhr University Bochum, Germany; *I. Kundrata*, ATLANT 3D Nanosystems, Denmark; *Anjana Devi*, Inorganic Materials Chemistry, Ruhr University Bochum, Germany; *J. Bachmann*, Chemistry of Thin Film Materials, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany

AS-TuP-3 Density Functional Theory Study on the Passivation of Oxides Surfaces by Inhibitor, *Romel Hidayat*, Sejong University, Republic of Korea; *T. Mayangari*, Universitas Pertamina, Indonesia; *K. Khumaini, H. Kim, W. Lee*, Sejong University, Republic of Korea

AS-TuP-4 Selective Deposition on Next-Generation Patterned Carbon/SiO₂ Materials, *Maggy Harake*, Stanford University; *I. Oh*, Ajou University, Korea (Democratic People's Republic of); *S. Bent*, Stanford University

AS-TuP-5 Multi-surface Inhibition for Area Selective Deposition of HfO₂ using Organothiol Inhibitors, *Summal Zoha*, Incheon National University, Republic of Korea; *F. Pieck*, University of Leipzig, Germany; *B. Gu*, Incheon National University, Republic of Korea; *R. Tonner*, University of Leipzig, Germany; *H. Lee*, Incheon National University, Republic of Korea

AS-TuP-6 Thermal Assisted Atomic Layer Deposition of Ruthenium by Ru Precursor and O₂ as a Reactant, *Gagi Tauhidur Rahman*, Graduate School of Advanced Science and Engineering, Hiroshima University, Japan; *Y. Amamiya, K. Uesugi, A. Teramoto*, Research Institute for Nanodevices, Hiroshima University, Japan

AS-TuP-7 Enhanced Deposition Selectivity of High-k Dielectrics by Vapor-Dosed Phosphonic Acid Inhibitors Combined with Selective Lift-Off, *Jeong-Min Lee, W. Kim*, Hanyang University, Republic of Korea

Nanostructure Synthesis and Fabrication

Room Evergreen Ballroom & Foyer - Session NS-TuP

Nanostructures Synthesis and Fabrication Poster Session

5:45pm

NS-TuP-1 Membrane Property Modification for Energy-efficient Membrane Separations via Vapor Phase Infiltration, *Yuri Choe, M. Ong, D. Bergsman*, University of Washington

NS-TuP-2 Stacking 2D Chalcogenides Utilizing ALD, *D. Shin, J. Yang, F. Krahl, Sebastian Lehmann, K. Nielsch*, Leibniz Institute for Solid State and Materials Research, Germany

NS-TuP-3 Stepwise Growth of Crystalline MoS₂ in Atomic Layer Deposition, *A. Cho, S. Ryu, Seong Keun Kim*, Korea Institute of Science and Technology, Republic of Korea

NS-TuP-4 Electrical Properties of ZnO Nanostructures Derived from Sequential Infiltration Synthesis in Self-Assembled Block Copolymer Patterns: Effects of Alumina Priming, *Won-Il Lee, A. Subramanian*, Stony Brook University/Brookhaven National Laboratory; *N. Tiwale, K. Kisslinger*, Brookhaven National Laboratory; *C. Nam*, Brookhaven National Laboratory and State University of New York at Stony Brook

NS-TuP-5 *in-Situ* XPS Analysis for WO₃ Sulfurization Process, *Chan-Yuen Chang, B. Liu*, Taiwan Instrument Research Institute, NARlabs, Taiwan

NS-TuP-6 Water-free SbO_x -ALD-process for Coating Bi_2Te_3 -particles, **Sebastian Lehmann**, F. Mitzscherling, S. He, J. Yang, M. Hantusch, A. Bahrami, K. Nielsch, Leibniz Institute for Solid State and Materials Research, Germany

NS-TuP-7 Reversible Electronic Phase Transition in VO_2 Thin Films and Nanostructures, **Jun Peng**, D. Hensel, Center for Hybrid Nanostructures, Universität Hamburg, Germany; L. Maragno, N. James, Integrated Materials Systems Group, Institute of Advanced Ceramics, Hamburg University of Technology, Germany; C. Heyn, Center for Hybrid Nanostructures, Universität Hamburg, Germany; K. Furlan, Integrated Materials Systems Group, Institute of Advanced Ceramics, Hamburg University of Technology, Germany; R. Blick, R. Zierold, Center for Hybrid Nanostructures, Universität Hamburg, Germany

