

ALD/ALE 2025 Program Overview

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

ALD/ALE 2025 Program Overview

Room /Time	Event Hall	Halla Hall	Samda Hall	Tamna Hall A	Tamna Hall BC
SuA		TS-SuA: Tutorial Session			
MoM				PS-MoM: Plenary Session	
MoA		AF1-MoA: ALD on 3D Structures		ALDALE-MoA: Student Award Session AA-MoA: Memory Applications I	AF2-MoA: Precursor Chemistry I
MoP	Poster Sessions				
TuM		AF1-TuM: Mechanism and Theory I AF2-TuM: Mechanism and Theory II	ALE1-TuM: Thermal Gas Phase ALE ALE2-TuM: ALE Applications I	AA1-TuM: Memory Applications II AA2-TuM: EUV and Patterning Applications	AF3-TuM: Precursor Chemistry II EM-TuM: Molecular Layer Deposition & Hybrid Materials I
TuA		AF1-TuA: Analysis AF2-TuA: Plasma ALD	ALE1-TuA: ALE Tools & ALE Modeling ALE2-TuA: ALE Applications II	AA-TuA: 3D Semiconductor Devices AS-TuA: Area Selective Deposition I	EM-TuA: Molecular Layer Deposition & Hybrid Materials II NS-TuA: 2D Materials and Devices
TuP	Poster Sessions				
WeM		AA1-WeM: Catalyst and Fuel Cell Applications AA3-WeM: Other Energy Applications	ALE1-WeM: Plasma and/Energy- Enhanced ALE + Sustainability ALE2-WeM: ALE Applications III	AS1-WeM: Area Selective Deposition II AS2-WeM: Area Selective Deposition III	AA2-WeM: Display Applications AF-WeM: Material Growth I
WeA		AA1-WeA: Battery Applications I AA2-WeA: Battery Applications II	AM-WeA: ALD Equipment	AS-WeA: Area Selective Deposition IV AA3-WeA: Emerging Applications	AF-WeA: Material Growth II AA4-WeA: Medical Applications

Sunday Afternoon, June 22, 2025

<p>Tutorial Room Halla Hall - Session TS-SuA Tutorial Session Moderators: Heeyeop Chae, Sungkyunkwan University (SKKU), Republic of Korea, Han-Bo-Ram Lee, Incheon National University, Republic of Korea</p>		
1:00pm	<p>INVITED: TS-SuA-1 ALD for Hydrogen Technology, <i>Ji Hwan An</i>, POSTECH, Republic of Korea</p>	
1:45pm	<p>INVITED: TS-SuA-4 ALD Process Optimization Using Machine Learning: A Practical Tutorial for Domain Experts, <i>Pil Sung Jo</i>, Gauss Labs Inc, Republic of Korea</p>	
2:30pm	<p>INVITED: TS-SuA-7 ALD-Enabled Synthesis of Metal-Organic Framework Thin Films: Fundamentals to Applications, <i>Junjie Zhao</i>, Zhejiang University, China</p>	
3:15pm	<p>BREAK</p>	
3:30pm	<p>INVITED: TS-SuA-11 The Importance of Interconnect Technology of Si Devices and The Extension of ALD Processes, <i>Hoonjoo Na</i>, Samsung Electronics, Republic of Korea</p>	
4:15pm	<p>INVITED: TS-SuA-14 Atomic Layer Etching: Basics, Chemistries, and New Developments, <i>Jane P. Chang</i>, UCLA</p>	
5:00pm	<p>INVITED: TS-SuA-17 The Era of Atomic Scale Processing: When Area-Selective Deposition Meets Atomic Layer Etching, <i>Silvia Armini</i>, IMEC, Belgium</p>	

Monday Morning, June 23, 2025

Plenary Session Room Tamna Hall A - Session PS-MoM Plenary Session Moderators: Heeyeop Chae , Sungkyunkwan University (SKKU), Republic of Korea, Han-Bo-Ram Lee , Incheon National University, Republic of Korea		
8:45am	PS-MoM-1 ALD Welcome and Introductory Remarks	
9:00am	INVITED: PS-MoM-2 ALD Plenary Lecture: The Evolution of DRAM: Scaling Challenges, ALD Innovations, and Future Architectures, Seiyon Kim , SK hynix, Republic of Korea	
9:45am	INVITED: PS-MoM-5 ALD 2025 Innovator Awardee Talk: Atomic Layer Deposition of Metal Phosphates and Metal Borates through Thermal and Plasma Activated Approaches, Christophe Detavernier , Ghent University, Belgium	
10:15am	BREAK & EXHIBITS	
10:45am	PS-MoM-9 ALE Welcome and Introductory Remarks	
11:00am	INVITED: PS-MoM-10 ALE Plenary Lecture: Challenges and Future of ALE Technology in Semiconductor Manufacturing, Chanmin Lee , Samsung Electronics, Republic of Korea	

