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
LB	Late Breaking
NS	Nanostructure Synthesis and Fabrication
PS	Plenary Session
TS	Tutorial

PROGRAM NUMBERS: *They are listed with the Confence 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****).*

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: Precursors & 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-Temperature and SiN ALE		AF1-TuA: Plasma ALD I AF2-TuA: Novel ALD Processing	AA1-TuA: Energy: Catalysis and 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: Memory RRAM, Neuromorp, NVM AA2-WeM: Memory DRAM	AM-WeM: Manufacturing EM-WeM: EUV Litho Materials
WeA		LB1-WeA: Late Breaking ALD LB2-WeA: Late Breaking Computational Modeling		AF1-WeA: Computational ALD I AF2-WeA: Computational ALD II	AA1-WeA: ULSI, Display, Optics, Metamaterials, and Bio Applications AA2-WeA: Energy Solar	EM1-WeA: Molecular Layer Deposition 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

Time	Session	
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** The Application of Atomic Layer Deposition for Batteries, ***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 CF_4 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 SiO_2 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 Korea3, 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 $TiCl_4$, ***Hyeongwu Lee***, *Y. Kim, H. Ha, H. Chae,* Sungkyunkwan University (SKKU), Republic of Korea

Monday Morning, July 24, 2023

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

Time	Session	
8:45am	**ALD OPENING REMARKS**	
9:00am	**INVITED: PS-MoM-2** ALD Plenary Lecture: Decades of ALD Research – Targets Upside Down, ***Markku Leskela***, University Helsinki, Finland	
9:15am		
9:30am		
9:45am	**BREAK & EXHIBITS**	
10:00am		
10:15am	**ALE OPENING REMARKS**	
10:30am	**INVITED: PS-MoM-8** ALE Plenary Lecture: The Need for Atomic Layer Etching in the Angstrom Era, ***Tristan Tronic***, 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, ***Simon Elliott***, 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, ***Eden Goodwin***, Carleton University, Canada; *J. Lomax,* University of Western Ontario, Canada; *M. Aloisio, C. Crudden,* Queen's University, Canada; *P. Ragogna,* University of Western Ontario, Canada; *S. Barry,* 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, ***Heta-Elisa Nieminen***, *M. Putkonen, M. Ritala,* 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, ***Jonathan Partridge***, *J. Murdzek, S. George,* 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, ***Mike van de Poll***, Eindhoven University of Technology, Netherlands; *H. Jain,* TNO-Holst Centre & Eindhoven University of Technology, The Netherlands; *B. Macco, P. Poodt, E. Kessels,* 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, ***Nicholas Carroll***, *H. Margavio, G. Parsons,* 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, ***Nicholas Chittock***, *W. Kessels,* Eindhoven University of Technology, The Netherlands; *H. Knoops,* Oxford Instruments Plasma Technology, Netherlands; *S. Elliott,* Schrödinger, Ireland; *A. Mackus,* 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), ***Iaan Cho***, Hongik University, Republic of Korea; *J. Cho, J. Jeong,* Hanyang University, Republic of Korea; *B. Shong,* Hongik University, Republic of Korea	
3:15pm	**ALD+ALE-MoA2-8** Student Award Finalist Talk: Atomic Layer Deposition of Semimetallic TiS2 Contact Layer on MoS2-based Thin Film Transistor for Contact Resistance Reduction, ***Jeongwoo Seo***, *H. Yoon, S. Lee, J. Yoo,* Yonsei University, Korea; *Y. Nam, J. Lim,* Samsung Display Co., Ltd., Republic of Korea; *S. Chung, H. Kim,* 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, *B. Das, R. Singh, C. Brewer,* University of Florida; *R. Holliday, A. Walker,* University of Texas at Dallas; ***Lisa McElwee-White***, 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, ***Anton Vihervaara***, *T. Hatanpää, H. Nieminen, K. Mizohata, M. Chundak, M. Ritala,* University of Helsinki, Finland	
4:45pm	**AF-MoA-14** Phosphorus Zintl Species as ALD precursors for Metal Phosphide Thin Films, ***Paul Ragogna***, *J. Bentley,* Western University, Canada; *E. Goodwin,* Carleton University, Canada; *J. Lomax,* Western University, Canada; *B. Van Ijzendoorn, M. Mehta,* University of Manchester, UK; *S. Barry,* Carleton University, Canada	
5:00pm	**AF-MoA-15** Investigation of Discrete Reactant Feeding for Atomic Layer Deposition of In_2O_3 Using Novel Liquid Alkyl-Cyclopentadienyl Indium Precursor, ***Hae Lin Yang***, *H. Kim,* Hanyang University, Republic of Korea; *T. ONO, S. KAMIMURA, A. EIZAWA, T. TERAMOTO, C. DUSSARRAT,* Air Liquide Laboratories, Japan; *J. Park,* Hanyang University, Republic of Korea	
5:15pm	**AF-MoA-16** Synthesis and Precursor Property Evaluation of Er Enaminolate Complexes and Deposition of Er_2O_3 Thin Film using Thermal Atomic Layer Deposition (ALD), ***Chamod Dharmadasa***, *C. Winter, N. Jayakodiarachchi,* Wayne State University; *P. Evans,* University of Wisconsin-Madison; *R. Liu,* 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, ***Alexander Weiß***, *M. Terletskaia, G. Popov, M. Leskelä, M. Ritala, M. Kemell,* 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*, **Paul Abel**,* Tokyo Electron America, Inc.	**INVITED: NS-MoA-11** A Modified ALD-like Approach to Demonstrate Exceptionally Thin Dielectric Layer Growth on 2D Materials*, **Daire Cott**, S. Sergeant, R. Rennen, G. Benjamin,* IMEC Belgium*; D. Lin,* IMEC, Belgium*; X. Wu,* IMEC Belgium*; Z. Lin,* IMEC Belgium,, Belgium*; T. Schram, Q. Smets, I. Asselberghs, P. Morin,* IMEC Belgium
4:15pm		
4:30pm	**ALE-MoA-13** Thermal Atomic Layer Etching of Molybdenum Based on Sequential Oxidation and Chlorination Reactions*, **Taewook Nam**, J. Partridge, S. George,* University of Colorado at Boulder	**NS-MoA-13** 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
4:45pm	**ALE-MoA-14** Non-Halogen Plasma for Selective Removal of Titanium Compounds Applied in Advanced Atomic Layer Etching*, **Thi-Thuy-Nga Nguyen**,* Nagoya University, Japan*; K. Shinoda,* Hitachi, Ltd., Japan*; S. Hsiao,* Nagoya University, Japan*; H. Hamamura,* Hitachi, Ltd., Japan*; K. Maeda, K. Yokogawa, M. Izawa,* Hitachi High-Tech Corp., Japan*; K. Ishikawa, M. Hori,* Nagoya University, Japan	**NS-MoA-14** Controlled Van der Waals Heterostructures Composed of Hexagonal Boron Nitride Layers on Graphitic Carbon Supports*, **Ali Hossain**,* Laboratoire des Multimatériaux et Interfaces, UMR CNRS 5615, Univ Lyon, Université Claude Bernard Lyon 1; IRIG/MEM/LEMMA, CEA-Grenoble, France*; H. Okuno,* IRIG/MEM/LEMMA, CEA-Grenoble, France*; S. Forel, C. Journet, C. Marichy,* 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*, **Taylor Smith**, J. Chang,* 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*, A. Zacatzi, M. Miller, R. Kanjolia, **Thong Ngo**,* EMD Electronics
5:15pm	**ALE-MoA-16** Plasma Atomic Layer Etching of Ruthenium with Surface Fluorination and Ion Bombardment for Next-generation Interconnect Metal*, **Yongjae Kim**, H. Kang, M. Choi, H. Ha, H. Chae,* 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*, **Chanyoung Yoo**, W. Choi, J. Jeon, B. Park, G. Jeon, S. Jeon, C. Hwang,* 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*, **Doo San Kim**, H. Kwon, Y. Jang, H. Gil, D. Kim, G. Kim, G. Yeom,* Sungkyunkwan University, Republic of Korea	**NS-MoA-17** 2D FeS_X Nanosheets by ALD: Electrocatalytic Properties Towards Hydrogen Evolution Reaction*, **Raul Zazpe**, J. Rodriguez Pereira, S. Thalluri, L. Hromadko,* University of Pardubice, Czechia*; D. Pavliňák, E. Kolíbalová,* Brno University of Technology, Czechia*; H. Sopha, J. Macak,* 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. Kanjolia,* EMD Electronics, USA; *M. Moinpour,* EMD Electronics; *J. Woodruff,* EMD Electronics, USA; *H. Simka,* Samsung Electronics; *A. Kummel,* UCSD

AM-MoP-4 Thermal Evaporation Enhanced Atomic Layer Deposition for Far Ultraviolet Mirror Coatings, ***Robin Rodríguez***, *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

AM-MoP-7 Study of Ultrasonic Vibration-Assisted Particle Atomic Layer Deposition Process via the Multiscale CFD-DDPM Simulation, ***Zoushuang Li***, *J. Xiang, X. Liu, R. Chen,* Huazhong University of Science and Technology, China

AM-MoP-10 Multi Cycle and Material Deposition for Spatial Atomic Layer Deposition Process, ***Atilla Varga***, *M. Carnoy, M. Funding la Cour, M. Plakhotnyuk, I. Kundrata,* ATLANT 3D, Denmark; *J. Bachmann,* Friedrich-Alexander Universität, Germany

ALD Fundamentals
Room Evergreen Ballroom & Foyer - Session AF-MoP
ALD Fundamentals Poster Session
5:45pm

AF-MoP-2 Atomic Layer Deposition of hfo2 Thin Film Using a Novel Heteroleptic Ethylenediamine Based Hf Precursor, ***Choel 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 Al_2O_3 Thin Film, ***Kyuhyun Yeom***, *H. Lee, K. Mun, D. Ryu, J. Seok,* Hansol chemical, Republic of Korea

AF-MoP-5 Low-Temperature HfO_2 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. Ooe, 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. Teplyakov,* University of Delaware

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. Harumningtyas,* 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 TiO_2 Deposition by ALD, ***Tyler Parke***, *A. Teplyakov,* 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 Sb_2Te_3, ***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 HfO_2/SiO_2 Nanolaminates on AlGaN/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 SiO_2 Films: Illuminating the Structure-Composition-Mechanical and Electrical Property Connections, *A. Dernov,* 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 Al_2O_3*,* ***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 SiO_2 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 HfO_2 Using O_3*,* ***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*, S. Thalluri, R. Zazpe, J. Rodriguez-Pereira, H. Sopha,* ***Jan Macak****,* University of Pardubice, Czechia

AF-MoP-37 Growth Behaviors and Structural Characterization of PEALD In_2O_3 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*,* ***Birol Kuyel****, A. Alphonse, J. Marshall,* NANO-MASTER, Inc.