NS-TuP-8 Fabrication of 2D- SnS_2 Film Using Atomic Layer Deposition and Hydrogen Sulfide Gas Annealing, **Yeonsik Choi**, S. Song, J. Kim, D. Lee, J. Bae, Y. Lee, H. Jeon, Hanyang University, Korea

NS-TuP-9 Novel Technologies for Particle Size Analysis and Particle Identification, **YITZHAK VANEK**, PERSYS; P. GODOY, Teich

NS-TuP-10 Initial Growth of ZnO on Polyacrylate Thin Films: A Comparison between Thermal and Plasma-Enhanced Atomic Layer Deposition, **Lisanne Demelius**, L. Wolfsberger, Graz University of Technology, Austria; M. Blatnik, Brno University of Technology, Czechia; K. Unger, Graz University of Technology, Austria; P. Parlanti, M. Gemmi, Istituto Italiano di Tecnologia, Italy; A. Coclite, Graz University of Technology, Austria

NS-TuP-11 Modulation-Doping of Silicon Nanowires by ALD- AlO_x Monolayers in a SiO_2 -shell, **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; T. Mikolajick, Nanoelectronic Materials Laboratory (NaMLab) gGmbH & 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

Wednesday Morning, July 26, 2023

Room Grand Ballroom A-C	
8:00am	INVITED: ALE1-WeM-1 Plasma-Enhanced Atomic Layer Etching for Metals and Dielectric Materials, <i>Heeyeop Chae</i> , Sungkyunkwan University (SKKU), Republic of Korea
8:15am	
8:30am	ALE1-WeM-3 Controlling the Hole Profile of High Aspect Ratio Structures in Atomic Layer Etching of SiO ₂ by Utilizing Dc-Superposition in Capacitively Coupled Plasmas, <i>Kang-Yi Lin, E. Hirsch, P. Wang</i> , TEL Technology Center, America, LLC, USA
8:45am	ALE1-WeM-4 Damage Analysis of Reactive Ion and Quasi-Atomic Layer Etched Silicon, <i>Amin Karimi</i> , AlixLabs AB, Sweden; <i>M. Alabrash</i> , Lund University, Sweden; <i>R. Jafari Jam</i> , AlixLabs AB, Sweden; <i>D. Lishan</i> , Plasma-Therm LLC; <i>H. Aslan, J. Garnæs</i> , Danish Fundamental Metrology, Denmark; <i>A. Uvarov</i> , Plasma-Therm Europe, France; <i>Y. Ilarionova, D. Suyatin, J. Sundqvist</i> , AlixLabs AB, Sweden; <i>S. Khan</i> , Danish Fundamental Metrology, Denmark; <i>I. Maximov</i> , Lund University, Sweden
9:00am	ALE1-WeM-5 Atomic Layer Etching of SiO ₂ via H ₂ /SF ₆ Plasma and TMA, <i>David Catherall, A. Minnich</i> , California Institute of Technology
9:15am	ALE1-WeM-6 Learnings and Mitigations of Nonuniformity in Oxide Quasi Ale Applied to Contact Patterning, <i>Francois BOULARD, A. RONCO, N. POSSEME</i> , CEA/LETI-University Grenoble Alpes, France
9:30am	ALE1-WeM-7 Adopting a Low Global Warming Potential Fluorocarbon Precursor (C ₆ F ₆) to Atomic Layer Etching of SiO ₂ with Fluorocarbon Plasmas, <i>Inho Seong, Y. You, Y. Lee</i> , Chungnam National University, Republic of Korea; <i>G. Yeom</i> , Sungkyunkwan University, Republic of Korea; <i>S. You</i> , Chungnam National University, Republic of Korea
9:45am	ALE1-WeM-8 Thermal ALE Reactants for Semiconductor Processing, <i>Martin McBriarty</i> , EMD Electronics
10:00am	BREAK & EXHIBITS
10:15am	
10:30am	
10:45am	INVITED: ALE2-WeM-12 Isotropic Plasma-Thermal Atomic Layer Etching of Aluminum Nitride Using SF ₆ Plasma and Al(CH ₃) ₃ , <i>Austin Minnich</i> , Caltech
11:00am	
11:15am	ALE2-WeM-14 Gan Atomic Layer Etching Using SF ₆ and Ar Plasmas Controlled by RFEA and Langmuir Probe Measurements, <i>Remi Dussart</i> , Universite d'Orleans - CNRS, France; <i>L. Hamraoui, T. Zhang, A. Crespi</i> , Universite d'Orleans, France; <i>M. Boufnichel</i> , STMicroelectronics, France; <i>P. Lefauchaux</i> , CNRS, France; <i>T. Tillocher</i> , Universite d'Orleans, France
11:30am	ALE2-WeM-15 Speedy and Smooth Atomic Layer Etching for Silicon Carbide with DC Bias-Pulsing, <i>Julian Michaels</i> , University of Illinois at Urbana-Champaign; <i>N. Deegan</i> , Argonne National Laboratory, USA; <i>Y. Tsaturyan</i> , University of Chicago; <i>R. Renzas</i> , Oxford Instruments; <i>D. Awschalom</i> , University of Chicago; <i>G. Eden</i> , University of Illinois at Urbana-Champaign; <i>J. Heremans</i> , Argonne National Laboratory
11:45am	ALE2-WeM-16 Thermal Atomic Layer Etching of MoS ₂ Films, <i>J. Soares, John Hues</i> , Micron School of Material Science and Engineering, Boise State University; <i>A. Mane, D. Choudhury, S. Letourneau</i> , Applied Materials Division, Argonne National Laboratory; <i>S. Hues</i> , Micron School of Material Science and Engineering, Boise State University; <i>J. Elam</i> , Applied Materials Division, Argonne National Laboratory; <i>E. Graugnard</i> , Micron School of Material Science and Engineering, Boise State University