Monday Afternoon, June 23, 2025

	ALD Fundamentals Room Halla Hall - Session AF1-MoA ALD on 3D Structures Moderators: Hao Van Bui , Phenikaa University, Viet Nam, Arrelaine Dameron , Forge Nano	Atomic Layer Etching Room Samda Hall - Session ALE-MoA ALD+ALE - Emerging ALE Moderators: Silvia Armini , IMEC Belgium, Huichan Seo , SK hynix, Republic of Korea
1:30pm		
3:15pm	BREAK & EXHIBITS	BREAK & EXHIBITS
4:00pm	INVITED: AF1-MoA-11 Continuous Production of Nanocoated Powders, Sébastien Moitzheim , Powall, Netherlands	INVITED: ALE-MoA-11 Revolutionizing Semiconductor Scaling with Atomic Layer Etch Pitch Splitting, Jonas Sundqvist , Reza Jafari Jam , Robin Athle , Yoana Ilarionova , Asif Hassan , Intu Sharma , Amin Karimi , AlixLabs, Sweden; Fred Roozeboom , AlixLabs, Netherlands; Dmitry Suyatin , AlixLabs, Sweden
4:30pm	AF1-MoA-13 Plasma-Enhanced Spatial ALD on 2D and 3D Surface Topologies: The Case of Amorphous and Crystalline TiO ₂ , Mike van de Poll (Graduate Student) , Eindhoven University of Technology, Netherlands; Jie Shen , Holst Centre / TNO, Netherlands; James Hilfiker , J.A. Woollam Co., Inc.; Marcel Verheijen , Paul Poedt , Eindhoven University of Technology, Netherlands; Fieke van den Bruele , Holst Centre / TNO, Netherlands; Erwin Kessels , Bart Macco , Eindhoven University of Technology, Netherlands	ALE-MoA-13 Exploring Atomic Layer Etching Behavior Differences in ZnO Crystallographic Planes and Surface Energy Analysis via DFT, Ji Hyun Gwoen , Hae Lin Yang , Min Chan Kim , Gyeong Min Jeong , Hanyang University, Korea; Cas Visser , Erwin Kessels , Eindhoven University of Technology, The Netherlands; Jin Seong Park , Hanyang University, Republic of Korea
4:45pm	AF1-MoA-14 Rapid Test for ALD in High Aspect Ratio Spaces Utilizing Thermally Bonded Chips and Hydrazine with Titanium Tetrachloride for TiN Deposition, Amy Ross , Dipayan Pal , Dohyun Go , Diego Contreras Mora , Ping-Che Lee , UC San Diego; Danish Baig , Georgia Institute of Technology; Adrian Alvarez , Walter Hernandez , RASIRC, USA; Dan Le , Jeffery Spiegelman , RASIRC; Muhannad Bakir , Georgia Institute of Technology; Andrew Kummel , UC San Diego	ALE-MoA-14 Investigation of Plasma ALD and ALE of Al ₂ O ₃ in Nanoscale Structures: Towards Corner Lithography at the sub-20 nm Scale, Nicholas J. Chittock , Oxford Instruments Plasma Technology, UK; Erwin Berenschot , Niels Tas , Melissa J. Goodwin , University of Twente, Netherlands; Marcel A. Verheijen , Eurofins Materials Science, Netherlands; Meghali Chopra , Yang Ban , Sandbox Semiconductor; Erwin Kessels , Adriaan J.M. Mackus , Eindhoven University of Technology, Netherlands
5:00pm	AF1-MoA-15 Enhancing Step Coverage in High-Temperature Ald for Advanced Semiconductor Scaling, Seung Hyun Lee , Deok Hyun Kim , Soulbrain Co., Ltd., Republic of Korea; Kok Chew Tan , Soulbrain Co., Ltd., Republic of Korea; Sung Gi Kim , Gyun Sang Lee , Jung Hun Lim , Jae Sun Jung , Soulbrain Co., Ltd., Republic of Korea	ALE-MoA-15 Optimizing EUV Etching with In-Situ Atomic Processing: Where and Why?, Philippe Bezaud , IMEC Belgium; Atefeh Fathzadeh , KU Leuven and Imec, Belgium
5:15pm	AF1-MoA-16 ALD as the Solution for Uniform Cu Electroplating in High Aspect Ratio Vias, Matthew Weimer , Sara Harris , Forge Nano; Irina Stateikina , Centre de Collaboration MiQro Innovation (C2MI), Canada; Dane Lindblad , Forge Nano; Marc Guillmain , Xavier Gaudreau-Miron , Centre de Collaboration MiQro Innovation (C2MI), Canada; Arrelaine Dameron , Forge Nano	
5:30pm	AF1-MoA-17 Multi-Scale Model for Optimization of Low-Temperature Al ₂ O ₃ ALD Process Conformality Within High Aspect Ratio Trench, Ivan Petraš , Yury Shustrov , Andrey Smirnov , Semiconductor Technology Research d.o.o. Beograd, Serbia	

Monday Afternoon, June 23, 2025

Room Tamna Hall A	
1:30pm	ALDALE-MoA-1 ALD Student Award Finalist Talk: Integrating Machine Learning into Atomic Layer Deposition: A Case Study on Hafnium Oxide Process Optimization, Minjong Lee (Graduate Student) , Doo San Kim, Thi Thu Huong Chu, Dushyant Narayan, Dan Le, Soubhik De, University of Texas at Dallas; Si Joon Kim, Kangwon National University, Republic of Korea; Jiyoung Kim, University of Texas at Dallas
1:45pm	ALDALE-MoA-2 ALD Student Award Finalist Talk: The AtomicLimits ALD/E Database: Unlocking the Future of ALD/E with Large Language Models, Eleni Poupaki (Graduate Student) , Eindhoven University of Technology, Netherlands; Sameer Sadruddin, Jennifer D'Souza, TIB Leibniz Information Centre for Science and Technology, Germany; Alex Watkins, Bora Karasulu, University of Warwick, UK; Sören Auer, TIB Leibniz Information Centre for Science and Technology, Germany; Adrie Mackus, Erwin Kessels, Eindhoven University of Technology, Netherlands
2:00pm	ALDALE-MoA-3 ALD Student Award Finalist Talk: Influence of Hydrocarbon Chain Length in Phenyl(Alkyl)trimethoxysilane Inhibitors on AS-ALD Selectivity: Comparison of Adsorption Mechanisms in Gas-phase and Liquid-phase, Hae Lin Yang (Graduate Student) , Minchan Kim, Hanyang University, Korea; Eun Chong Cho, Sungkyunkwan University, Korea; Seunghwan Lee, Beomseok Kim, Changhwa Jung, Hanjin Lim, Samsung Electronics Co., Inc., Republic of Korea; Jung-Hoon Lee, Youngkwon Kim, Korea Research Institute of Chemical Technology (KRICT), Republic of Korea; Jin-Seong Park, Hanyang University, Korea
2:15pm	ALDALE-MoA-4 ALD Student Award Finalist Talk: Diffusion Behavior Study for Vapor Phase Infiltration Using Quartz Crystal Microgravimetry and its Application in Energy Storage Materials, Rongliang Shang (Graduate Student) , Jin Xie, ShanghaiTech University, China
2:30pm	ALDALE-MoA-5 ALE Student Award Finalist Talk: Lateral Etching of 2D MoS ₂ Crystalline Layers Using Sequential Ozone and Thionyl Chloride Exposures, Janine Sempel (Graduate Student) , University of Colorado at Boulder; Taewook Nam, Sejong University, Republic of Korea; Tianyi Zhang, Jing Kong, Massachusetts Institute of Technology; Steven George, University of Colorado at Boulder
2:45pm	ALDALE-MoA-6 ALE Student Award Finalist Talk: A Sustainable and Precise Solution to IGZO Etch Residual Challenges Using Transient-Assisted Processing (TAP), Atefeh Fathzadeh (Graduate Student) , KU Leuven and Imec, Belgium; Philippe Bezaud, Thierry Conard, Frank Holsteyns, IMEC Belgium; Stefan De Gendt, KU Leuven and Imec, Belgium
3:00pm	
3:15pm	BREAK & EXHIBITS
4:00pm	INVITED: AA-MoA-11 Atomic Layer Technology for Ferroelectrics and Resistive Switching Devices: Advances in Epitaxial Growth, Doping, and Defect Control, Miin-Jang Chen , Yu-Sen Jiang, Ting-Yun Wang, Chen-Hsiang Ling, Department of Materials Science and Engineering, National Taiwan University, Taiwan
4:30pm	AA-MoA-13 Atomic-Scale Processing of Ruthenium Thin Films via ALD and ALE for Advanced Interconnects, ChangHwan Choi , YoungSeo Na (Graduate Student) , HyunJin Lim, SangKuk Han, HyoJin Ahn, YehBeen Im, WonJae Choi, Hanyang University, Korea
4:45pm	AA-MoA-14 ALD of ferroelectric TiN/Hf _{0.5} Zr _{0.5} O ₂ /TiN stacks; growth and interfacial oxidation studied by <i>in situ</i> spectroscopic ellipsometry, Stijn van der Heijden (Graduate Student) , Eindhoven University of Technology, Netherlands; Florian Wunderwald, Uwe Schroeder, Namlab, Germany; Marcel Verheijen, Erwin Kessels, Bart Macco, Eindhoven University of Technology, Netherlands
5:00pm	AA-MoA-15 Stable Synaptic Function and Orientation Selectivity Recognition Under Strain in Bilayer Stretchable Memristors via Atomic Layer Deposition, Ying-Jie Ma (Graduate Student) , Ai-Dong Li, Nanjing University, China
5:15pm	AA-MoA-16 P-Type Tellurium Thin Film Transistor with Sacrificial Atomic Layer Deposition, Wonho Choi (Graduate Student) , Byongwoo Park, Seungjae Yoon, Jeong Woo Jeon, Gwangsik Jeon, Sangmin Jeon, Sungjin Kim, Seoul National University, South Korea; Chanyoung Yoo, Hongik University, Republic of Korea; Cheol Seong Hwang, Seoul National University, South Korea