AF-MoP-40 Non-Langmuir Adsorption in O_3 in the TMA-O_3 ALD process*,* ***David Kane****, J. McHugh,* Arradiance LLC

AF-MoP-41 ALD Infilling of Macroscopic Nanoporous Solids: Expanding Beyond Al_2O_3*,* ***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,* EMD Electronics, Republic of 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-45 Electric characteristics for HfO_2/SiO_2 Interface Control by Neutral Beam Enhanced Atomic Layer Deposition*,* ***Daisuke Ohori****, 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 Al_2O_3 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*, D. Le, S. Hwang, J. Kim,* University of Texas at Dallas*; J. Spiegelman,* RASIRC*; J. Kim,* University of Texas at Dallas*; M. Benham,* RASIRC*;* ***Si-Un Song****,* University of Texas at Dallas*; R. Choi,* Inha University, Republic of Korea

AF-MoP-52 Low Toxicity Electron Transport Layer of Atomic Layer Deposited TiO_2 and SnO_2 for Sb_2S_3 Thin Film Solar Cells*, Y. Kim, P. Pawar,* ***Jaeyoung Heo****,* Chonnam National University, Republic of Korea

AF-MoP-53 Growth and Crystallization of Conductive srruo3 Films by Atomic Layer Deposition Depending on the Substrates*,* ***Youngsin Kim****, C. Hwang,* Seoul National University, South Korea

AF-MoP-54 In-Situ Gas Monitoring of ALD Processes Using Remote Optical Emission Spectroscopy*,* ***Nessima Kaabeche****,* Gencoa, UK*; C. Guerra,* Swiss Cluster, Switzerland*; J. Brindley, D. Monaghan,* Gencoa, UK

AF-MoP-55 The Application of Rare-Earth Metals as ALD Precursors*,* ***Yu-Chieh Pao****,* Industrial Technology Research Institute, Taiwan*; B. Lee,* Industrial Technology Research Insitute, Taiwan

AF-MoP-56 Structural and Electrical Properties of Aluminum Oxide Thin Films by Atomic Layer Deposition for Passivation and Etch Stop Layer*,* ***Sangwoo Lee****, J. Yun,* Sejong University, Republic of Korea*; I. Choi, B. Cho, J. Yang,* TES Co., Ltd., Republic of Korea*; T. Choi,* Sejong University, Republic of Korea

AF-MoP-57 Characterization of Snox Thin Films Deposited by Atomic Layer Deposition*,* ***Taekjib Choi****, S. Lee, J. Yun,* Sejong University, Republic of Korea*; I. Choi, B. Cho, J. Yang,* TES Co., Ltd., Republic of Korea

AF-MoP-58 Laser Diagnostics of Plasma Surface Interactions*,* ***Mruthunjaya Uddi****,* Advanced Cooling Technologies*; A. Dogariu,* Texas A&M University*; E. Kudlanov,* Advanced Cooling Technologies*; G. Urdaneta,* texas A&M University*; Y. Xiao, D. Jensen, C. Chen,* Advanced Cooling Technologies

AF-MoP-59 Density-Functional Theory Modeling for Thermal Atomic Layer Etching of Cobalt with Hexafluoroacetylacetone Chelation*, S. Chae,* ***Sangheon Lee****,* Ewha Womans University, Republic of Korea

AF-MoP-60 Study on Phase and Chemical Bonding of Molybdenum Film Grown by Atomic Layer Deposition*,* ***So Young Kim****, C. Jo, H. Shin,* Yonsei University, Republic of Korea*; M. Cheon, K. Lee, D. Seo, J. Choi,* Hanwha Corporation, Republic of Korea*; H. Park,* BIO-IT Micro Fab Center, Republic of Korea*; D. Ko,* Yonsei University, Republic of Korea

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)heptanoeate (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

EM-MoP-7 The Electrical Characterization of MoO_x Capping on HZO High-k Dielectrics by Plasma-Enhanced Atomic Layer Deposition*, P. Juan,* Ming Chi University of Technology, Taiwan*; W. Cho, **Chi-Chung Kei**,* National Applied Research Laboratories, Taiwan Instrument Research Institute, Taiwan*; C. Tou,* Ming Chi University of Technology, Taiwan

EM-MoP-8 Towards Sequentially Infiltrated Two-Photon Polymerized 3d Photonic Crystals for Mid-IR Spectroscopic Applications*, **Anuj Singhal**,* University of Illinois - Chicago*; R. Divan,* Argonne National Laboratory*; A. Dalmiya, P. Lynch,* University of Illinois - Chicago*; L. Stan,* Argonne National Laboratory*; I. Paprotny,* University of Illinois - Chicago

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, ***Greg Parsons***, North Carolina State University	**ALD & ALE** **Session ALD+ALE-TuM** **ALD/ALE Session** **Moderators:** **Steven M. George**, University of Colorado at Boulder, **Anil Mane**, Argonne National Laboratory
8:15am		
8:30am	**ALD+ALE-TuM-3** Mass Changes During and After $Al(CH_3)_3$ Exposures for Thermal Al_2O_3 ALE at Low TemperaturesUsing HF and $Al(CH_3)_3$ as Reactants, ***Andrew S. Cavanagh***, *S. George,* University of Colorado at Boulder	
8:45am	**ALD+ALE-TuM-4** Crystallinity of Sacrificial Etch Layer Influences Resulting Structure During Simultaneous Deposition and Etching, ***Hannah R. M. Margavio***, *L. Keller,* North Carolina State University; *N. Arellano, R. Wojtecki,* IBM Almaden Research Center; *G. Parsons,* 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, ***Michael Nolan***, 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, ***Landon Keller***, *G. Parsons,* 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, ***Hoon Kim***, *J. Du, J. Wang, D. Allen, E. Pierce, M. Huang, N. Borgharkar, K. Woo,* 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, ***Xiao Hu***, *J. Schuster,* Center for Microtechnologies, Chemnitz University of Technology, Germany; Fraunhofer Institute for Electronic Nano Systems, Germany	**Atomic Layer Etching** **Session ALE-TuM** **Modeling of ALE** **Moderators: Michael Nolan**, University College Cork, Ireland, **Thomas Tillocher**, GREMI CNRS/Orleans University, France
11:00am		
11:15am	**ALE-TuM-14** Plasma Oxidation of Copper: Molecular Dynamics Study with Neural Network Potentials, ***Yantao Xia***, University of California at Los Angeles; *S. Philippe,* 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_3N_4 in q-ALE, ***Hojin Kim***, *D. Zhang, T. Hisamatsu, A. Ko,* TEL Technology Center, America, LLC, USA	
11:45am	**ALE-TuM-16** Selecting a Method for ALE Modeling, *Y. Barsukov, S. Jubin, S. Ethier,* ***Igor Kaganovich***, Princeton University Plasma Physics Lab	

Tuesday Morning, July 25, 2023

	Room Grand Ballroom E-G	
8:00am	**INVITED: AF1-TuM-1** Precursor Design Enabling Angstrom Era Semiconductor Manufacturing, ***Charles Mokhtarzadeh***, *E. Mattson, S. Lee, S. Clendenning, P. Theofanis,* 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, ***Georgi Popov***, *T. Hatanpää, A. Weiß, M. Chundak, M. Ritala, M. Kemell,* University of Helsinki, Finland	
8:45am	**AF1-TuM-4** Novel Metal Fluoride ALD Processes, ***Elisa Atosuo***, *M. Mäntymäki, M. Heikkilä, K. Mizohata, M. Leskelä, M. Ritala,* University of Helsinki, Finland	
9:00am	**AF1-TuM-5** Halide-free, Low Melting, Volatile, Thermally Stable Mo(0) Precursors for ALD of Mo films, ***Chandan Kr Barik***, *A. Leoncini,* Applied Materials – National University of Singapore Corporate Lab, Singapore; *F. Liu,* Applied Materials, Inc.; *J. Tang, J. Sudijono,* Applied Materials – National University of Singapore Corporate Lab, Singapore; *M. Saly,* Applied Materials, Inc.	
9:15am	**AF1-TuM-6** Thermal Atomic Layer Deposition of MoC Thin Films, ***Paloma Ruiz Kärkkäinen***, *T. Hatanpää, M. Heikkilä, K. Mizohata, M. Chundak, M. Putkonen, M. Ritala,* University of Helsinki, Finland	
9:30am	**AF1-TuM-7** Precursors and Processes for the Atomic Layer Deposition of Bismuth Metal Thin Films, ***Daniel Beh***, Wayne State University; *Z. Devereaux, T. Knisley,* Applied Materials; *C. Winter,* Wayne State University	
9:45am	**AF1-TuM-8** Atomic Layer Deposition of Tin Oxide Thin Films Using a New Liquid Precursor Bis(ethylcyclopentadienyl) Tin, ***Makoto Mizui***, *N. Takahashi, F. Mizutani,* Kojundo Chemical Laboratory Co., Ltd., Japan; *T. Nabatame,* 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, ***Henrik Pedersen***, *K. Rönnby, G. Damas, L. Ojamäe,* 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, ***Jeffrey Woodward***, *D. Boris,* U.S. Naval Research Laboratory; *M. Johnson,* Huntington Ingalls Industries; *S. Walton, J. Hite, M. Mastro,* U.S. Naval Research Laboratory	
11:15am	**AF2-TuM-14** Towards Self-Limiting III-Nitride Epitaxy via Hollow-Cathode Nitrogen Plasmas, *N. Ibrahimli, S. Ilhom, A. Mohammad, J. Grasso, B. Willis,* University of Connecticut; *A. Okyay,* Stanford University; ***Necmi Biyikli***, 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, ***Adam Bertuch***, Veeco Instruments; *J. Casamento, J. Maria,* Pennsylvania State University	
11:45am	**AF2-TuM-16** Crystalline Gallium Nitride Deposition on SiO_2/Si by RF-Biased Atomic Layer Annealing, ***Ping-che Lee***, *A. Mcleod,* Univ. of Cal., San Diego; *S. Ueda,* Materials Science and Engineering Program, Univ. of Cal., San Diego; *J. Spiegelman,* Rasirc; *R. Kanjolia, M. Moinpou,* EMD Electronics; *A. Kummel,* 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, ***Chunmei Ban***, CU Boulder	**ALD Applications** **Session AA1-TuM** **ALD for Batteries** **Moderators: Hyeontag Jeon**, Hanyang University, Republic of Korea, **Markku Leskela**, University of Helsinki, Finland
8:15am		
8:30am	**AA1-TuM-3** Flexible Hybrid Coating on Positive Electrode Enabling High Energy and Power Density for Lithium-Ion Batteries, ***Zahra Ahaliabadeh***, *V. Miikkulainen,* Aalto University, Finland; *M. mäntymäki,* Helsinki University of Technology, Finland; *T. Kallio,* Aalto University, Finland	
8:45am	**AA1-TuM-4** Aluminum Doping of Lithium Phosphate using Atomic Layer Deposition, ***Daniela Fontecha***, *K. Gregorczyk, A. Kozen, G. Rubloff,* University of Maryland, College Park	
9:00am	**AA1-TuM-5** Developing High-Performance Nickel-Rich Cathodes of Lithium-ion Batteries via Atomic Layer Deposition, ***Xiangbo Meng***, *X. Wang, K. Velasquez Carballo, A. Shao,* University of Arkansas; *Y. Liu, H. Zhou,* Argonne National Laboratory; *X. Xiao,* Brookhaven National Laboratory	
9:15am	**AA1-TuM-6** Molecular-Layer-Deposited Zincone Films Induce the Formation of LiF-Rich Interphase for Lithium Metal Anodes, ***Wei-Min Li***, Jiangsu Leadmicro Nano-Technology Co., Ltd., China; *S. Chang, A. Li,* 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, ***Sanzeeda Baig Shuchi***, *S. Oyakhire, Y. Cui, S. Bent,* Stanford University	
9:45am	**AA1-TuM-8** Enabling Fast Charging of Lithium-ion Batteries by Coating of Graphite with ALD, *E. Kazyak, K. Chen, Y. Chen, T. Cho,* ***Neil P. Dasgupta***, 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, ***Luca Lamagna***, STMicroelectronics, Italy	**ALD Applications** **Session AA2-TuM** **MEMS, Actuators, Hard Films** **Moderators:** **Anjana Devi**, Ruhr University Bochum, Germany, **Viljami Pore**, ASM, Finland
11:00am		
11:15am	**AA2-TuM-14** Applications of Piezoelectric, Ferroelectric, and Antiferroelectric Thin Films Grown by Atomic Layer Deposition, ***Nicholas Strnad***, DEVCOM Army Research Laboratory; *G. Fox,* Fox Materials Consulting, LLC; *T. Tharpe,* Oak Ridge Associated Universities; *R. Knight, R. Rudy, J. Pulskamp,* 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, ***Md Istiaque Chowdhury***, Lehigh University; *M. Sowa,* Veeco Instruments Inc.; *K. Van Meter,* Florida International University; *A. Kozen,* University of Maryland, College Park; *S. Lazarte, B. Krick,* Florida International University; *N. Strandwitz,* Lehigh University	
11:45am	**AA2-TuM-16** Towards ALD of hard AlTiN coatings, ***Pamburayi Mpofu***, Linköping University, Sweden; *J. Lauridsen, O. Alm, T. Larsson,* Seco Tools AB, Sweden; *H. Högberg, H. Pedersen,* Linköping University, Sweden	