Atomic Layer Etching Session ALE1-WeM Si and SiO₂ ALE
Moderators:
Austin Minnich, Caltech,
Gregory N. Parsons, North Carolina State University

Atomic Layer Etching Session ALE2-WeM Plasma and Energy-Enhanced ALE
Moderators:
Heeyeop Chae, Sungkyunkwan University (SKKU), Republic of Korea,
Dmitry Suyatin, Lund University, Sweden

Wednesday Morning, July 26, 2023

Room Grand Ballroom E-G		
8:00am	INVITED: AF1-WeM-1 Measuring the Time-Resolved Heat of ALD Surface Reactions, Ashley Bielinski , E. Kamphaus, L. Cheng, A. Martinson, Argonne National Laboratory	ALD Fundamentals Session AF1-WeM In Situ Measurement Moderators: Jolien Dendooven , Ghent University, Belgium, Mikko Ritala , University of Helsinki, Finland
8:15am		
8:30am	AF1-WeM-3 HfO ₂ ALD on Si(111) - A Mechanistic in-Situ Study through Time-resolved APXPS, Rosemary Jones , Lund University, Sweden; G. D'Acunto, Stanford University; P. Shayesteh, Lund University, Sweden; J. Gallet, F. Bournel, F. Rochet, Sorbonne Universite, France; I. Pinsard, Lund University, Sweden; A. Head, Brookhaven National Laboratory; J. Schnadt, Lund University, Sweden	
8:45am	AF1-WeM-4 In Situ Reflection High Energy Electron Diffraction Investigations of Epitaxial Growth and Crystallization of Gallium Oxide Thin Films, Alexandra Howzen , N. Strandwitz, Lehigh University	
9:00am	AF1-WeM-5 Surface and Film Stress during ALD of Al ₂ O ₃ and ZnO: <i>In Situ</i> Measurements Using Wafer Curvature Techniques, Ryan B. Vanfleet , E. Sorinto, A. Cavanagh, V. Bright, S. George, University of Colorado at Boulder	
9:15am	AF1-WeM-6 Chemisorption Mechanisms of Aminosilane Precursors during ALD of SiO ₂ : <i>in situ</i> Characterization and ab initio Study, Khabib Khumaini , H. Son, H. Roh, O. Kim, R. Hidayat, H. Kim, W. Lee, Sejong University, Republic of Korea	
9:30am	INVITED: AF1-WeM-7 Seeing It Happen: Insights Into the Surface Chemistry of HfO ₂ and TiO ₂ ALD from <i>Operando</i> Ambient Pressure X-ray Photoelectron Spectroscopy, Joachim Schnadt , Lund University, Sweden	
9:45am		
10:00am	BREAK & EXHIBITS	
10:15am		
10:30am		
10:45am	AF2-WeM-12 Preparation and Characterization of Well-Defined Mixed-Oxide and Metal-Oxide Interfaces in Porous Catalysts using ALD, Francisco Zaera , Department of Chemistry	ALD Fundamentals Session AF2-WeM High Aspects Moderators: Henrik Pedersen , Linköping University, Sweden, Riikka Puurunen , Aalto University, Finland
11:00am	AF2-WeM-13 A Toolbox for Characterization of Film Penetration Depth in High Aspect Ratio Structures, Anish Philip , M. Utriainen, J. Kinnunen, P. Hyttinen, Chipmetrics Ltd, Finland; V. Korpelainen, B. Sauvet, VTT Technical Research Centre of Finland; W. Kessels, M. Poll, B. Macco, Eindhoven University of Technology, The Netherlands	
11:15am	AF2-WeM-14 Understanding Process Parameters of ALD on Silica Aerogels and Their Effects on Mechanical Properties, Victor Vogt , A. Gayle, Z. Berquist, A. Manon, A. Lenert, N. Dasgupta, University of Michigan	
11:30am	INVITED: AF2-WeM-15 Tuning Properties of ZnO Deposited via ALD for Applications in Sensing and Porous Material Development, Anna Maria Coclite , Graz University of Technology, Austria	
11:45am		