ALD & ALE
Session ALDALE-MoA
Student Award Session
Moderators:

Jihwan An, Pohang University of Science and Technology (POSTECH), Republic of Korea,
Parag Banerjee, University of Central Florida

ALD Applications
Session AA-MoA
Memory Applications I
Moderators:

Hanmei Choi, Samsung Electronics, Republic of Korea,
Robert Clark, TEL Technology Center, America, LLC

Monday Afternoon, June 23, 2025

Room Tamna Hall BC		
1:30pm		ALD Fundamentals Session AF2-MoA Precursor Chemistry I Moderators: Seán Barry , Carleton University, Canada, Haripin Chandra , The Electronics business of Merck KGaA Darmstadt Germany
3:15pm	BREAK & EXHIBITS	
4:00pm	INVITED: AF2-MoA-11 The Emergence of New Ligands for ALD Precursor Development, Anjana Devi , Leibniz Institute for Solid State and Materials Research, Germany	
4:30pm	AF2-MoA-13 A Novel Liquid Cocktail Precursor for Atomic Layer Deposition of Hafnium-Zirconium-Oxide Films for Ferroelectric Devices, Akihiro Nishida , Tsukasa Katayama , Takashi Endo , Yasutaka Matsuo , Hokkaido University, Japan	
4:45pm	AF2-MoA-14 Anhydrous Hydrogen Iodide Source for ALD of CsI and Other Metal Halides, Georgi Popov , Alexander Weiß , Anton Vihervaara , Kenichiro Mizohata , Mikko Ritala , Marianna Kemell , University of Helsinki, Finland	
5:00pm	AF2-MoA-15 Evaluating Trisilylamine and Diiodosilane as Silicon Precursors for PEALD of Silicon Nitride in Front-End-of-Line Applications, Keerthi Dorai Swamy Reddy , Marco Lisker , IHP - Leibniz Institut fuer innovative Mikroelektronik, Germany	
5:15pm	AF2-MoA-16 Precursor Design for Thermal ALD of Silver Metal, David Emslie , Nick Hoffman , McMaster University, Canada	
5:30pm		

ALD for Manufacturing

Room Event Hall - Session AM-MoP

ALD for Manufacturing Poster Session

5:45 – 7:00 pm

AM-MoP-2 Assessing the Potential of Non-Pyrophoric $\text{Zn}(\text{Dmp})_2$ for the Fast Deposition of ZnO Functionalcoatings by Spatial Atomic Layer Deposition, **David Muñoz-Rojas**, CNRS, France; **Liam Johnston**, LMGP, France; **Jorit Obenlünenschloß**, RUB, Germany; **Anjana Devi**, IFW, Dresden, Germany; **Daniel Bellet**, Grenoble INP, France

AM-MoP-3 A Novel Microwave ECR Plasma System for Damage-Free PEALD, **Paul Dreher**, Dominik Hartmann, Evatec AG, Switzerland; **Julian Pilz**, Silicon Austria Labs, Austria; **Jörg Patscheider**, Evatec AG, Switzerland

AM-MoP-4 Optimization of the showerhead for Atomic Layer Deposition by Computational Fluid Dynamics, **Seunghoon Lee (Graduate Student)**, Dongkun Song, Gyeongwon Min, Doyoung Jung, Jungeon Park, Jeongmin Han, Dahye Geum, Hyeondo Han, Seungwan Bae, Hyeon Lee, Guyoung Cha, Dankook University, Republic of Korea

AM-MoP-5 Very High Frequency Plasma-Enhanced ALD: System Configuration and Thin Film Property Analysis, **Jae Yeon Han**, Hyung Min Kim, Da Eun Bae, Jae Ho Choi, Jae Hack Jeong, CN1 Co., Ltd, Republic of Korea

AM-MoP-6 Pneumatic Optimization Utilizing Predictive Analytics Within Embedded Systems for Dose Control of Fast Pulsing Valves., **Frank Horvat**, M. Masroor, B. Olechnowicz, Swagelok Company

AM-MoP-7 Fast Deposition of High-Quality ALD Materials Using the PlasmaPro ASP System, **Yi Shu**, Arpita Saha, Dmytro Besprozvanny Besprozvanny, Michael Powell Powell, Agnieszka Kurek, Oxford Instruments Plasma Technology, UK; **Harm Knoops**, Oxford Instruments Plasma Technology, UK, Eindhoven University of Technology, Netherland, UK

AM-MoP-10 XPS Metrology for Area Selective Deposition Applications in Semiconductor Manufacturing, **Kangwon Kim**, Hyung Keun Yoo, Samsung Electronics, Republic of Korea; **Heechang Yang**, Sunho Kim, Nova Measuring Instruments Korea, Ltd., Republic of Korea; **Wei Ti Lee**, Torsten Stoll, Nova Measuring Instruments, Inc.