Tuesday Morning, July 25, 2023

	Room Regency Ballroom A-C	
8:00am	**INVITED: AS1-TuM-1** Advances in the Industrial Adoption of Selective ALD Processes, ***David Thompson**,* 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*; F. Zaera,* University of California - Riverside	
8:45am	**AS1-TuM-4** Inherently Area-Selective Atomic Layer Deposition of Device-Quality $Hf_{1-x}Zr_xO_2$ Thin Films through Catalytic Local Activation, ***Hyo-Bae Kim**, J. Lee, W. Kim, J. Ahn,* 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**, E. Kamphaus, A. Martinson,* 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**, C. Chou,* National Taiwan University, Taiwan*; W. Lee, C. Chuu,* TSMC, Taiwan*; C. Hou,* Academia Sinica, Taiwan*; T. Wang,* National Taiwan University, Taiwan*; J. Shyue,* Academia Sinica, Taiwan*; M. Chen,* National Taiwan University, Taiwan	
9:30am	**AS1-TuM-7** Dopant-selective Choreography of Metal Deposition for Bottom-up Nanoelectronics, ***Nishant Deshmukh**, D. Aziz, A. Brummer, S. Kurup,* Georgia Institute of Technology, USA*; M. Filler,* 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**, J. Baek, S. Lee, S. Kwon,* 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. Tezsevin,* Eindhoven University of Technology, Turkey*; M. Merkx, E. Kessels,* Eindhoven University of Technology, Netherlands*; T. Sandoval,* Universidad Tecnica Federico Santa Maria, Chile*; A. Mackus,* 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 Merkx**, T. Janssen, I. Tezsevin, R. Heinemans, R. Lengers, E. Kessels,* Eindhoven University of Technology, Netherlands*; T. Sandoval,* Universidad Técnica Federico Santa Mariá, Chile*; A. Mackus,* 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**, T. Nguyen Chi, L. Trinh Ngoc, B. Gu, H. Lee,* 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**, C. Yeon,* Soulbrain, Republic of Korea*; J. Kim,* Hongik University, Republic of Korea*; J. Jung, S. Lee, T. Park, Y. Park,* Soulbrain, Republic of Korea*; B. Shong,* Hongik University, Republic of Korea	
11:45am	**AS2-TuM-16** Fundamental Surface Chemistry Considerations for Selecting Small Molecule Inhibitors for AS-ALD, *A. Mameli,* 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, ***Kazunori Shinoda***, *N. Miyoshi, H. Kobayashi,* Hitachi, Ltd., Japan; *M. Izawa,* Hitachi High-Tech Corp., Japan; *K. Ishikawa, M. Hori,* Nagoya University, Japan	**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
1:45pm		
2:00pm	**ALE1-TuA-3** Isotropic Atomic Layer Etching Process for HfO_2 Film, ***Jun Hyuck Kwon***, *C. Kim, B. Cho, J. Park, S. Park, J. Chun,* 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, ***Aziz Abdulagatov***, *J. Partridge,* University of Colorado at Boulder; *V. Sharma,* ASM Microchemistry Ltd., Finland; *J. Murdzek, A. Cavanagh, S. George,* University of Colorado at Boulder	
2:30pm	**ALE1-TuA-5** Surface Modification with Neutral Gas Cluster Beams and Its Application to Atomic Layer Etching, ***Noriaki Toyoda***, *H. Tanaka, M. Takeuchi,* 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, ***Chien-Wei Chen***, *C. Chang,* Taiwan Instrument Research Institute, National Applied Research Laboratories, Taiwan; *Y. Jhang,* 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, ***Anil Mane***, *J. Elam,* Argonne National Laboratory, USA	
3:15pm		
3:30pm	**BREAK & EXHIBITS**	
3:45pm		
4:00pm	**INVITED: ALE2-TuA-11** Atomic Layer Etching at Cryogenic Temperature, ***Thomas Tillocher***, *G. Antoun, J. Nos,* GREMI CNRS/Orleans University, France; *C. Cardinaud, A. Girard,* IMN CNRS/Nantes University, France; *P. Lefaucheux, R. Dussart,* GREMI CNRS/Orleans University, France	**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
4:15pm		
4:30pm	**ALE2-TuA-13** SiO_2 ALE based on High Boiling Point Fluorocarbon Physisorption, ***Dain Sung***, *G. Yeom, H. Tak, D. Kim,* Sungkyunkwan University, Republic of Korea	
4:45pm	**ALE2-TuA-14** Cryogenically Cooled, Saturating Quasi-ALE of Silicon Nitride, ***Frank Greer***, *D. Shanks, R. Ahmed, J. Femi-Oyetoro, A. Beyer,* Jet Propulsion Laboratory (NASA/JPL)	
5:00pm	**INVITED: ALE2-TuA-15** High Throughput SiN ALE and Its Damage Control, ***Akiko Hirata***, Sony Semiconductor Solutions Corporation, Japan	
5:15pm		
5:30pm	**ALE2-TuA-17** The Atomic Layer Etching Database: A Valuable Crowd-Sourced Platform for the Community, *N. Chittock, A. Mackus, H. Knoops, B. Macco,* ***Erwin Kessels***, Eindhoven University of Technology, The Netherlands	

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	Room Grand Ballroom E-G	
1:30pm	**AF1-TuA-1** Plasma Enhanced Atomic Layer Deposition of Silicon Carbonitride, *S. Johnson, T. Yang,* University of Texas at Austin*; J. Zhao, T. Iwao, C. Schlechte, J. Carroll, G. Blankemeyer, P. Ventzek,* Tokyo Electron America Inc.,*; J. Resasco, G. Hwang, **John Ekerdt**,* 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, ***Neil Richard Innis**, C. Marichy, C. Bousige, C. Journet,* Laboratoire des Multimatériaux 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, ***Min-Jeong Rhee**,* Ajou University, Republic of Korea*; W. Lee,* Pukyong National University, Republic of Korea*; I. Oh,* Ajou University, Republic of Korea*; G. Yoo,* Soongsil University, Seoul, Republic of Korea*; J. Heo,* Ajou University, Suwon, Republic of Korea	
2:15pm	**AF1-TuA-4** ALD of Transition Metal Chalcogenide TaS_X Using TBTDMT Precursor and H_2S Plasma, ***Sanne Deijkers**, H. Thepass,* Eindhoven University of Technology, The Netherlands*; H. Sprey, J. Maes,* ASM Belgium*; E. Kessels, A. Mackus,* 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, ***Louise Bailey**, D. Besprozvannyy,* Oxford Instruments Plasma Technology, UK*; R. Renzas,* Oxford Instruments Plasma Technology*; H. Knoops,* Oxford Instruments Plasma Technology, Netherlands*; M. Powell,* Oxford Instruments Plasma Technology, UK	
2:45pm	**AF1-TuA-6** PEALD Black TiO_2, *S. Berriel, **Terrick McNealy-James**, B. Butkus, T. Currie, C. Chen, L. Shultz, C. Feit, K. Davis, T. Jurca, P. Banerjee,* University of Central Florida	
3:00pm	**AF1-TuA-7** Optimizing for the Neutral Radicals in Plasma Enhanced ALD, ***Lauren Otto**,* 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, *J. Gertsch, Z. Sobell, A. Cavanagh,* University of Colorado Boulder*; H. Simka,* Samsung Semiconductor, Inc.*; **Steven George**,* 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, ***Zachary Sobell**, S. George,* University of Colorado at Boulder	**ALD Fundamentals** **Session AF2-TuA** **Novel ALD Processing** **Moderators:** **Agnieszka Kurek**, Oxford Instruments Plasma Technology, Netherlands, **Matthias Minjauw**, Ghent University, Belgium
4:15pm	**AF2-TuA-12** ALD of Multicomponent Films Using Precursor Co-Dosing, ***Paul Poodt**,* 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, ***Amnon Rothman**, A. Werbrouck, S. Bent,* Stanford University	
4:45pm	**AF2-TuA-14** Combining Atomic Layer Deposition Routes and Solvothermal Conversion: Towards Access to Layer Stacking of Porphyrin-Based Mofs, *B. Gikonyo, **Catherine Marichy**, S. Forel, A. Fateeva,* Laboratoire des Multimatériaux et Interfaces, CNRS/Université Claude Bernard Lyon 1, France	
5:00pm	**AF2-TuA-15** Crystal Phase Transition of Atomic Layer Deposited Antimony Telluride Thin Films with Thickness and Substrate-Dependent Orientations, ***Sangyoon Lee**, J. Seo, I. Sohn,* Yonsei University, Korea*; Y. Kang, C. Lee, W. Yang,* Samsung Advanced Institute of Technology, Republic of Korea*; S. Chung, H. Kim,* Yonsei University, Korea	
5:15pm	**AF2-TuA-16** Molecular Layer Deposition as a Strategy to Direct Polymer Adsorption and Crystallization, ***Maurice Brogly**, S. Bistac, D. Bindel,* Université de Haute Alsace, France	
5:30pm	**AF2-TuA-17** Optical Monitoring of $MoCl_5$ Delivery for Atomic Layer Deposition Applications, ***Berc Kalanyan**, E. Jahrman, J. Maslar,* National Institute of Standards and Technology	