Wednesday Morning, July 26, 2023

Room Grand Ballroom H-K		
8:00am	INVITED: AA1-WeM-1 3D Integrated Device Applications of ALD-Grown Ferroelectric and Oxide-Semiconductor Materials, <i>Masaharu Kobayashi</i> , University of Tokyo, Japan	ALD Applications Session AA1-WeM Memory RRAM, Neuromorphic, NVM Moderators: Robert Clark , TEL Technology Center, America, LLC, Seung-Yeol Yang , Samsung, Republic of Korea
8:15am		
8:30am	AA1-WeM-3 Cross-Point Metal-Ferroelectric-Metal Capacitors Array for Compute-in-Memory Applications, <i>Minjong Lee, H. Hernandez-Arriaga, J. Kim, J. Kim</i> , University of Texas at Dallas	
8:45am	AA1-WeM-4 Using ALD to Precisely Place Multiple Transition Metal Impurities to Defect Engineer MIM Diode Performance, <i>Shane Witsell, J. Conley</i> , Oregon State University	
9:00am	AA1-WeM-5 The Impact of Oxygen Source on the Formation of TiN Interface at the Initial Stage ALD process of Hafnia-based Ferroelectrics: An <i>in-situ</i> Analysis, <i>Jin-Hyun Kim, S. Kim, D. Le, Y. Jung, S. Hwang, H. Hernandez-Arriaga, M. Lee, A. Khosravi, K. Tan</i> , University of Texas at Dallas; <i>J. Spiegelman, M. Benham</i> , RASIRC; <i>S. Kim</i> , Kangwon University, Republic of Korea; <i>J. Kim</i> , University of Texas at Dallas	
9:15am	AA1-WeM-6 Performance Enhancement in HZO Based Ferroelectric Memory Devices, <i>Ranjith K. Ramachandran, L. Lukose</i> , ASM Belgium; <i>A. Leonhardt, M. Surman</i> , ASM Microchemistry Ltd., Finland; <i>V. Koladi Mootheri</i> , ASM Belgium; <i>M. Ioana Popovici</i> , IMEC, Belgium; <i>M. Givens, A. Illiberi</i> , ASM Belgium	
9:30am	AA1-WeM-7 Stabilization of Tetragonal Phase of Ti-doped ZrO ₂ Deposited by ALD, <i>Seokhwi Song, Y. Choi, E. Kim, K. Kim, H. Jeon</i> , Hanyang University, Korea	
9:45am	AA1-WeM-8 Three Terminal Synaptic Devices Employing ALD Grown Dual Dielectrics and Their Linear Learning Process, <i>Jung Wook Lim</i> , Electronics and Telecommunications Research Institute, Republic of Korea; <i>J. Kim</i> , ETRI, Republic of Korea	
10:00am	BREAK & EXHIBITS	
10:15am		
10:30am		
10:45am	INVITED: AA2-WeM-12 Opportunity of Atomic Scaled Materials in Revolutionary Memory Technologies, <i>Seiyon Kim</i> , SK Hynix, Republic of Korea	ALD Applications Session AA2-WeM Memory DRAM Moderators: Parag Banerjee , University of Central Florida, Beun Park , Samsung, Republic of Korea
11:00am		
11:15am	AA2-WeM-14 Ultra High-k HfZrO ₄ Thin Films Grown by Atomic Layer Deposition using Metal-Organic and Brute HOOH Precursors, <i>Harshil Kashyap, A. Kummel</i> , University of California San Diego; <i>J. Spiegelman, M. Benham</i> , RASIRC	
11:30am	AA2-WeM-15 Achieving Ultra-High Mobility and Reliability of ALD-IGZO TFTs via Selective N ₂ O Plasma Reactant for BEOL Applications, <i>Dong-Gyu Kim</i> , Hanyang University, Republic of Korea; <i>H. Choi</i> , Chungnam National University, Republic of Korea; <i>Y. Kim, D. Lee, H. Oh</i> , Hanyang University, Republic of Korea; <i>J. Lee</i> , Chungnam National University, Republic of Korea; <i>J. Kim</i> , Ulsan National Institute of Science and Technology, Republic of Korea; <i>S. Lee, B. Kuh, T. Kim</i> , Samsung Electronics, Republic of Korea; <i>H. Kim</i> , Chungnam National University, Republic of Korea; <i>J. Park</i> , Hanyang University, Republic of Korea	
11:45am	AA2-WeM-16 Ultrathin and Highly Crystalline Indium Oxide Thin Films Using Novel Liquid In Precursor as a New Channel Material, <i>Su-Hwan Choi, R. Seong-Hwan</i> , Hanyang University, Korea; <i>C. Yeon, J. Jung, Y. Park</i> , Soulbrain, Republic of Korea; <i>J. Park</i> , Hanyang University, Korea	