AM-MoP-12 A Remote Plasma Spectroscopy Diagnostic for Monitoring of Atomic Layer Deposition Processes, **Marcus Law**, Gencoa Ltd., UK

AM-MoP-13 Early Detection of Process Window Shifts in ALD Processes by PillarHall Lateral High Aspect Ratio Test Structures, **Jani Karttunen**, Chipmetrics Oy, Finland; **Anish Philip**, Aalto University, Finland; **Jussi Kinnunen**, Kalle Eskelinen, **Feng Gao**, Mikko Utriainen, Chipmetrics Oy, Finland

AM-MoP-15 Process Monitoring via Time-of-Flight Mass Spectrometry based on Isotopic Patterns, **Hye-Young Kim**, **Sung Kyu Jang**, **Seul-Gi Kim**, **Yoonjeong Shin**, Korea Electronics Technology Institute, Republic of Korea; **Il Hwi Lee**, **Nam Young Kim**, SurplusGLOBAL Inc., Republic of Korea; **Jong Hyun Choi**, **Hyeongkeun Kim**, Korea Electronics Technology Institute, Republic of Korea

AM-MoP-16 Advancing Fast Spatial Atomic Layer Deposition: Optimizing Precursor Control and Atmospheric Effects for Functional Oxide Thin Films, **Viet Huong Nguyen**, **Hao Van Bui**, Faculty of Materials Science and Engineering, Phenikaa University, Hanoi 12116, Viet Nam., Viet Nam

ALD Fundamentals

Room Event Hall - Session AF-MoP

ALD Fundamentals Poster Session

5:45 – 7:00 pm

AF-MoP-1 Atomic Layer Deposition of P-type Oxide Semiconductor Thin Films Using a Novel Precursor for Transistor Applications, **Sol-Hee Jo (Graduate Student)**, Jung-Hoon Lee, Jimin Seo, Bo Keun Park, Korea Research Institute of Chemical Technology (KRICT), Republic of Korea

AF-MoP-2 Silicon Nitride Ald Process Using Diiodosilane and Hydrazine for Low Temperature Deposition, **Hayato Murata**, Takuya Yoshikawa, Yoshifumi Wada, Hideharu Shimizu, Taiyo Nippon Sanso Corporation, Japan

AF-MoP-3 Characterization of Novel Precursors for Improved ALD Performance in HfO_2 Films, **Dahyun Lee**, Hohoon Kim, Sejin Jang, Seonah Kim, Donggeun Lee, The Electronics business of Merck KGaA Darmstadt Germany.; **Khang Ngo**, **Randall Higuchi**, The Electronics business of Merck KGaA Darmstadt Germany,

AF-MoP-4 Effect of Impurities in Trimethylaluminum on Conformality of Al_2O_3 Thin Film on Patterned Substrate Grown by ALD, **Shuya Ikemura**, **Kohei Iwanaga**, TOSOH Corporation, Japan

AF-MoP-5 Thermolysis of Silicon Precursors for High-Temperature Atomic Layer Deposition Processes, **Tanzia Chowdhury**, Okhyeon Kim, Hye-Lee Kim, Sejong University, Republic of Korea; **Jung Woo Park**, Hansol Chemical Co., Ltd., Republic of Korea; **Won-Jun Lee**, Sejong University, Republic of Korea

AF-MoP-6 On an Initial Incubation Process of Thermal ALD Pt on $\text{ALD Al}_2\text{O}_3$ Measured by Temperature Stabilized In-line QCM, **Masafumi Kumano**, Micro System Integration Center, Tohoku University, Japan; **Makoto Shimizu**, Graduate School of Engineering, Department of Mechanical Systems Engineering, Tohoku University, Japan; **Takuma Yamamoto**, Graduate School of Engineering, Department of Mechanical Engineering, Tohoku University, Japan; **Shuji Tanaka**, Graduate School of Engineering, Department of Robotics, Japan

AF-MoP-7 Oxide Film ALD Using Oh Radicals Generated by Mixing Pure Ozone Gas with Hydrogen-Included Molecular Gas Over 200°C, **Naoto Kameda**, MEIDENSHA Corp., Japan; **Kenichi Uehara**, **Shigeo Yasuhara**, Japan Advanced Chemicals Corp., Japan; **Soichiro Motoda**, **Tetsuya Nishiguchi**, MEIDEN NANOPROCESS INNOVATIONS Inc., Japan

AF-MoP-8 Novel Indium Precursor with Improved Physical Properties and ALD Window for Atomic Layer Deposition of Indium Oxide, **Randall Higuchi**, **Khang Ngo**, The Electronics business of Merck KGaA Darmstadt Germany.; **Lukas Mai**, **Paul Mehlmann**, Merck KGaA, Darmstadt, Germany; **Daniel Moser**, **Bhushan Zope**, Merck KGaA, Darmstadt; **Holger Heil**, Merck KGaA, Darmstadt, Germany

AF-MoP-9 Atomistic Modeling Methodologies for Atomic Layer Deposition, **Yong-Ju Kang**, Synopsys Korea Inc., Republic of Korea; **Suresh Kondati Natarajan**, Synopsys Inc., Denmark; **Rafshan Ul Atik**, Synopsys India Pvt. Ltd., India; **Jess Wellendorf**, **Søren Smidstrup**, Synopsys Denmark ApS, Denmark

AF-MoP-10 Unraveling the Influence of Substrate Surface and Temperature on Microstructural Evolution of Crystalline MoS_2 in Atomic Layer Deposition, **Seung Ho Ryu (Graduate Student)**, **Seong Keun Kim**, Korea University, Republic of Korea

AF-MoP-11 Novel Alkoxy-Bridged Silicon Precursor for Plasma Enhanced Chemical Vapor Deposition of Low-k SiCOH Spacer Thin Film, **Jongryul Park**, **Sooyoung Jung**, **Seokhee Shin**, **Yongjoo Park**, SK Trichem, Republic of Korea

AF-MoP-12 High Temperature Atomic Layer Deposition of Hafnium Oxide Film using Novel Liquid Hf Precursor Deposition, **Daeyeong Kim**, SK Trichem, Republic of Korea; **Oh Jieun**, **Lee Seo-Hyun**, **Kim Woo Hee Kim**, Hanyang University, Korea; **Park Yongjoo**, SK Trichem, Republic of Korea

AF-MoP-13 Analysis of Plasma Characteristics and Substrate Damage Using a Dual-Frequency PE-ALD Process with 13.56 MHz and 100 MHz, **Da-Eun Bae**, **Hyung Min Kim**, **Jae Yeon Han**, **Jae Ho Choi**, **Jae Hack Jeong**, CN1 Co., Ltd., Republic of Korea

AF-MoP-14 High-Temperature, High-Growth Rate Atomic Layer Deposition of Silicon Oxide Thin Films Using a Novel Precursor, **Changgyu Kim (Graduate Student)**, **Mi-Soo Kim**, **Okhyeon Kim**, **Ji Hwan Lee**, Sejong University, Republic of Korea; **Seunggyun Hong**, **Byung-Kwan Kim**, **Jin Sik Kim**, **Wonyong Koh**, UP Chemical Co., Ltd., Republic of Korea; **Hye-Lee Kim**, **Won-Jun Lee**, Sejong University, Republic of Korea

AF-MoP-15 Development of New Group 3 Metal and Lanthanide Precursors with Volatility and Thermal Stability for ALD, **Yongmin Go (Graduate Student)**, **Bo Keun Park**, 141, Gajeong-ro, Yuseong-gu, Republic of Korea