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	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, ***Sara Harris**, M. Weimer,* Forge Nano*; K. Yim, L. Cohen, D. Esposito,* Colombia University*; A. Dameron,* Forge Nano	**ALD Applications** **Session AA1-TuA** **Energy: Catalysis and Fuel Cells** **Moderators:** **Chang-Yong Nam**, Brookhaven National Laboratory,
1:45pm	**AA1-TuA-2** Stabilization of ALD-grown Iridium Species for the OER Activity, ***Muhammad Hamid Raza***, Humboldt-Universität zu Berlin, 2-Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (HZB), Germany*; M. Frisch, R. Kraehnert,* Department of Chemistry, Technische Universität Berlin, Germany*; N. Pinna,* 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, ***Miika Mattinen**, T. Hatanpää, K. Mizohata,* University of Helsinki, Finland*; S. Bent,* Stanford University*; M. Ritala,* University of Helsinki, Finland	
2:15pm	**AA1-TuA-4** Surface Texture Design of Pt/C Catalyst to Enhance Oxygen Reduction Reaction by FBR-ALD, ***Ji-Hu Baek**, M. Jung, S. Lee, S. Kwon,* Pusan National University, Republic of Korea	
2:30pm	**AA1-TuA-5** Atomic Layer Deposition of Copper Catalysts for Electrochemical Recycling of Carbon Dioxide, ***Julia D. Lenef**, S. Lee, K. Fuelling, K. Rivera Cruz,* University of Michigan, Ann Arbor*; A. Prajapati, C. Hahn,* Lawrence Livermore National Laboratory*; C. McCrory, N. Dasgupta,* 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, ***Hyuenwoo Yang***, North Carolina State University, Republic of Korea*; H. Margavio, L. Keller, G. Parsons,* North Carolina State University	
3:00pm	**AA1-TuA-7** Enhanced Green Hydrogen Production Using ALD-based Catalysts for Ammonia Decomposition, ***Yu-Jin Lee**, H. Sohn, H. Jeong, S. Nam,* Korea Institute of Science and Technology (KIST), Republic of Korea*; J. Park,* Seoul National University, Republic of Korea*; Y. Kim,* Korea Institute of Science and Technology (KIST), Republic of Korea	
3:15pm	**AA1-TuA-8** Atomic Layer Depositied Silver Catalysts for Anion Exchange Membrane Fuel Cells, ***Gwon Deok Han**, H. Han, F. Prinz,* Stanford University*; J. Shim,* 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, ***Mariona Coll**, P. Salles,* 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, *M. Rogowska, L. Rykkje, **Henrik Sønsteby**,* University of Oslo, Norway	
4:45pm	**AA2-TuA-14** *In situ* Atomic Layer Doping of Epitaxially Grown β-Ga_2O_3 Films via Plasma-enhanced ALD at 240 ℃, ***Saidjafarzoda Ilhom***, Univerisity of Connecticut*; A. Mohammad, N. Ibrahimli, J. Grasso, B. Willis,* University of Connecticut*; A. Okyay,* Stanford University*; N. Biyikli,* University of Connecticut	
5:00pm	**AA2-TuA-15** Plasma Enhanced Atomic Layer Deposition of Niobium Nitride for Scalable Quantum Device Fabrication, ***Yi Shu**,* Oxford Instruments Plasma Technology, UK*; C. Lennon,* University of Glasgow, UK*; Z. Ren,* Oxford Instruments Plasma Technology, UK*; H. Knoops,* Oxford Instruments Plasma Technology, UK, Eindhoven University of Technology, Netherlands*; F. Morini, A. Kurek, T. Hemakumara,* Oxford Instruments Plasma Technology, UK*; R. Hadfield,* University of Glasgow, UK	
5:15pm	**AA2-TuA-16** Superconducting NbN Thin Films Deposited by Plasma Enhanced Atomic Layer Deposition, ***Jakob Zessin***, SENTECH Instruments GmbH, Germany*; M. Hagel, T. Reindl, L. Freund,* SF Nanostructuring Lab, Max Planck Institute for Solid State Research, Germany*; P. Plate,* SENTECH Instruments GmbH, Germany*; J. Weis,* SF Nanostructuring Lab, Max Planck Institute for Solid State Research, Germany	
5:30pm	**AA2-TuA-17** Work-Function Modulation using Atomic Layer Deposited TaN and Ternary TaAlN Metal Gate, ***Moonsuk Choi**, B. Ku, S. Kim, C. Chung, C. Choi,* Hanyang University, Republic of Korea	

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	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. Throm, D. Stalla, M. Young,* University of Missouri	
5:30pm	**NS-TuA-17** Low Cost, Large Area Sers Substrates by All Ald Deposited 3d Porous Filter Papers, ***Feng Niu***, Raytum Photonics	

ALD Applications
Room Evergreen Ballroom & Foyer - Session AA-TuP
ALD Applications Poster Session
5:45pm

AA-TuP-1 Improved Properties of the $SrRuO_3$ 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 TiO_2 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 ZrO_2/Al_2O_3 and ZrO_2/Y_2O_3 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 $SrTiO_3$ Thin Film for DRAM Capacitor by Inserting GeO_x Buffer Layer in $Ru/SrTiO_3/RuO_2$ 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. Järvilehto, 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 SiO_2 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-9 Molecular Layer Deposition of Lithium-Containing Polymeric Coatings for Superior Lithium Metal Batteries, *X. Wang,* ***Xiangbo Meng***, University of Arkansas

AA-TuP-10 Suppression of Interfacial Layer Formation in ZrO_2-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 ZrO_2 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 ZrO_2-TiSiN Based MIM Capacitor by Introducing Y_2O_3 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 MoO_2/MoO_3 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-Mo_2N 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 Y_2O_3 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 Y_2O_3 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-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 CO_2 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-23 ALD-based Catalysts with TiO_2 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 Politechnique 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 $Hf_xZr_{1-x}O_2$ 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 ZrO_2-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-31 Comparison between Doped and Undoped Ferroelectric HfO_2, ***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 $LiNi_{0.8}Mn_{0.1}Co_{0.1}O_2$ 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. Gümbel, I. Müller, J. Schörmann, S. Chatterjee,* Justus Liebig University Giessen, Germany

AA-TuP-41 Revelation of Ferroelectricity of ALD ZrO_2 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 $Hf_{0.5}Zr_{0.5}O_2$ 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 McNeary***, 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-$Hf_{0.5}Zr_{0.5}O_2$ 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 Nb_2O_5 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 $Si_xSn_yO_z$ 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

AA-TuP-60 Titanium Oxynitride Thin Films Wide Temperature Range Sensors, ***Filipp Baron***, Saaz Micro Inc.

AA-TuP-61 Magnesium-doping in TiO_2 Dielectric Films for DRAM Capacitor Applications, ***YU-KYUNG PARK***, *C. Hwang,* Seoul National University, South Korea

AA-TuP-62 Electrical Characteristics Modification of Dual Gate Oxide Semiconductor Thin-film Transistor, ***Sehun Jeong***, *S. Park,* Korea Advanced Institute of Science and Technology, Republic of Korea

AA-TuP-63 Control of Hydrogen Content via Super-Cycle ALD Deposited Al_2O_3 Gate Insulator, ***Hwayoung Kim***, *S. Park,* Korea Advanced Institute of Science and Technology, Republic of Korea

AA-TuP-64 Atomic Layer Deposited ZnO and Al_2O_3 on Nonwoven Fibre Materials – Improving Antimicrobial Properties and Moisture Resistance, ***Laura Keskiväli***, VTT Technical Research Centre of Finland; *P. Porri,* University of Helsinki, Finland; *S. Salo, K. Heinonen, A. Harlin,* VTT Technical Research Centre of Finland

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 Jousseaume***, 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. Mayangsari,* Universitas Pertamina, Indonesia; *K. Khumaini, H. Kim, W. Lee,* Sejong University, Republic of Korea

AS-TuP-4 Selective Deposition on Next-Generation Patterned Carbon/SiO_2 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 HfO_2 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 O_2 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

AS-TuP-10 Area-Selective Atomic Layer Deposition of Ru Thin Films Using Phosphonic Acid Self-Assembled Monolayers for Metal/Dielectic Seletivity, ***Seo-Hyun Lee***, *J. Lee, W. Kim,* Hanyang University, Korea

AS-TuP-11 Area-Selective Atomic Layer Deposition on Dielectric Substrates via Selective Adsorption of Small Molecule Inhibitors, ***Jieun Oh***, *H. Park, J. Lee, W. Kim,* Hanyang University, Korea

AS-TuP-12 Inline Metrology to Characterize and Improve Process Control of Area Selective Deposition, ***Ganesh Vanamu***, *W. Lee,* Nova Metrology Instruments; *R. Koret, J. Hung,* Nova Measuring Instruments, Israel; *J. Watkins, T. Stoll,* Nova Measuring Instruments

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 MoS_2 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 Wo_3 Sulfurization Process, ***Chan-Yuen Chang****, B. Liu,* Taiwan Instrument Research Institute, NARlabs, Taiwan

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,* Teilch

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 Phase Control of Two-Dimensional Tin Sulfide Compounds Deposited by Atomic Layer Deposition, ***Dong Geun Kim****, J. Lee, J. Choi, J. Ahn,* Hanyang University, Korea

NS-TuP-12 Area-Selective Deposition of 2D-MoS_2 using Self-Assembled Monolayer, ***Jeong-hun Choi****, D. Kim, S. Lee, J. Ahn,* Hanyang University, Korea

NS-TuP-13 Etching ProcessOptimization of ScAlN with the combination of Inductively Coupled Plasma Dry Etch and Concentrated TMAH Solution, ***Abu Shami Md Zadid SHIFAT****, R. Jaiswal,* University of New Mexico*; A. Siddiqui,* Sandia National Laboratories*; T. Busani,* University of New Mexico