Wednesday Morning, July 26, 2023

Room Regency Ballroom A-C		
8:00am	INVITED: AM-WeM-1 Atomic Layer Technologies for III-V Nitride Epitaxy, High-K/Metal Gate, Ferroelectric Negative Capacitance, and Area-Selective Deposition, <i>Miin-Jang Chen, C. Chou, T. Chang, W. Lee</i> , National Taiwan University, Taiwan	ALD for Manufacturing Session AM-WeM Manufacturing Moderators: Arrelaine Dameron, Forge Nano, Ganesh Sundaram, Veeco-CNT
8:15am		
8:30am	AM-WeM-3 Optimizing Vessel Design for Pulsed Delivery of Solid Precursors, <i>James Maslar, V. Khromchenko, B. Kalanyan</i> , National Institute of Standards and Technology (NIST)	
8:45am	AM-WeM-4 Accurate Precursor Dose Delivery with Realtime Closed Loop Control, <i>Jim Ye, J. Ding</i> , MKS Instruments, Inc.	
9:00am	AM-WeM-5 Fast and Efficient Large Format ALD, <i>D. Lindblad, Matthew Weimer, A. Damerson, J. Ragonesi</i> , Forge Nano; <i>O. Snef</i> , Sundew Technologies	
9:15am	AM-WeM-6 Mechatronic Spatial Atomic Layer Deposition for Closed-Loop Process Control, <i>Daniel Penley, T. Cho, A. Brooks, L. Ranshoff, H. Park, E. Herman, O. Trejo, K. Barton, N. Dasgupta</i> , University of Michigan, Ann Arbor	
9:30am	AM-WeM-7 Spatial Atomic Layer Deposition: A New Revolution in Ultra-Fast Production of Conformal Optical Coatings, <i>John Rönn, S. Virtanen, P. Maydannik, K. Niiranen, S. Sneck</i> , Beneq, Finland	
9:45am	AM-WeM-8 Spatial ALD of Iridium Oxide Electro-Catalyst Layers for PEM Electrolysis, <i>Corné Frijters</i> , SparkNano, Netherlands; <i>J. Shen, M. Ameen</i> , TNO/Holst Center, Netherlands; <i>J. Greer</i> , Air Liquide Advanced Materials, Germany; <i>N. Blasco</i> , Air Liquide Advanced Materials, France; <i>P. Poodt</i> , SparkNano, Netherlands	
10:00am	BREAK & EXHIBITS	
10:15am		
10:30am		
10:45am	INVITED: EM-WeM-12 Novel Organic-Inorganic Hybrid Thin Films Deposited by Molecular Atomic Layer Deposition (MALD) for EUV Resist Applications, <i>Jiyoung Kim</i> , University of Texas at Dallas	Emerging Materials Session EM-WeM EUV Litho Materials Moderator: Nicholas Strandwitz, Lehigh University
11:00am		
11:15am	EM-WeM-14 Inorganic Cluster Synthesis and Characterization via Atomically Precise ALD in Polymers, <i>T. Kunene, Alex Martinson</i> , Argonne National Laboratory	
11:30am	EM-WeM-15 Molecular Layer Deposition of Al- and Hf-Based Hybrid Resists for Electron-Beam and EUV Lithography, <i>A. Ravi, J. Shi, J. Lewis, Stacey Bent</i> , Stanford University	
11:45am	EM-WeM-16 High-resolution EUV Lithographic Patterning Characteristics of InO _x -PMMA Hybrid Photoresist Generated by Vapor-phase Infiltration, <i>A. Subramanian</i> , Stony Brook University; <i>N. Tiwale</i> , Brookhaven National Laboratory; <i>W. Lee</i> , Stony Brook University; <i>K. Kisslinger, M. Lu, A. Stein</i> , Brookhaven National Laboratory; <i>J. Kim</i> , University of Texas at Dallas; Chang-Yong Nam , Brookhaven National Laboratory/Stony Brook University	