AF-MoP-16 Exploring Ultrathin SnO_2 Films via Atomic Layer Deposition for Facilitating the Formation of the Rutile TiO_2 Phase, **InHwan Baek**, **YooHyeon Jung**, **InHong Hwang**, Inha University, Republic of Korea

AF-MoP-17 Novel ALD Indium Precursor for In_2O_3 Thin Film Fabrication, **Dong Hyeon Bang (Graduate Student)**, **Bo Keun Park**, **Yongmin Go**, **Sunyoung Shin**, **Ji Yeon Ryu**, Korea Research Institute of Chemical Technology (KRICT), Republic of Korea

AF-MoP-18 Optimization of ALD Processes and High-Quality Thin Film Formation Using the Liquid Aluminum Precursor 1,5-Dimethyl-1-Alumina 5-Azacyclooctane, **Sangick Lee**, **Sanghun Lee**, **Yunsik Park**, **Sejin Jang**, **JoongJin Park**, **Sangyong Jeon**, **JunHee Cho**, DNF, Republic of Korea

AF-MoP-19 Low-Resistivity Molybdenum Thin Films Deposited by ALD Using Molybdenum(0) Organometallic Compounds and Iodine-Containing Reactant, **Sang Ick Lee**, **Ji Hyeon Youn**, **Yo Han Jo**, **Won Mook Chae**, **Sang Yong Jeon**, **Joong Jin Park**, **Se Jin Jang**, DNF Co., Ltd., Republic of Korea

AF-MoP-20 Valence-state Controlled Growth of P-type Tin(II) Monoxide Films by Atomic Layer Deposition using a Novel Sn Precursor, **Jeong Hwan Han**, **Jeong Eun Shin (Graduate Student)**, Seoul National University of Science and Technology, Republic of Korea; **Heesun Kim**, **Bo Keun Park**, Korea Research Institute of Chemical Technology (KRICT), Republic of Korea

AF-MoP-21 Synthesis and Characterization of Ge and Sn ALD Precursors with Aminoketone Ligands, **Chang Min Lee (Graduate Student)**, Bo Keun Park, Heesun Kim, Ji Min Seo, Yongmin Go, Korea Research Institute of Chemical Technology (KRICT), Republic of Korea; Seung Uk Son, Sungkyunkwan University, Korea; Ji Yeon Ryu, Taek Mo Chung, Korea Research Institute of Chemical Technology (KRICT), Republic of Korea

AF-MoP-22 M(II) (M = Ni, Cu, Ge, Sn) ALD Precursors Using N-tert-butylformamide Ligand, **Mi Jeong Kim (Graduate Student)**, Korea Research Institute of Chemical Technology (KRICT), Republic of Korea; Ji Min Seo, Korea Research Institute of Chemical Technology (KRICT), Republic of Korea; Heesun Kim, Korea Research Institute of Chemical Technology (KRICT), Republic of Korea; Yongmin Go, Korea Research Institute of Chemical Technology (KRICT), Republic of Korea; Seung Uk Son, Sungkyunkwan University, Korea; Ji Yeon Ryu, Taek-Mo Chung, Bo Keun Park, Korea Research Institute of Chemical Technology (KRICT), Republic of Korea

AF-MoP-23 Reaction Pathway of Copper Atomic Layer Deposition via Time-of-Flight Mass Spectrometry, **Camilla Minzoni, Caroline Hain, Krzysztof Mackosz**, Empa, Swiss Federal Laboratories for Materials Science and Technology, Thun, Switzerland; **Andreas Werbrouck**, Thin Film Coatings and Materials Electrochemistry Lab, University of Missouri-Columbia, Missouri, USA; **Carla Frege, Bensaoula Abdel**, Tofwerk AG, Thun, Switzerland; **Patrik Hoffmann, Ivo Utke**, Empa, Swiss Federal Laboratories for Materials Science and Technology, Thun, Switzerland, **Kwijoong Kim**, TOFWERK, Republic of Korea

AF-MoP-24 Bimetal Thin Film Deposition Using Novel Organometallic Dinuclear RuCo Complex, **Kazuaru Suzuki**, Tomohiro Tsugawa, Subhabrata Das, Yohei Uchiyama, Ryosuke Harada, Hirofumi Nakagawa, Tanaka Precious Metal Technologies Co. Ltd., Japan

AF-MoP-25 Atomic Layer Deposition of Composition Engineered Nitrogen-Doped SnOX Films for Enhanced Performance of Thin-Film Transistor, **Jeong Hwan Han, Hyun Hak Lee (Undergraduate)**, Jeong Eun Shin, Na Yeon Lee, Seoul National University of Science and Technology, Republic of Korea

AF-MoP-26 Atomic Layer Deposition of Molybdenum Using a Dual-Purpose Molybdenum Precursor for Advanced Metallization, **David Mandia, Matthew Griffiths, Youness Alvandi, Arya Shafiefarhood**, Lam Research Corporation

AF-MoP-27 Demonstration of ALD Hf_xZr_{1-x}O₂ Using Various Oxidant Sources Over Ultra-High Aspect-Ratio Structure for Memory Applications, **Dan Le**, RASIRC; **Jin-Hyun Kim, Thi Thu Huong Chu, Soubhik De, Dushyant Narayan, Minjong Lee**, University of Texas at Dallas; **Walter Hernandez, Josh Garretson, Adrian Alvarez, Jeffrey Spiegelman**, RASIRC; **Jiyoung Kim**, University of Texas at Dallas; **Lorenzo Diaz**, RASIRC

AF-MoP-28 Bottleneck-Effect on Thin-Film Conformality in High Aspect Ratio ALD, **Mikko Utriainen, Jussi Klunninen, Jani Karttunen, Feng Gao**, Chipmetrics, Finland; **Anish Philip**, Aalto University, Finland

AF-MoP-29 Low Temperature Deposition of SiO₂ and SiOC Films, **Chad Brick**, Gelest, Inc; **Tomoyuki Ogata**, Mitsubishi Chemical Corporation, Japan

AF-MoP-30 Vanadium-Sulphide Layers with Atomic Layer Deposition, **Zsófia Bajji, Zsófia Bérces**, Centre for energy research, Hungary; **Zoltán Szabó, Zsolt Fogarassy, Péter Vancsó**, Centre for Energy Research, Hungary

AF-MoP-31 Film and Surface Stress Measurements during Tungsten Atomic Layer Deposition, **Ryan B. Vanfleet (Graduate Student)**, Steven M. George, University of Colorado at Boulder

AF-MoP-32 Modifying Vanadium Oxide by Atomic Layer Plasma Treatment, **Ritwik Bhatia, Mohammad Saghayezhian, Veeco Instruments; Ganesh Sundaram, Veeco**

AF-MoP-33 Prediction of Adsorption/Desorption Equilibrium Constants and Surface Reaction Rate Constants Using Neural Network Potentials for ALD Process Design, **Noboru Sato, Naoki Tamaoki, Atsuhiko Tsukune, Yukihiro Shimogaki**, The University of Tokyo, Japan

AF-MoP-35 Thermal ALD Vanadium Nitride (VN) as Next-Generation Electrode, **Antony Jan, Hae Young Kim**, Eugenius, Inc.