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, ***Heeyeop Chae***, Sungkyunkwan University (SKKU), Republic of Korea	**Atomic Layer Etching** **Session ALE1-WeM** **Si and SiO_2 ALE** **Moderators:** **Austin Minnich**, Caltech, **Gregory N. Parsons**, North Carolina State University
8:15am		
8:30am	**ALE1-WeM-3** Controlling the Hole Profile of High Aspect Ratio Structures in Atomic Layer Etching of SiO2 by Utilizing Dc-Superposition in Capacitively Coupled Plasmas, ***Kang-Yi Lin***, *E. Hirsch, P. Wang,* TEL Technology Center, America, LLC, USA	
8:45am	**ALE1-WeM-4** Damage Analysis of Reactive Ion and Quasi-Atomic Layer Etched Silicon, ***Amin Karimi***, AlixLabs AB, Sweden; *M. Alabrash,* Lund University, Sweden; *R. Jafari Jam,* AlixLabs AB, Sweden; *D. Lishan,* Plasma-Therm LLC; *H. Aslan, J. Garnæs,* Danish Fundamental Metrology, Denmark; *A. Uvarov,* Plasma-Therm Europe, France; *Y. Ilarionova, D. Suyatin, J. Sundqvist,* AlixLabs AB, Sweden; *S. Khan,* Danish Fundamental Metrology, Denmark; *I. Maximov,* Lund University, Sweden	
9:00am	**ALE1-WeM-5** Atomic Layer Etching of SiO_2 via H_2/SF_6 Plasma and TMA, ***David Catherall***, *A. Minnich,* California Institute of Technology	
9:15am	**ALE1-WeM-6** Learnings and Mitigations of Nonuniformity in Oxide Quasi Ale Applied to Contact Patterning, ***Francois BOULARD***, *A. RONCO, N. POSSEME,* CEA/LETI-University Grenoble Alpes, France	
9:30am	**ALE1-WeM-7** Adopting a Low Global Warming Potential Fluorocarbon Precursor (C_6F_6) to Atomic Layer Etching of Sio_2 with Fluorocarbon Plasmas, ***Inho Seong***, *Y. You, Y. Lee,* Chungnam National University, Republic of Korea; *G. Yeom,* Sungkyunkwan University, Republic of Korea; *S. You,* Chungnam National University, Republic of Korea	
9:45am	**ALE1-WeM-8** Thermal ALE Reactants for Semiconductor Processing, ***Martin McBriarty***, 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 $Al(CH_3)_3$, ***Austin Minnich***, Caltech	**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
11:00am		
11:15am	**ALE2-WeM-14** Gan Atomic Layer Etching Using SF_6 and Ar Plasmas Controlled by RFEA and Langmuir Probe Measurements, ***Remi Dussart***, Universite d'Orleans - CNRS, France; *L. Hamraoui, T. Zhang, A. Crespi,* Universite d'Orleans, France; *M. Boufnichel,* STMicroelectronics, France; *P. Lefaucheux,* CNRS, France; *T. Tillocher,* Universite d'Orleans, France	
11:30am	**ALE2-WeM-15** Speedy and Smooth Atomic Layer Etching for Silicon Carbide with DC Bias-Pulsing, ***Julian Michaels***, University of Illinois at Urbana-Champaign; *N. Delegan,* Argonne National Laboratory, USA; *Y. Tsaturyan,* University of Chicago; *R. Renzas,* Oxford Instruments; *D. Awschalom,* University of Chicago; *G. Eden,* University of Illinois at Urbana-Champaign; *J. Heremans,* Argonne National Laboratory	
11:45am	**ALE2-WeM-16** Thermal Atomic Layer Etching of MoS_2 Films, *J. Soares,* ***John Hues***, Micron School of Material Science and Engineering, Boise State University; *A. Mane, D. Choudhury, S. Letourneau,* Applied Materials Division, Argonne National Laboratory; *S. Hues,* Micron School of Material Science and Engineering, Boise State University; *J. Elam,* Applied Materials Division, Argonne National Laboratory; *E. Graugnard,* Micron School of Material Science and Engineering, Boise State University	

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** **Moderator:** **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_2O_3 and ZnO: *In Situ* 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: *in situ* 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 *Operando* 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, ***Masaharu Kobayashi***, 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, ***Minjong Lee***, *H. Hernandez-Arriaga, J. Kim, J. Kim,* 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, ***Shane Witsell***, *J. Conley,* 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 *in-situ* Analysis, ***Jin-Hyun Kim***, *S. Kim, D. Le, Y. Jung, S. Hwang, H. Hernandez-Arriaga, M. Lee, A. Khosravi, K. Tan,* University of Texas at Dallas; *J. Spiegelman, M. Benham,* RASIRC; *S. Kim,* Kangwon University, Republic of Korea; *J. Kim,* University of Texas at Dallas	
9:15am	**AA1-WeM-6** Performance Enhancement in HZO Based Ferroelectric Memory Devices, ***Ranjith K. Ramachandran***, *L. Lukose,* ASM Belgium; *A. Leonhardt, M. Surman,* ASM Microchemistry Ltd., Finland; *V. Koladi Mootheri,* ASM Belgium; *M. Ioana Popovici,* IMEC, Belgium; *M. Givens, A. Illiberi,* ASM Belgium	
9:30am	**AA1-WeM-7** Stabilization of Tetragonal Phase of Ti-doped ZrO_2 Deposited by ALD, ***Seokhwi Song***, *Y. Choi, E. Kim, K. Kim, H. Jeon,* Hanyang University, Korea	
9:45am	**AA1-WeM-8** Three Terminal Synaptic Devices Employing ALD Grown Dual Dielectrics and Their Linear Learning Process, ***Jung Wook Lim***, Electronics and Telecommunications Research Institute, Republic of Korea; *J. Kim,* 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, ***Seiyon Kim***, SK Hynix, Republic of Korea	**ALD Applications** **Session AA2-WeM** **Memory DRAM** **Moderator: Parag Banerjee**, University of Central Florida
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, ***Harshil Kashyap***, *A. Kummel,* University of California San Diego; *J. Spiegelman, M. Benham,* RASIRC	
11:30am	**AA2-WeM-15** Achieving Ultra-High Mobility and Reliability of ALD-IGZO TFTs via Selective N2O Plasma Reactant for BEOL Applications, ***Dong-Gyu Kim***, Hanyang University, Republic of Korea; *H. Choi,* Chungnam National University, Republic of Korea; *Y. Kim, D. Lee, H. Oh,* Hanyang University, Republic of Korea; *J. Lee,* Chungnam National University, Republic of Korea; *J. Kim,* Ulsan National Institute of Science and Technology, Republic of Korea; *S. Lee, B. Kuh, T. Kim,* Samsung Electronics, Republic of Korea; *H. Kim,* Chungnam National University, Republic of Korea; *J. Park,* 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, ***Su-Hwan Choi***, *R. Seong-Hwan,* Hanyang University, Korea; *C. Yeon, J. Jung, Y. Park,* Soulbrain, Republic of Korea; *J. Park,* 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, ***Miin-Jang Chen***, *C. Chou, T. Chang, W. Lee,* 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, ***James Maslar***, *V. Khromchenko, B. Kalanyan,* National Institute of Standards and Technology (NIST)	
8:45am	**AM-WeM-4** Accurate Precursor Dose Delivery with Realtime Closed Loop Control, *J. Ye*, *J. Ding,* ***Guy Rosenzweig,*** MKS Instruments, Inc.	
9:00am	**AM-WeM-5** Fast and Efficient Large Format ALD, *D. Lindblad,* ***Matthew Weimer***, *A. Damerson, J. Ragonesi,* Forge Nano; *O. Snef,* Sundew Technologies	
9:15am	**AM-WeM-6** Mechatronic Spatial Atomic Layer Deposition for Closed-Loop Process Control, ***Daniel Penley***, *T. Cho, A. Brooks, L. Ranshoff, H. Park, E. Herman, O. Trejo, K. Barton, N. Dasgupta,* 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, ***John Rönn***, *S. Virtanen, P. Maydannik, K. Niiranen, S. Sneck,* Beneq, Finland	
9:45am	**AM-WeM-8** Spatial ALD of Iridium Oxide Electro-Catalyst Layers for PEM Electrolysis, ***Corné Frijters***, SparkNano, Netherlands; *J. Shen, M. Ameen,* TNO/Holst Center, Netherlands; *J. Greer,* Air Liquide Advanced Materials, Germany; *N. Blasco,* Air Liquide Advanced Materials, France; *P. Poodt*, 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, ***Jiyoung Kim***, University of Texas at Dallas	**Emerging Materials** **Session EM-WeM** **EUV Litho Materials** **Moderator: Haripin Chandra**, EMD Electronics, USA
11:00am		
11:15am	**EM-WeM-14** Inorganic Cluster Synthesis and Characterization via Atomically Precise ALD in Polymers, *T. Kunene,* ***Alex Martinson***, Argonne National Laboratory	
11:30am	**EM-WeM-15** Molecular Layer Deposition of Al- and Hf-Based Hybrid Resists for Electron-Beam and EUV Lithography, *A. Ravi, J. Shi, J. Lewis,* ***Stacey Bent***, Stanford University	
11:45am	**EM-WeM-16** High-resolution EUV Lithographic Patterning Characteristics of InO_x-PMMA Hybrid Photoresist Generated by Vapor-phase Infiltration, *A. Subramanian,* Stony Brook University; *N. Tiwale,* Brookhaven National Laboratory; *W. Lee,* Stony Brook University; *K. Kisslinger, M. Lu, A. Stein,* Brookhaven National Laboratory; *J. Kim,* University of Texas at Dallas; ***Chang-Yong Nam***, Brookhaven National Laboratory/Stony Brook University	

Wednesday Afternoon, July 26, 2023

Room Grand Ballroom A-C

Late-breaking Abstracts
Session LB1-WeA
Late Breaking ALD
Moderator:
Sumit Agarwal, Colorado School of Mines

Time	Presentation
1:30pm	**LB1-WeA-1** Atomic Layer Deposition of Yttrium Oxide on Metallic Lithium, ***Bo Zhao***, Ghent University; Hubei Jiufengshan Laboratory, China; *L. Henderick, C. Detavernier,* Ghent University, Belgium
1:45pm	**LB1-WeA-2** Recent Advances for Spatial Atomic Layer Deposition Process: Microreactor Direct Atomic Layer Processing (µDALP™), ***Maksym Plakhotnyuk***, *A. Varga, I. Kundrata,* ATLANT 3D, Denmark; *J. Bachmann,* FreFriedrich-Alexander Universität, Germany
2:00pm	**LB1-WeA-3** Towards Improved Conversion of Wet Waste to Jet Fuel with Atomic Layer Deposition-Coated Hydrodeoxygenation Catalysts, ***W. Wilson McNeary***, *J. Miller, S. Tacey,* National Renewable Energy Laboratory; *J. Travis,* Forge Nano; *M. Griffin, K. Jungjohann, G. Teeter,* National Renewable Energy Laboratory; *T. Eralp Erden,* Johnson Matthey, UK; *C. Farberow,* National Renewable Energy Laboratory; *L. Tuxworth, M. Watson,* Johnson Matthey, UK; *A. Dameron,* Forge Nano; *D. Vardon,* Alder Fuels
2:15pm	**LB1-WeA-4** A Kinetic Model for Heterogeneous Nucleation in ALD and CVD, ***Andreas Werbrouck***, *S. Bent,* Stanford University
2:30pm	**LB1-WeA-5** Intrinsic Area Selective Atomic Layer Deposition of MoS_2 Thin Films, *J. Soares,* ***Wesley Jen***, Boise State University; *J. Wensel,* Micron Technology; *S. Hues, E. Graugnard,* Boise State University
2:45pm	**LB1-WeA-6** Selective Deposition of HfO_2 on Aminosilane-treated TiN/SiO_2 Substrates, ***Yujin Lee***, Stanford University; *H. Kim,* Samsung Advanced Institute of Technology, Republic of Korea; *S. Bent,* Stanford University
3:00pm	**LB1-WeA-7** Atomic Layer Deposited Zr-doped HfO_2 (HZO) and Indium Gallium Oxide (IGO) Thin Films for 3D Gate-All-Around FeFET, ***Boncheol Ku***, *J. Hur, J. Jeong, C. Choi,* Hanyang University, Korea
3:15pm	**LB1-WeA-8** Development of Robust Gate Insulators for MIS-HEMT Structures Based on ALD/PEALD Techniques, ***Messaoud Bedjaoui***, *S. Cadot, J. Amiran, R. Contie, A. Thiam, C. Bout,* CEA/LETI-University Grenoble Alpes, France; *P. Fernandes Paes Pinto Rocha,* CEA/LETI-University Grenoble Alpes, Grenoble INP-LTM, France
3:30PM	**BREAK**
3:45pm	