Wednesday Afternoon, July 26, 2023

Room Grand Ballroom E-G		
1:30pm	INVITED: AF1-WeA-1 Effect of Inhibitor Adsorption on the Mechanisms for Selectivity Loss, <i>Tania Sandoval</i> , Technical University Federico Santa Maria, Chile	ALD Fundamentals Session AF1-WeA Computational ALD I Moderators: Michael Nolan , University College Cork, Ireland, Atsushi Sakurai , ADEKA CORPORATION, Japan
1:45pm		
2:00pm	AF1-WeA-3 Electronic Structure of ALD Al ₂ O ₃ /TiO ₂ Heterointerfaces: A First-principles Study, <i>Hyobin Eom, C. Ahn, J. Park, B. Shong</i> , Hongik University, Republic of Korea	
2:15pm	AF1-WeA-4 Reaction Mechanism of Bifunctional Organic Reactants and Diethylzinc for Atomic and Molecular Layer Deposition, <i>Miso Kim, H. Oh, B. Shong</i> , Hongik University, Republic of Korea	
2:30pm	AF1-WeA-5 Simulated Conformality of ALD Growth Inside Lateral HAR Channels: Comparison between a Diffusion-Reaction Model and a Ballistic Transport-Reaction Model, <i>J. Järvillehto, J. Velasco, J. Yim, C. Gonsalves, Riikka Puurunen</i> , Aalto University, Finland	
2:45pm	AF1-WeA-6 Simulated Conformality of ALD in Lateral High Aspect Ratio Channels: Impact of Knudsen Number on the Saturation Profile, <i>Christine Gonsalves, J. A. Velasco, J. Järvillehto, J. Yim, V. Vuorinen, R. L. Puurunen</i> , Aalto University, Finland	
3:00pm	AF1-WeA-7 Atomistic Modeling of Thin-Film Deposition with Carrier Gases, <i>S. Natarajan, P. Khomyakov, J. Wellendorff</i> , Synopsys Denmark; <i>Baiyu Zhang, A. Blom</i> , Synopsys, Inc.	
3:15pm	AF1-WeA-8 Chemistry of Plasma-Enhanced and Thermal Atomic Layer Deposition of Metal and Intermetallic Thin Films: The Role of Substrates and Reducing Agent, <i>Ji Liu, M. Nolan</i> , Tyndall National Institute, University College Cork, Ireland	
3:30pm	BREAK	
3:45pm		
4:00pm	AF2-WeA-11 Revealing Process-Structure Relationships for ALD Amorphous Oxide Semiconductors with XANES and First-Principles Modeling, <i>Orlando Trejo</i> , Applied Materials; <i>T. Cho</i> , University of Michigan, Ann Arbor; <i>S. Sainio</i> , University of Oulu, Finland; <i>N. Dasgupta</i> , University of Michigan, Ann Arbor	ALD Fundamentals Session AF2-WeA Computational ALD II Moderator: Tania Sandoval , Technical University Federico Santa Maria, Chile
4:15pm	AF2-WeA-12 Machine-Learning Aided Understanding of ALD Processes, <i>A. Arunachalam</i> , University of Texas at Dallas; <i>S. Novia Berriel, U. Kumar</i> , University of Central Florida; <i>S. Das</i> , University of Texas at Dallas; <i>S. Seal</i> , University of Central Florida; <i>K. Basu</i> , University of Texas at Dallas; <i>P. Banerjee</i> , University of Central Florida	
4:30pm	AF2-WeA-13 Digital Twin and Experimental Platform for AI-Driven Optimization of ALD Processes, <i>Angel Yanguas-Gil, N. Paulson, J. Elam</i> , Argonne National Laboratory	
4:45pm		
5:00pm	AF2-WeA-15 Closing Remarks in Grand Ballroom H-K,	