AF-MoP-37 Atomic Layer Deposition of a Low Carbon Hafnium Oxide Using (2-methylindanyl)tris(dimethylamido)hafnium and Ozone, **Drew Hood, Rong Zhao**, Entegris

AF-MoP-38 Rapid Low-Temperature Atomic Layer Deposition of HfO₂, **Xianhu Liang, Volkmar Hock, Hartmut Buhmann, Johannes Kleinlein, Laurens W. Molenkamp**, University of Wuerzburg, Germany

AF-MoP-39 Innovative Advanced Deposition Material (ADM) Technique for Low-Resistivity, High-Conformality Metal and Barrier Thin Films, **Gyun Sang Lee, Changbong Yeon, Deok Hyun Cho, Jung Hun Lim, Jaesun Jung**, Soulbrain, Republic of Korea

AF-MoP-40 Evaluation of a Hafnium Precursor with Higher Thermal Stability for the Atomic Layer Deposition of Hafnium Oxide Films, **Randall Higuchi, Khang Ngo, Bhushan Zope**, The Electronics business of Merck KGaA Darmstadt Germany; **Joo-Yong Kim, Dong-Geun Lee**, The Electronics business of Merck KGaA Darmstadt Germany

AF-MoP-41 Modulation of Hf_xZr_{1-x}O₂ Thin Film Characteristics via ALD and ALE, **Ming-Kuan Fan (Graduate Student)**, National Tsing Hua University, Taiwan ; Taiwan Instrument Research Institute, Taiwan; **Yi-Cheng Chen**, National Tsing Hua University, Taiwan; **Chien-Wei Chen, Yang-Yu Jhang, Sheng-De Wong**, Taiwan Instrument Research Institute, Taiwan; **Hong-Luen Lin**, Tokyo Electron Taiwan Limited, Taiwan; **Ying-Hao Chu**, National Tsing Hua University, Taiwan

AF-MoP-42 Atomic Layer Deposition of Lanthanum Oxide Using New La Precursors, **Junhyun Song, Seungmin Han, Jungwon Hwang**, Air Liquide, Republic of Korea

AF-MoP-44 Promising ALD Precursor for Next-Generation Circuit Material: A Novel Ru-Based ALD Precursor with Lower Vaporization Temperature, **ziyu Yan, Yong-Jay Lee**, Industrial Technology Research Institute, Taiwan

AF-MoP-45 Low-Temperature ALD of Silicon Nitride Films Using Dis and Tis Precursors: A Strategy for Substrate Protection and High-Density Films, **Myeonghun Lee (Graduate Student)**, Taeheon Kim, Minchan Kim, Changkyun Park, Jinseong Park, Hanyang University, Korea

AF-MoP-46 Thermal Atomic Layer Deposition of Silicon Carbonitride Using Carbon-Containing Silicon Precursor, **Okhyeon Kim (Graduate Student)**, Tanzia Chowdhury, Mi-Soo Kim, Changgyu Kim, Hye-Lee Kim, Jeong Woo Han, Jae-Seok An, Jung Woo Park, Won-Jun Lee, Sejong University, Republic of Korea

AF-MoP-47 Atomic Layer Deposition of High-Quality SnO Thin Films Using Sn(EtCp)₂ Precursor, **Fumikazu Mizutani, Nobutaka Takahashi**, Kojundo Chemical Laboratory Co., Ltd., Japan; **Tomomi Sawada**, National Institute for Materials Science, Japan; **Toshihide Nabatame**, National Institute for Materials Science, Japan

AF-MoP-48 Damage-Free XPS Analysis of ALD HfO₂, ZrO₂ and HfZrO_x Films Using Ar Cluster Ions, **Seungwook Choi (Graduate Student)**, Ansoon Kim, Korea Research Institute of Standards and Science (KRISS), Republic of Korea

AF-MoP-49 Steric Hindrance of Hf Precursors and Film Growth of HfO₂ Atomic Layer Deposition: Comparative Kinetic Monte Carlo Simulation, **Yanwei Wen, Haojie Li, Bin Shan, Rong Chen**, Huazhong University of Science and Technology, China

AF-MoP-50 In-Situ Spectroscopic Ellipsometry for Transition Metal Oxide Growth Control in Remote Plasma ALD Processes, **Yousra Traouli, Ufuk Kilic**, University of Nebraska - Lincoln; **Mathias Schubert, Eva Schubert**, University of Nebraska-Lincoln, USA

AF-MoP-52 A Theoretical Study on High-Temperature ALD of TiN Using CP(CH₃)₃Ti(OMe)₃ as a Precursor, **Jae Min Jang (Graduate Student)**, Hongik University, Republic of Korea; **Hye Won Park**, Incheon National University, Republic of Korea; **Soo-Hyun Kim**, Ulsan National Institute of Science and Technology, Republic of Korea; **Han-Bo-Ram Lee**, Incheon National University, Republic of Korea; **Bonggeun Shong**, Hongik University, Republic of Korea

AF-MoP-53 Adsorption of Hf Ald Precursor on Pristine HfO₂ Surface Without Hydroxyl Groups, **Woong Pyo Jeon (Graduate Student)**, Miso Kim, Jinwoo Lee, Bonggeun Shong, Hongik University, Republic of Korea

AF-MoP-54 Sequential Adsorption of Dimethyl Zinc and Trimethylaluminum and Its Application to Zinc Aluminum Oxide Atomic Layer Deposition, **Haruto Suzuki, Satoshi Suzuki, Hibiki Takeda, Ryo Miyazawa, Bashir Ahmmad, Fumihiko Hirose**, Yamagata University, Japan

AF-MoP-55 A Study on Laterally Controlled Distribution of Elements in InZnO Thin Films by Atomic Layer Modulation, **Dong-Hyun Lim (Graduate Student)**, Ajou University, Republic of Korea; **Kyung-Won Park, Ji-Hye Choi**, ATIK CO., LTD., Republic of Korea; **Il-Kwon Oh**, Ajou University, Republic of Korea

AF-MoP-56 Comparative Study on the Impacts of Anhydrous and Hydrated H₂O₂ on ALD Hafnium Oxide Growth on Titanium Nitride Surface, **Dan Le**, RASIRC; **Jin-Hyun Kim, Thi Thu Huong Chu, Soubhik De, Dushyant Narayan, Minjong Lee**, University of Texas at Dallas; **Walter Hernandez, Josh Garretson, Adrian Alvarez, Jeffrey Spiegelman**, RASIRC; **Jiyoung Kim**, University of Texas at Dallas