Late-breaking Abstracts
Session LB2-WeA
Late Breaking Computational Modeling
Moderator:
John Conley, Oregon State University

Time	Presentation
4:00pm	**LB2-WeA-11** Exploring the Blocking Mechanism of Small Molecule Inhibitors by Density Functional Theory, ***Fabian Pieck***, *R. Tonner-Zech,* Wilhelm-Ostwald-Institut Physikalische und Theoretische Chemie, Germany
4:15pm	**LB2-WeA-12** Multiscale Computational Fluid Dynamics Modeling of Spatial Atomic Layer Deposition for Emerging Applications, ***Zoushuang Li***, *K. Cao, B. Shan, R. Chen,* Huazhong University of Science and Technology, China
4:30pm	**LB2-WeA-13** Reaction Mechanism of Atomic Layer Deposition of Pt from First Principles, ***Sylwia Klejna***, AGH University of Krakow, Poland
4:45pm	**CLOSING REMARKS IN GRAND BALLROOM H-K**

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, ***Tania Sandoval***, 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_2O_3/TiO_2 Heterointerfaces: A First-principles Study, ***Hyobin Eom***, *C. Ahn, J. Park, B. Shong,* Hongik University, Republic of Korea	
2:15pm	**AF1-WeA-4** Reaction Mechanism of Bifunctional Organic Reactants and Diethylzinc for Atomic and Molecular Layer Deposition, ***Miso Kim***, *H. Oh, B. Shong,* 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, *J. Järvilehto, J. Velasco, J. Yim, C. Gonsalves,* ***Riikka Puurunen***, 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, ***Christine Gonsalves***, *J. A. Velasco, J. Järvilehto, J. Yim, V. Vuorinen, R. L. Puurunen,* Aalto University, Finland	
3:00pm	**AF1-WeA-7** Atomistic Modeling of Thin-Film Deposition with Carrier Gases, *S. Natarajan, P. Khomyakov, J. Wellendorff,* Synopsys Denmark; ***Baiyu Zhang***, *A. Blom,* 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, ***Ji Liu***, *M. Nolan,* 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, ***Orlando Trejo***, Applied Materials; *T. Cho,* University of Michigan, Ann Arbor; *S. Sainio,* University of Oulu, Finland; *N. Dasgupta,* 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, *A. Arunachalam,* University of Texas at Dallas; ***S. Novia Berriel***, *U. Kumar,* University of Central Florida; *S. Das,* University of Texas at Dallas; *S. Seal,* University of Central Florida; *K. Basu,* University of Texas at Dallas; *P. Banerjee,* University of Central Florida	
4:30pm	**AF2-WeA-13** Digital Twin and Experimental Platform for AI-Driven Optimization of ALD Processes, ***Angel Yanguas-Gil***, *N. Paulson, J. Elam,* Argonne National Laboratory	
4:45pm	**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)*, **GeonHo Baek**, J. Park, G. Park, H. Yang,* Hanyang University, Korea	**ALD Applications** **Session AA1-WeA** **ULSI, Display, Optics, Metamaterials, and Bio Applications** **Moderators:** **Charles Dezelah**, ASM, Finland, **Matthias Young**, University of Missouri-Columbia
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*, **Dong-Hee Lee**,* Kyung Hee university, Korea (Democratic People's Republic of)*; Y. Kwon, N. Seong, K. Choi,* NCD. Co., Korea (Democratic People's Republic of)*; S. Yoon,* 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*, **Taewon Hwang**, H. Yang, Y. Kim,* Hanyang University, Korea*; T. ONO, S. KAMIMURA, A. EIZAWA, T. TERAMOTO, C. DUSSARRAT,* Air Liquide Laboratories, Japan*; J. Park,* 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*, **SHIN HO NOH**,* Kyunghee University, Republic of Korea*; Y. Kwon, N. Seong, K. Choi,* NCD Co. Ltd, Korea*; S. Yoon,* 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*, **Syreina Sayegh**,* European Institute of Membranes, France*; A. NZIE,* CEMHTI, France*; M. Bechelany,* European Institute of Membranes, France*; O. ROZENBAUM,* CEMTHI, France*; Q. FLAMANT,* 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*, **Brian Willis**, R. Raman, J. Grasso,* University of Connecticut	
3:00pm	**AA1-WeA-7** Electrochemically Active Antibacterial Electrodes for Neural Interfacing Applications*, **Shahram Amini**,* Pulse Technologies Inc.*; G. Feng, H. Khosla,* Villanova University	
3:15pm	**AA1-WeA-8** Ultrathin TiO_2 ALD Coatings Strongly Enhance Biological Response of Biomedical Materials*, **Jan Macak**,* 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%)*, H. Park, S. Shin, P. Nandi, D. Pal, **Hyunjung Shin**,* Sungkyunkwan University (SKKU), Republic of Korea	**ALD Applications** **Session AA2-WeA** **Energy Solar** **Moderators:** **Mike McSwiney**, Intel, USA, **Shaibal Sarkar**, ITT Bombay, India
4:15pm		
4:30pm	**AA2-WeA-13** ALD of Niobium Oxide (Nb_2O_5) and Niobium-doped Titanium Oxide (Nb:TiO_2) for Solar Cell Applications*, T. VINCENT,* IPVF, France*; D. COUTANCIER,* CNRS, France*; P. Dally, M. AL-KATRIB, F. DONSANTI,* IPVF, France*; A. YAICHE,* EDF, France*; K. MEDJOUBI, M. PROVOST,* IPVF, France*; J. ROUSSET,* EDF, France*; M. BOUTTEMY,* ILV, France*; **Nathanaelle SCHNEIDER**,* CNRS, France	
4:45pm	**CLOSING REMARKS**	

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, *X. Wang*, School of Advanced Materials, Shenzhen Graduate School, Peking University, China; ***Min Zhang***, 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** The Molecular Evolution of Zno Sequential Infiltration Synthesis, *I. Weisbord, M. Barzilay*, Department of Chemical Engineering, Technion, Israel; *A. Kuzmin, A. Anspoks*, Institute of Solid State Physics, University of Latvia; *E. Welter*, Deutsches Elektronen-Synchrotron, Germany; ***Tamar Segal-Peretz***, Department of Chemical Engineering, Technion, Israel	
2:15pm	**EM1-WeA-4** Conformal ALD/MLD of Perfectly Stable Zn-Benzenedithiol Thin Films, *T. Jussila*, Aalto University, Finland; *A. Philip, J. Kinnunen*, Chipmetrics Oy, Finland; *D. Zanders*, Ruhr-University Bochum, Germany; *M. Utriainen*, Chipmetrics Oy, Finland; *A. Devi*, Ruhr-University Bochum, Germany; ***Maarit Karppinen***, Aalto University, Finland	
2:30pm	**EM1-WeA-5** Recent Developments in Oxidative Molecular Layer Deposition (oMLD), ***Matthias Young***, *Q. Wyatt, K. Brathwaite, M. Ardiansyah, N. Paranamana, K. Brorsen*, University of Missouri	
2:45pm	**EM1-WeA-6** In Situ Analysis of Growth Mechanism During Molecular Layer Deposition of Polyurea, ***Wallis E. Scholl***, Colorado School of Mines; *E. Hudson, L. Belau*, Lam Research Corporation; *S. Agarwal*, Colorado School of Mines	
3:00pm	**INVITED: EM1-WeA-7** A Chemist's Lego Blocks: Molecular Layer Deposition (MLD) for Nanoelectronic Applications, ***Michelle Paquette***, 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, ***Kristina Ashurbekova***, *M. Knez*, 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-13** Quantifying Organic Precursor Dosings during Molecular Layer Deposition: Unexpected Effects of Inert Carrier Flow, ***Stephanie Atkinson***, *G. Parsons*, North Carolina State University	
4:30pm		
4:45pm	**CLOSING REMARKS IN GRAND BALLROOM H-K**	