Wednesday Afternoon, July 26, 2023

Room Grand Ballroom H-K	
1:30pm	AA1-WeA-1 Synthesis of Low-k SiCNO Thin Films by Plasma-enhanced Atomic-molecular Layer Deposition with Tetra-isocyanate-silane (TICS) and Phloroglucinol (Phl), <i>GeonHo Baek, J. Park, G. Park, H. Yang</i> , Hanyang University, Korea
1:45pm	AA1-WeA-2 Performance and Thermal Stability Improvement of Vertical-Channel Thin-Film Transistor by Controlling Deposition Temperature of Gate Stack Prepared by Atomic Layer Deposition, <i>Dong-Hee Lee</i> , Kyung Hee university, Korea (Democratic People's Republic of); <i>Y. Kwon, N. Seong, K. Choi</i> , NCD. Co., Korea (Democratic People's Republic of); <i>S. Yoon</i> , Kyung Hee University, Korea (Democratic People's Republic of)
2:00pm	AA1-WeA-3 Sequential Design of PEALD In-Ga-Zn-O Active Layer: Sub-cycle Engineering of Indium Oxide Layer for Highly Stable TFT, <i>Taewon Hwang, H. Yang, Y. Kim</i> , Hanyang University, Korea; <i>T. ONO, S. KAMIMURA, A. EIZAWA, T. TERAMOTO, C. DUSSARRAT</i> , Air Liquide Laboratories, Japan; <i>J. Park</i> , Hanyang University, Korea
2:15pm	AA1-WeA-4 Bilayer Channel Combination Strategy via Atomic-Layer Deposition of In-Sn-O/In-Sn-Zn-O Structures for Highly-Functional Oxide Thin-Film Transistors, <i>SHIN HO NOH</i> , Kyunghee University, Republic of Korea; <i>Y. Kwon, N. Seong, K. Choi</i> , NCD Co. Ltd, Korea; <i>S. Yoon</i> , Kyunghee University, Republic of Korea
2:30pm	AA1-WeA-5 Elaboration of Refractory Metamaterials by Atomic Layer Deposition for Tuning Thermal Emission at High Temperature, <i>Syreina Sayegh</i> , European Institute of Membranes, France; <i>A. NZIE, CEMHTI</i> , France; <i>M. Bechelany</i> , European Institute of Membranes, France; <i>O. ROZENBAUM, CEMTHI</i> , France; <i>Q. FLAMANT</i> , Saint Gobain, France
2:45pm	AA1-WeA-6 Optical Properties of Interconnected Plasmonic Nanostructures with sub-10 Nm Nanogaps by Area-Selective Atomic Layer Deposition, <i>Brian Willis, R. Raman, J. Grasso</i> , University of Connecticut
3:00pm	AA1-WeA-7 Electrochemically Active Antibacterial Electrodes for Neural Interfacing Applications, <i>Shahram Amini</i> , Pulse Technologies Inc.; <i>G. Feng, H. Khosla</i> , Villanova University
3:15pm	AA1-WeA-8 Ultrathin TiO ₂ ALD Coatings Strongly Enhance Biological Response of Biomedical Materials, <i>Jan Macak</i> , University of Pardubice, Czechia
3:30pm	BREAK
3:45pm	
4:00pm	INVITED: AA2-WeA-11 Atomic Layer Deposition of Highly Stable and Efficient Perovskite Solar Cells (~ 24%), <i>H. Park, S. Shin, P. Nandi, D. Pal, Hyunjung Shin</i> , Sungkyunkwan University (SKKU), Republic of Korea
4:15pm	
4:30pm	AA2-WeA-13 ALD of Niobium Oxide (Nb ₂ O ₅) and Niobium-doped Titanium Oxide (Nb:TiO ₂) for Solar Cell Applications, <i>T. VINCENT, IPVF</i> , France; <i>D. COUTANCIER, CNRS</i> , France; <i>P. Dally, M. AL-KATRIB, F. DONSANTI, IPVF</i> , France; <i>A. YAICHE, EDF</i> , France; <i>K. MEDJOUBI, M. PROVOST, IPVF</i> , France; <i>J. ROUSSET, EDF</i> , France; <i>M. BOUTTEMY, ILV</i> , France; <i>Nathanaelle SCHNEIDER, CNRS</i> , France
4:45pm	AA2-WeA-14 Atomic Layer Deposited Overlayers on Metal Clusters, <i>M. Asiri</i> , University of Adelaide, Australia; <i>A. Kai</i> , Flinders University, Australia; <i>G. Metha</i> , University of Adelaide, Australia; <i>Gunther Andersson</i> , Flinders University, Australia
5:00pm	AA2-WeA-15 Closing Remarks,