AF-MoP-57 Computation of Al₂O₃ ALD by Trimethylaluminum with Kinetic Monte Carlo and Neural Network Potential, **Yichen Zou (Graduate Student)**, Yuxuan Wu, The University of Tokyo, China; **Jun Yamaguchi, Noboru Sato, Atsuhiko Tsukune, Yukihiro Shimogaki**, The University of Tokyo, Japan

AF-MoP-58 Comparison of ALD SiN Film Properties Based on Synthesis Precursor, Process Temperature, and Conditions, **Jaeyoung Lim, Hanseong Kim, Sunki Min, Kang-sub Yim, Sun Jung Kim**, Samsung Electronics Semiconductor R&D center Semiconductor Processing Development, Republic of Korea

AF-MoP-59 The Application of Diiodosilane to Deposit SiN Film as Insulation Layer, **Yun-Chih Chiang (Graduate Student)**, Yong-Jay Lee, Industrial Technology Research Institute, Taiwan

AF-MoP-60 Effects of Parameter Control and Post-Thermal Treatment on Impurity Control in Molybdenum Compound Films Grown by ALD with a Liquid Precursor, **So Young Kim (Graduate Student)**, Yonsei University, Republic of Korea; *Tai-su Park*, Justem Corporation Ltd., Republic of Korea; *Dae-Hong Ko*, Yonsei University, Republic of Korea

AF-MoP-62 Molecular Dynamics Simulations of HF Etching Using Universal Graph Neural Network Potential, **Akihiro Nagoya**, Yusuke Asano, Taku Watanabe, Preferred Computational Chemistry, Inc., Japan

Atomic Layer Etching

Room Event Hall - Session ALE-MoP

Atomic Layer Etching Poster Session

5:45 – 7:00 pm

ALE-MoP-1 Study on High-Selectivity Atomic Layer Etching (ALE) of SiO₂/Si₃N₄ Using Ar/C₄F₆ Plasma, **Kyongnam Kim**, Daejeon University, Republic of Korea; **Jinwoo Choi (Graduate Student)**, Daejeon University, Republic of Korea; *ByeongHo Song*, Jeongwoon Bae, Daejeon University, Republic of Korea

ALE-MoP-2 Improving Process Stability in Atomic Layer Etching for Next-Generation Microfabrication, **Suyoung Jang (Graduate Student)**, Junyeob Lee, Dohyeon Kim, Jeongwoon Bae, Taehyung Kim, Kyongnam Kim, Daejeon University, Republic of Korea; *Jihyun Kim*, WONIK IPS, Republic of Korea

ALE-MoP-3 Synergy in Thermal Atomic Layer Etching: Interplay between Individual Reactions, **Marcel Junige**, **Andrew S. Cavanagh**, Steven M. George, University of Colorado Boulder

ALE-MoP-4 Atomic Layer Etching of ZrO₂, HfO₂ and HfZrO₄ Thin Films via Metal-Free Ligand Exchange using Hydrogen Fluoride and Acetylacetone, **Kyoungh-Mun Kim**, Joo-Yong Kim The Electronics business of Merck KGaA Darmstadt Germany

ALE-MoP-5 Isotropic Atomic Layer Etching of Crystalline HfO₂ Thin Films Using F Radical and Al(CH₃)₂Cl, **Jehwan Hong (Graduate Student)**, Gyejun Cho, Changgyu Kim, Hye-Lee Kim, Sejong University, Republic of Korea; *Byungchul Cho*, Min Su Kim, Ju Hwan Park, Min Kim, Wonik IPS, Republic of Korea; *Won-Jun Lee*, Sejong University, Republic of Korea

ALE-MoP-6 Atomic Layer Etching of Al₂O₃ Film by Using Different Metal Precursor for Ligand Exchange, **Chan Lee**, Chang Kyu Lee, Byung Chul Cho, Ju Hwan Park, Min Kim, WONIK IPS, Republic of Korea; *Misoo Kim*, Khabib Khumaini, Hye-Lee Kim, Won-Jun Lee, Sejong University, Republic of Korea

ALE-MoP-7 Fabrication of Ultrathin Ruthenium Films via a Top-Down Approach Using Thermal Atomic Layer Etching, **Jeong Hwan Han**, **Eun Ji Ju (Graduate Student)**, *Jae Hyeon Lee*, Seoul National University of Science and Technology, Republic of Korea

ALE-MoP-8 Thermal Atomic Layer Etching of ZrO₂ Using Chlorine-Based Precursor, *Sang-ik Lee*, **Yong-won Kim**, DNF Co., Ltd, Republic of Korea; *jun-hee Cho*, Joong-jin Park, DNF Co., Ltd., Republic of Korea

ALE-MoP-9 Highly Precise Atomic Layer Etching of SiO₂ with SF₆ Radicals and TMA Surface Modification, **Min Kyun Sohn**, Seong Hyun Lee, Jieun Kim, Sun Kyu Jung, Min-A Park, Jin Ha Kim, Jaeseoung Park, Jeong Woo Park, Dongwoo Suh, ETRI, Republic of Korea

ALE-MoP-11 Tailored Waveforms for Ion Energy Control in Ale Applications, **Sebastian Mohr**, Quantemol.Ltd, Germany; **HyungSeon Song**, Quantemol.Ltd, Republic of Korea

ALE-MoP-12 Understanding Fluorocarbon Thin Film Growth through CF_x Radical Adsorption on Amorphous Si₃N₄, **Mihyeon Jo (Graduate Student)**, Sangheon Lee, Ewha Womans University, Republic of Korea

ALE-MoP-13 Study of Low GWP Gas Decomposition and Fluorocarbon Film Created gas Deposition on SiO₂, **Minji Kim (Undergraduate)**, Sangheon Lee, Ewha Woman's University, Republic of Korea

ALE-MoP-14 Low-Damage Plasma Atomic Layer Etching of Silicon Dioxide and Nitride via DC Substrate Bias and Remote Inductively Coupled Plasma Source, *Hee Chul Lee*, **HongHee Jeon (Undergraduate)**, SoWon Kim, Tech University of Korea

ALE-MoP-15 SiO₂ Atomic Layer Etching with Ultra-Low Electron Temperature Plasma, **Junyoung Park**, Nayeon Kim, Jung-Eun Choi, Yujin Yeo, Min-Seok Kim, Chang-Min Lim, Beom-Jun Seo, Chin-Wook Chung, Hanyang University, Korea

ALE-MoP-16 Selective Generation of CF₂ Radicals in Ar/CF₄ Plasma with a DC-Biased Grid for High-Precision Atomic Layer Etching, **Minseok Kim (Graduate Student)**, Hyunho Nahm, Yujin Yeo, Chinwook Chung, Hanyang University, Republic of Korea