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Chung, S.: AA-TuP-39, 19; AA-TuP-41, 20; AF2-TuA-15, 16; ALD+ALE-MoA2-8, 6
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Dendooven, J.: AS1-TuA-1, 18
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Hepp, T.: AF-MoP-11, 8
Heremans, J.: ALE2-WeM-15, 22
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Hock, A.: ALE-SuP-5, 4; TS-SuA-1, **3**
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Hori, M.: ALE1-TuA-1, 15; ALE-MoA-14, 7
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Hou, C.: AS1-TuM-6, 14
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Jeong, J.: AA-TuP-12, **19**; ALD+ALE-MoA2-7, 6; LB1-WeA-7, 26
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Ji, Y.: AF-MoP-42, 9; ALE-SuP-7, 4
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Jung, H.: ALE-SuP-11, 4
Jung, J.: AA2-WeM-16, 24; AF-MoP-15, 8; ALE-SuP-2, **4**; ALE-SuP-3, 4; AS2-TuM-15, 14
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Jung, Y.: AA1-WeM-5, 24; AA-TuP-14, 19; AA-TuP-26, 19; AA-TuP-47, 20
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Kameoka, T.: AF-MoP-6, 8
Kamimura, S.: AF-MoP-49, **9**
KAMIMURA, S.: AA1-WeA-3, 28; AF-MoA-15, 6
Kamphaus, E.: AF1-WeM-1, 23; AS1-TuM-5, 14
Kane, D.: AF-MoP-40, **9**
Kang, D.: AA-TuP-59, **20**
Kang, H.: ALE-MoA-16, 7; ALE-SuP-10, 4; ALE-SuP-11, **4**
Kang, J.: AA-TuP-47, 20; AA-TuP-54, **20**; AF-MoP-42, 9; ALE-SuP-7, **4**
Kang, Y.: AF2-TuA-15, 16
Kanjolia, R.: AF2-TuM-16, 12; AM-MoP-3, 8; NS-MoA-15, 7
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Karahashi, K.: AF-MoP-33, 9
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Kazyak, E.: AA1-TuM-8, 13
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Keller, L.: AA1-TuA-6, 17; ALD+ALE-TuM-4, 11; ALD+ALE-TuM-7, **11**
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Kim, B.: AA-TuP-41, 20; AA-TuP-7, 19; AF-MoP-30, 9
Kim, C.: AA-TuP-32, 19; ALE1-TuA-3, 15; AM-MoP-1, 8; AM-MoP-5, 8
Kim, D.: AA2-WeM-15, **24**; AA-TuP-10, 19; AA-TuP-32, **19**; AF-MoP-50, 9; ALE2-TuA-13, 15; ALE-MoA-17, **7**; ALE-SuP-4, 4; ALE-SuP-8, 4; AM-MoP-5, 8; NS-TuP-11, **21**; NS-TuP-12, 21
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Kim, H.: AA2-WeM-15, 24; AA-TuP-10, 19; AA-TuP-16, 19; AA-TuP-17, **19**; AA-TuP-39, 19; AA-TuP-41, 20; AA-TuP-63, **20**; AF1-WeM-6, 23; AF2-TuA-15, 16; AF-MoA-15, 6; AF-MoP-2, 8; AF-MoP-25, 8; AF-MoP-3, 8; AF-MoP-42, 9; ALD+ALE-MoA2-8, 6; ALD+ALE-TuM-8, **11**; ALE-TuM-15, **11**; AS1-TuM-4, **14**; AS-TuP-3, 20; LB1-WeA-6, 26
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Kim, O.: AF1-WeM-6, 23; AF-MoP-25, **8**; AM-MoP-5, 8
Kim, S.: AA1-WeM-5, 24; AA2-TuA-17, 17; AA2-WeM-12, **24**; AA-TuP-26, 19; AA-TuP-47, 20; AF-MoP-50, 9; AF-MoP-60, **9**; NS-TuP-3, **21**
Kim, T.: AA2-WeM-15, 24; AA-TuP-2, **19**; AA-TuP-3, 19; AA-TuP-39, 19
Kim, W.: AS1-TuM-4, 14; AS-TuP-10, 20; AS-TuP-11, 20; AS-TuP-7, 20
Kim, Y.: AA1-TuA-7, 17; AA1-WeA-3, 28; AA2-WeM-15, 24; AA-TuP-14, **19**; AA-TuP-15, 19; AA-TuP-23, 19; AA-TuP-48, 20; AF-MoP-25, 8; AF-MoP-37, 9; AF-MoP-52, 9; AF-MoP-53, **9**; ALE-MoA-16, **7**; ALE-SuP-10, **4**; ALE-SuP-11, 4; ALE-SuP-12, 4; AM-MoP-6, 8
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Kleinlein, J.: AF-MoP-5, **8**
Klejna, S.: LB2-WeA-13, **26**
Klement, P.: AA-TuP-40, **20**
Knemeyer, K.: AA-TuP-49, 20
Knez, M.: EM2-WeA-11, 29
Knight, R.: AA2-TuM-14, 13
Knisley, T.: AF1-TuM-7, 12; AF-MoP-14, 8
Knoops, H.: AA2-TuA-15, 17; AF1-TuA-5, 16; ALD+ALE-MoA2-6, 6; ALE2-TuA-17, 15
Ko, A.: ALE-TuM-15, 11
Ko, D.: AF-MoP-60, 9
Kobayashi, H.: ALE1-TuA-1, 15
Kobayashi, M.: AA1-WeM-1, **24**
Koch, J.: AF-MoP-11, 8
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Koh, W.: AA-TuP-7, **19**; AF-MoP-30, 9
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Kolíbalová, E.: NS-MoA-17, 7
Korchnoy, V.: AF-MoP-12, **8**
Korpelainen, V.: AF2-WeM-13, 23
Kozen, A.: AA1-TuM-4, 13; AA2-TuM-15, 13; AF-MoP-21, 8
Kraehnert, R.: AA1-TuA-2, 17
Krahl, F.: NS-TuP-2, 20
Krick, B.: AA2-TuM-15, 13
Krishtab, M.: AS1-TuA-7, **18**
Kronemeijer, A.: AA-TuP-50, 20
Krstić, M.: AF-MoP-33, 9
Krunal, G.: AF-MoP-16, 8
Ku, B.: AA2-TuA-17, 17; LB1-WeA-7, **26**
Kudlanov, E.: AF-MoP-58, 9
Kuh, B.: AA2-WeM-15, 24; AF-MoP-25, 8
Kumar, R.: AF-MoP-27, 9
Kumar, U.: AF2-WeA-12, 27
Kummel, A.: AA2-WeM-14, 24; AF2-TuM-16, 12; AM-MoP-3, 8; EM-MoP-5, 10; EM-MoP-6, 10
Kundrata, I.: AM-MoP-10, 8; AS-TuP-2, 20; LB1-WeA-2, 26
Kunene, T.: EM-WeM-14, 25
Kuo, C.: AA-TuP-35, 19; AM-MoP-3, **8**
Kurek, A.: AA2-TuA-15, 17
Kurup, S.: AS1-TuM-7, 14
Kuyel, B.: AF-MoP-39, **9**
Kuzmin, A.: EM1-WeA-3, 29
Kwak, Y.: AA-TuP-23, 19
Kwon, H.: ALE-MoA-17, 7; ALE-SuP-4, 4; ALE-SuP-8, **4**
Kwon, J.: ALE1-TuA-3, **15**
Kwon, S.: AA1-TuA-4, 17; AS1-TuM-8, 14; TS-SuA-14, **3**
Kwon, Y.: AA1-WeA-2, 28; AA1-WeA-4, 28
Kwone, Y.: AA-TuP-56, 20; AF-MoP-24, **8**; AF-MoP-37, 9

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Lam, D.: AA-TuP-29, 19
Lamagna, L.: AA2-TuM-12, **13**
Lamann, K.: AF-MoP-48, 9
Larkiala, S.: AM-MoP-2, 8
Larsson, T.: AA2-TuM-16, 13
Lasonen, V.: AS1-TuA-6, 18
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Le, D.: AA1-WeM-5, 24; AA-TuP-26, 19; AF-MoP-23, 8; AF-MoP-51, 9; EM-MoP-3, **9**
Lee, A.: AA-TuP-11, 19; AA-TuP-12, 19
Lee, B.: AF-MoP-55, 9
Lee, C.: AF2-TuA-15, 16; AF-MoP-42, 9
Lee, D.: AA1-WeA-2, **28**; AA2-WeM-15, 24; AF-MoP-38, 9; NS-TuP-8, 21
Lee, H.: AF-MoP-3, **8**; AF-MoP-35, 9; AF-MoP-4, 8; ALE-SuP-12, **4**; AM-MoP-1, 8; AS2-TuM-14, 14; AS-TuP-5, 20
Lee, J.: AA2-WeM-15, 24; AF-MoP-34, **9**; AS1-TuM-4, 14; AS-TuP-10, 20; AS-TuP-11, 20; AS-TuP-7, **20**; NS-TuP-11, 21
Lee, K.: AF-MoP-2, 8; AF-MoP-3, 8; AF-MoP-60, 9; AM-MoP-1, 8
Lee, M.: AA1-WeM-3, **24**; AA1-WeM-5, 24; AA-TuP-14, 19; AA-TuP-25, **19**; AA-TuP-26, 19; AS2-TuM-14, **14**
Lee, P.: AF2-TuM-16, **12**; EM-MoP-5, 10
Lee, S.: AA1-TuA-4, 17; AA1-TuA-5, 17; AA2-WeM-15, 24; AA-TuP-10, **19**; AA-TuP-13, 19; AA-TuP-16, 19; AA-TuP-17, 19; AA-TuP-26, 19; AA-TuP-27, **19**; AA-TuP-29, **19**; AA-TuP-56, 20; AF1-TuM-1, 12; AF2-TuA-15, **16**; AF-MoP-24, 8; AF-MoP-31, **9**; AF-MoP-37, 9; AF-MoP-56, **9**; AF-MoP-57, 9; AF-MoP-59, **9**; ALD+ALE-MoA2-8, 6; AM-MoP-1, 8; AS1-TuM-8,