**ALD Applications
Session AA1-WeA
ULSI, Display, Optics, Metamaterials & Bio
Applications
Moderators:
Shi-Jin Ding, Fudan University, China,
Adriana Szeghalmi, Fraunhofer Inst Applied Optics,
Germany**

**ALD Applications
Session AA2-WeA
Energy Solar
Moderators:
Mike McSwiney, Intel, USA,
Shaibal Sarkar, ITT Bombay, India**

Wednesday Afternoon, July 26, 2023

Room Regency Ballroom A-C			
1:30pm	INVITED: EM1-WeA-1 MLD/ALD of Hybrid Dielectrics for Flexible Electronic Devices, <i>Xinwei Wang</i> , School of Advanced Materials, Shenzhen Graduate School, Peking University, China; <i>M. Zhang</i> , School of Electronic and Computer Engineering, Shenzhen Graduate School, Peking University, China	Emerging Materials Session EM1-WeA Molecular Layer Deposition Moderators: Rong Chen , Huazhong University of Science and Technology, China, Jiyoung Kim , University of Texas at Dallas	
1:45pm			
2:00pm	EM1-WeA-3 Quantifying Organic Precursor Dosings during Molecular Layer Deposition: Unexpected Effects of Inert Carrier Flow, <i>Stephanie Atkinson, G. Parsons</i> , North Carolina State University		
2:15pm	EM1-WeA-4 Conformal ALD/MLD of Perfectly Stable Zn-Benzenedithiol Thin Films, <i>T. Jussila</i> , Aalto University, Finland; <i>A. Philip, J. Kinnunen</i> , Chipmetrics Oy, Finland; <i>D. Zanders</i> , Ruhr-University Bochum, Germany; <i>M. Utriainen</i> , Chipmetrics Oy, Finland; <i>A. Devi</i> , Ruhr-University Bochum, Germany; <i>Maarit Karppinen</i> , Aalto University, Finland		
2:30pm	EM1-WeA-5 Recent Developments in Oxidative Molecular Layer Deposition (oMLD), <i>Matthias Young, Q. Wyatt, K. Brathwaite, M. Ardiansyah, N. Paranamana, K. Brorsen</i> , University of Missouri		
2:45pm	EM1-WeA-6 In Situ Analysis of Growth Mechanism During Molecular Layer Deposition of Polyurea, <i>Wallis E. Scholl</i> , Colorado School of Mines; <i>E. Hudson, L. Belau</i> , Lam Research Corporation; <i>S. Agarwal</i> , Colorado School of Mines		
3:00pm	INVITED: EM1-WeA-7 A Chemist's Lego Blocks: Molecular Layer Deposition (MLD) for Nanoelectronic Applications, <i>Michelle Paquette</i> , University of Missouri-Kansas City		
3:15pm			
3:30pm	BREAK		
3:45pm			
4:00pm	EM2-WeA-11 Organic-Inorganic Hybrid Thermoelectric Materials Through a New Concept of Vapor Phase Infiltration, <i>Kristina Ashurbekova, M. Knez</i> , CIC nanoGUNE, Spain		Emerging Materials Session EM2-WeA Infiltration Processes Moderators: Benjamin Greenberg , Naval Research Laboratory, Mato Knez , CIC nanoGUNE, Spain
4:15pm	EM2-WeA-12 Towards Sequentially Infiltrated Two-Photon Polymerized 3d Photonic Crystals for Mid-IR Spectroscopic Applications, <i>Anuj Singhal</i> , University of Illinois - Chicago; <i>R. Divan</i> , Argonne National Laboratory; <i>A. Dalmiya, P. Lynch</i> , University of Illinois - Chicago; <i>L. Stan</i> , Argonne National Laboratory; <i>I. Paprotny</i> , University of Illinois - Chicago		
4:30pm	EM2-WeA-13 The Molecular Evolution of ZnO Sequential Infiltration Synthesis, <i>I. Weisbord, M. Barzilay</i> , Department of Chemical Engineering, Technion, Israel; <i>A. Kuzmin, A. Anspoks</i> , Institute of Solid State Physics, University of Latvia; <i>E. Welter</i> , Deutsches Elektronen-Synchrotron, Germany; <i>Tamar Segal-Peretz</i> , Department of Chemical Engineering, Technion, Israel		
4:45pm			
5:00pm	EM2-WeA-15 Closing Remarks in Grand Ballroom H-K,		

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