14; AS2-TuM-15, 14; AS-TuP-10, **20**; NS-TuP-12, 21
Lee, W.: AF1-TuA-3, 16; AF1-WeM-6, 23; AF-MoP-25, 8; AM-MoP-5, 8; AM-WeM-1, 25; AS1-TuM-6, 14; AS-TuP-3, 20; EM-MoP-3, 9; EM-WeM-16, 25; NS-TuP-4, **21**
Lee, Y.: AA1-TuA-7, **17**; AA-TuP-23, **19**; ALE1-WeM-7, 22; AM-MoP-5, 8; AM-MoP-6, **8**; LB1-WeA-6, **26**; NS-TuP-8, 21
Lefaucheux, P.: ALE2-TuA-11, 15; ALE2-WeM-14, 22
Lehmann, S.: AF-MoP-29, 9; NS-MoA-13, **7**; NS-TuP-2, **20**
Lehtonen, J.: AF-MoP-32, 9
Leménager, M.: AA-TuP-51, 20
Lenef, J.: AA1-TuA-5, **17**; AF-MoP-18, **8**
Lenert, A.: AF2-WeM-14, 23
Lengers, R.: AS2-TuM-13, 14
Lennon, C.: AA2-TuA-15, 17
Leoncini, A.: AF1-TuM-5, 12
Leonhardt, A.: AA1-WeM-6, 24
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Leskelä, M.: AF1-TuM-4, 12; AF-MoA-17, 6
Letourneau, S.: ALE2-WeM-16, 22
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Lewis, J.: EM-WeM-15, 25
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Li, H.: AA-TuP-33, **19**
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Li, Y.: AF-MoP-26, 8; AF-MoP-45, 9
Li, Z.: AM-MoP-7, **8**; AS1-TuA-2, 18; LB2-WeA-12, **26**
Lim, C.: AF-MoP-15, 8; ALE-SuP-2, 4; ALE-SuP-3, 4
Lim, D.: AF-MoP-50, 9
Lim, H.: AA-TuP-41, 20
Lim, J.: AA1-WeM-8, **24**; AA-TuP-1, **19**; AA-TuP-3, 19; ALD+ALE-MoA2-8, 6
Lin, D.: NS-MoA-11, 7
Lin, J.: EM-MoP-2, 9
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Lin, Z.: NS-MoA-11, 7
Lindblad, D.: AM-WeM-5, 25
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Liu, F.: AF1-TuM-5, 12; AF-MoP-26, 8
Liu, J.: AF1-WeA-8, **27**
Liu, R.: AF-MoA-16, 6
Liu, X.: AM-MoP-7, 8
Liu, Y.: AA1-TuM-5, 13
Lofano, E.: AS1-TuA-5, 18
Lomax, J.: AF-MoA-14, 6; ALD+ALE-MoA2-1, 6
Lowery, P.: AF-MoP-16, 8
Lu, M.: EM-WeM-16, 25
Luebbert, G.: NS-TuA-16, 18
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Maeda, K.: ALE-MoA-14, 7
Maes, J.: AF1-TuA-4, 16
Mameli, A.: AS2-TuM-16, 14
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Manders, W.: AA-TuP-50, 20
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Mäntymäki, M.: AF1-TuM-4, 12
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Maria, J.: AF2-TuM-15, 12
Marichy, C.: AF1-TuA-2, 16; AF2-TuA-14, **16**; NS-MoA-14, 7
Markevitch, M.: AF-MoP-23, 8
Marshall, J.: AF-MoP-39, 9
Martinson, A.: AF1-WeM-1, 23; AS1-TuM-5, 14; EM-WeM-14, **25**
Maslar, J.: AF2-TuA-17, 16; AM-WeM-3, **25**
Mastro, M.: AF2-TuM-13, 12
Mattinen, M.: AA1-TuA-3, **17**; AS1-TuA-4, 18
Mattson, E.: AF1-TuM-1, 12
Mauchamp, N.: AF-MoP-33, 9
Maximov, I.: ALE1-WeM-4, 22
Mayangsari, T.: AS-TuP-3, 20
Maydannik, P.: AM-WeM-7, 25
McBriarty, M.: ALE1-WeM-8, **22**
McCrory, C.: AA1-TuA-5, 17
McElwee-White, L.: AF-MoA-11, **6**
McHugh, J.: AF-MoP-40, 9
McIntee, O.: NS-TuA-12, 18
Mcleod, A.: AF2-TuM-16, 12; EM-MoP-5, 10
McNealy-James, T.: AF1-TuA-6, **16**
McNeary, W.: AA-TuP-46, **20**; LB1-WeA-3, **26**
MEDJOUBI, K.: AA2-WeA-13, 28
Mehregan, M.: NS-TuA-16, **18**
Mehta, M.: AF-MoA-14, 6
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Merkx, M.: AS2-TuM-12, 14; AS2-TuM-13, **14**
Mester, L.: AS1-TuA-6, 18
Metzger, T.: EM-MoP-5, 10
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Miikkulainen, V.: AA1-TuM-3, 13; AM-MoP-2, 8
Miller, J.: AF-MoP-28, **9**; LB1-WeA-3, 26
Miller, M.: NS-MoA-15, 7
Mimura, T.: AA-TuP-58, 20
Minjauw, M.: AS1-TuA-1, **18**
Minnich, A.: ALE1-WeM-5, 22; ALE2-WeM-12, **22**
Minot, M.: AA-TuP-20, 19; AA-TuP-21, 19
Misimi, B.: AF-MoP-17, 8
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Mizohata, K.: AA1-TuA-3, 17; AF1-TuM-4, 12; AF1-TuM-6, 12; AF-MoA-13, 6
Mizui, M.: AF1-TuM-8, **12**
Mizutani, F.: AF1-TuM-8, 12
Modreanu, M.: EM-MoP-2, 9
Mohammad, A.: AA2-TuA-14, 17; AF2-TuM-14, 12; AF-MoP-43, **9**
Moinpou, M.: AF2-TuM-16, 12
Moinpour, M.: AM-MoP-3, 8
Mokhtarzadeh, C.: AF1-TuM-1, **12**
Molenkamp, L.: AF-MoP-5, 8
Monaghan, D.: AF-MoP-54, 9
Moon, S.: AA-TuP-14, 19; AA-TuP-23, 19
Morin, P.: NS-MoA-11, 7
Morini, F.: AA2-TuA-15, 17
Moriyama, T.: AF-MoP-16, 8
Motoda, S.: AF-MoP-10, 8
Mpofu, P.: AA2-TuM-16, **13**
Müller, I.: AA-TuP-40, 20
Mun, K.: AF-MoP-2, 8; AF-MoP-3, 8; AF-MoP-4, 8
Murata, H.: AF-MoP-6, **8**
Murdzek, J.: ALD+ALE-MoA2-3, 6; ALE1-TuA-4, 15

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Na, S.: AA-TuP-39, **19**; AA-TuP-41, 20
Nabatame, T.: AF1-TuM-8, 12
Nakamura, K.: AF-MoP-10, 8
Nam, C.: EM-MoP-3, 9; EM-WeM-16, **25**; NS-TuP-4, 21
Nam, M.: AA-TuP-10, 19
Nam, S.: AA1-TuA-7, 17; AA-TuP-23, 19
Nam, T.: ALE-MoA-13, **7**
Nam, Y.: ALD+ALE-MoA2-8, 6
Nandi, P.: AA2-WeA-11, 28
Napari, M.: TS-SuA-4, **3**
Natarajan, S.: AF1-WeA-7, 27
Nečas, D.: AF-MoP-20, 8
Newsom, T.: AS1-TuA-3, 18
Ngo, T.: NS-MoA-15, **7**
Nguyen Chi, T.: AS2-TuM-14, 14
Nguyen, C.: AF-MoP-35, 9
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Nhan, B.: AA-TuP-45, **20**
Nielsch, K.: AF-MoP-29, 9; NS-MoA-13, 7; NS-TuP-2, 20
Nieminen, H.: AF-MoA-13, 6; ALD+ALE-MoA2-2, **6**
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Nikiforov, G.: AF-MoP-49, 9
Nishida, A.: AF-MoP-7, 8
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Niu, F.: NS-TuA-17, **18**
NOH, S.: AA1-WeA-4, **28**
Nolan, M.: AF1-WeA-8, 27; ALD+ALE-TuM-5, **11**
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Nos, J.: ALE2-TuA-11, 15
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Oh, I.: AF1-TuA-3, 16; AF-MoP-50, 9; AS-TuP-4, 20
Oh, J.: AS-TuP-11, **20**
Ohori, D.: AF-MoP-45, **9**
Ojamäe, L.: AF2-TuM-12, 12
Okuno, H.: NS-MoA-14, 7
Okyay, A.: AA2-TuA-14, 17; AF2-TuM-14, 12; AF-MoP-43, 9
Ong, M.: NS-TuP-1, 20
Ono, T.: AF-MoP-49, 9
ONO, T.: AA1-WeA-3, 28; AF-MoA-15, 6
Ooe, Y.: AF-MoP-7, 8
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Oyakhire, S.: AA1-TuM-7, 13
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Pal, D.: AA2-WeA-11, 28
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Park, B.: NS-MoA-16, 7
Park, C.: AF-MoP-2, **8**; AF-MoP-25, 8
Park, G.: AA1-WeA-1, 28
Park, H.: AA2-WeA-11, 28; AA-TuP-47, **20**; AF-MoP-60, 9; AM-WeM-6, 25; AS-TuP-11, 20
Park, J.: AA1-TuA-7, 17; AA1-WeA-1, 28; AA1-WeA-3, 28; AA2-WeM-15, 24; AA2-WeM-16, 24; AA-TuP-14, 19; AA-TuP-15, **19**; AA-TuP-48, 20; AF1-WeA-3, 27; AF-MoA-15, 6; AF-MoP-15, 8; AF-MoP-2, 8; AF-MoP-3, 8; AF-MoP-37, 9; ALE1-TuA-3, 15; ALE-SuP-3, **4**
Park, S.: AA-TuP-39, 19; AA-TuP-41, **20**; AA-TuP-47, 20; AA-TuP-62, 20; AA-TuP-63, 20; ALE1-TuA-3, 15
Park, T.: AS2-TuM-15, 14; EM-MoP-3, 9
Park, Y.: AA2-WeM-16, 24; AA-TuP-10, 19; AA-TuP-11, 19; AA-TuP-16, 19; AA-TuP-17, 19; AS2-TuM-15, 14
PARK, Y.: AA-TuP-61, **20**
Parke, T.: AF-MoP-22, **8**
Parlanti, P.: NS-TuP-10, 21
Parsons, G.: AA1-TuA-6, 17; ALD+ALE-MoA2-5, 6; ALD+ALE-TuM-1, **11**; ALD+ALE-TuM-4, 11; ALD+ALE-TuM-7, 11; AS1-TuA-8, 18; EM2-WeA-13, 29
Partridge, J.: ALD+ALE-MoA2-3, **6**; ALE1-TuA-4, 15; ALE-MoA-13, 7
Pathak, R.: AA-TuP-18, 19; AA-TuP-52, **20**; NS-TuA-11, 18
Pattison, T.: AS1-TuA-5, **18**
Paulson, N.: AF2-WeA-13, 27
Pavliňák, D.: NS-MoA-17, 7
Pawar, P.: AF-MoP-52, 9
Pedersen, H.: AA2-TuM-16, 13; AF2-TuM-12, **12**
Peng, J.: NS-TuP-7, **21**
Penley, D.: AM-WeM-6, **25**; NS-TuA-14, 18
Peterson, J.: AA-TuP-58, **20**
Peterson, R.: AF-MoP-18, 8; AS1-TuA-3, 18
Petrov, V.: AA-TuP-42, **20**
Philip, A.: AF2-WeM-13, **23**; EM1-WeA-4, 29; EM-MoP-1, **9**
Philippe, M.: AA-TuP-51, 20
Philippe, S.: ALE-TuM-14, 11
Pieck, F.: AS-TuP-5, 20; LB2-WeA-11, **26**
Pierce, E.: ALD+ALE-TuM-8, 11
Pina, M.: ALE-SuP-1, **4**
Pinna, N.: AA1-TuA-2, 17
Pinsard, I.: AF1-WeM-3, 23
Plakhotnyuk, M.: AM-MoP-10, 8; LB1-WeA-2, **26**
Plate, P.: AA2-TuA-16, 17
Poll, M.: AF2-WeM-13, 23
Poodt, P.: AF2-TuA-12, **16**; ALD+ALE-MoA2-4, 6; AM-WeM-8, 25
Popecki, M.: AA-TuP-20, 19; AA-TuP-21, 19
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Porri, P.: AA-TuP-64, 20
POSSEME, N.: ALE1-WeM-6, 22
Povey, I.: EM-MoP-2, 9
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PROVOST, M.: AA2-WeA-13, 28
Pulskamp, J.: AA2-TuM-14, 13
Putkonen, M.: AF1-TuM-6, 12; ALD+ALE-MoA2-2, 6
Puurunen, R.: AA-TuP-5, 19; AF1-WeA-5, **27**; AF-MoP-32, 9; AM-MoP-2, **8**

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Ragogna, P.: AF-MoA-14, **6**; ALD+ALE-MoA2-1, 6
Ragonesi, J.: AM-WeM-5, 25
Rahman, G.: AF-MoP-16, 8; AS-TuP-6, **20**
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Rask, J.: AM-MoP-2, 8
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Reindl, T.: AA2-TuA-16, 17
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Renzas, R.: AF1-TuA-5, 16; ALE2-WeM-15, 22
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Riedl, T.: AF-MoP-17, 8
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Ritasalo, R.: EM-MoP-4, 9
Rivera Cruz, K.: AA1-TuA-5, 17
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Rodriguez, R.: AA-TuP-57, 20
Rodríguez, R.: AM-MoP-4, **8**
Rodriguez-Pereira, J.: AF-MoP-36, 9
Rogowska, M.: AA2-TuA-13, 17
Roh, H.: AF1-WeM-6, 23
RONCO, A.: ALE1-WeM-6, 22
Rönn, J.: AM-WeM-7, **25**
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