ALE-MoP-17 Low-Temperature Atomic Layer Etching Characteristics of Nitride Surfaces Using C₄F₈ Gas, **GwangHo Lee (Graduate Student)**, KwangWoon University, Korea; *GiChung Kwon*, *ChangHee Lee*, *JaeHyeon Kim*, *YeJun Cheon*, *GaEun Hwang*, *InHyeok Kho*, *HeeSam Cheon*, *YoonJoo Jeong*, *InYoung Bang*, *HyoJong Shin*, *Ji Hwan Kim*, *Yujin Heo*, Kwangwoon University, Republic of Korea

ALE-MoP-18 Investigation on Ar Sputtering Etch Rate of Silicon Oxide at Low Temperature, **Yujin Heo (Graduate Student)**, Kwangwoon University, Korea; *GiChung Kwon*, KwangWoon University, Korea; *Ji Hwan Kim*, Kwangwoon University, Korea; *InYoung Bang*, KwangWoon University, Korea; *JaeHyeon Kim*, *GwangHo Lee*, Kwangwoon University, Korea; *ChangHee Lee*, KwangWoon University, Korea; *HyoJong Shin*, Kwangwoon University, Korea; *YoonJoo Jeong*, *InHyeok Kho*, *HeeSam Cheon*, *YeJun Cheon*, *GaEun Hwang*, KwangWoon University, Korea

ALE-MoP-19 Transient Etching Characteristics of SiO₂ at Low Temperature using CH₂F₂/Ar Plasma in an Inductively Coupled Plasma System, **Ji Hwan Kim (Graduate Student)**, Gi-Chung Kwon, JaeHyeon Kim, InYoung Bang, ChangHee Lee, YeJun Cheon, GaEun Hwang, InHyeok Kho, HeeSam Cheon, YoonJoo Jeong, HyoJong Shin, GwangHo Lee, Yujin Heo, Kwangwoon University, Republic of Korea

ALE-MoP-20 Real-time Temperature Monitoring of Wafer Chuck and Focus Ring, **JaeHyeon Kim (Graduate Student)**, Gi-Chung Kwon, In Young Bang, GwangHo Lee, Ji Hwan Kim, ChangHee Lee, YoonJoo Jeong, InHyeok Kho, Yujin Heo, HyoJong Shin, HeeSam Cheon, Ga Eun Hwang, YeJun Cheon, Kwangwoon University, Republic of Korea

ALE-MoP-21 Real-Time Plasma Density Measurement Using a Capacitance Measurement Sensor Embedded in an Electrostatic Chuck and Comparison with Other Diagnostic Techniques, **ChangHee Lee (Graduate Student)**, Gi-Chung Kwon, Ji Hwan Kim, InYoung Bang, JaeHyeon Kim, GwangHo Lee, HyoJong Shin, YoonJoo Jeong, InHyeok Kho, Yujin Heo, HeeSam Cheon, YeJun Cheon, GaEun Hwang, Kwangwoon University, Republic of Korea

ALE-MoP-22 Low-Temperature Dielectric Etching Characteristics Using CH₂F₂/NO₂ Inductively Coupled Plasma, **HyoJong Shin (Graduate Student)**, GiChung Kwon, Ji Hwan Kim, InYoung Bang, JaeHyeon Kim, GwangHo Lee, ChangHee Lee, InHyeok Kho, YoonJoo Jeong, Yujin Heo, HeeSam Cheon, GaEun Hwang, YeJun Cheon, Kwangwoon University, Republic of Korea

ALE-MoP-23 Study on Cryogenic Etching Characteristics of Dielectrics Using NF₃/NO/Ar Inductively Coupled Plasma, **YoonJoo Jeong (Graduate Student)**, GiChung Kwon, Ji Hwan Kim, InYoung Bang, JaeHyeon Kim, GwangHo Lee, ChangHee Lee, HyoJong Shin, InHyeok Kho, Yujin Heo, HeeSam Cheon, GaEun Hwang, YeJun Cheon, Kwangwoon University, Republic of Korea

Nanostructure Synthesis and Fabrication

Room Event Hall - Session NS-MoP

Nanostructure Synthesis and Fabrication Poster Session

5:45 – 7:00 pm

NS-MoP-1 Structural Modifications of Porous Templates with Pbte ALD Coatings, *Haifeng Cong*, **Helmut Baumgart**, Old Dominion University

NS-MoP-2 Technological Promise of a Frustratingly Elusive Ni^(tbu₂DAD)₂—Yet the Challenge is Part of the Breakthrough, **Gabriele Botta**, Nanogune, Italy

NS-MoP-3 Atomic Layer Deposition by Pressure-Driven Convective Flow Through 3D Nanocomposite Structures, **Austin Cendejas**, **Benjamin Greenberg**, **Kevin Anderson**, **Boris Feygelson**, US Naval Research Laboratory

NS-MoP-6 Creation of Nanowire-Bundled Grain Boundaries in Bi₂Te₃-Based Thermoelectric Materials via Atomic Layer Deposition, **Gwang Min Park (Graduate Student)**, *Seunghyeok Lee*, Korea Institute of Science and Technology (KIST), Republic of Korea; *Jinseok Hong*, *Seokho Nahm*, Hanyang University, Korea; *Seung-Hyub Baek*, *Jin-Sang Kim*, Korea Institute of Science and Technology (KIST), Republic of Korea; *Seung-Yong Lee*, Hanyang University, Korea; *Seong Keun Kim*, Korea Institute of Science and Technology (KIST), Republic of Korea

NS-MoP-7 Surface Engineered Polymeric Membranes for Improved Fouling Resistance and Superior Oil-Water Separation, **Bratin Sengupta**, **Yining Liu**, **Seth Darling**, **Jeffrey Elam**, Argonne National Laboratory

NS-MoP-8 Interface Engineering of 2D MoS₂ Devices through ALD Oxidant Selection, *Si Eun Yu*, *Thi Thu Huong Chu*, *Minjong Lee*, *Dushyant M. Narayan*, **Doo San Kim**, **Dan N. Le**, University of Texas at Dallas; *Rino Choi*, Inha University, Republic of Korea; *Jiyoung Kim*, University of Texas at Dallas

NS-MoP-9 Facile Synthesis of Copper Germanium Oxide with Carbon Shell for Lithium Ion Battery Anode Applications, *Deug Hyun Nam*, *Chan Woong Na*, **Yoon Myung**, Korea Institute of Industrial Technology, Republic of Korea

NS-MoP-10 Amorphous Boron Nitride Deposited on MoS₂ Monolayers by Thermal Atomic Layer Deposition for High-Performance Two-Dimensional Electronics, **Yu-Chuan Lin**, National Yang Ming Chiao Tung University (NYCU), Taiwan

Tuesday Morning, June 24, 2025

Room Halla Hall		
8:00am	AF1-TuM-1 The Mechanism of Thermal ALD of Silicon Carbonitride from Chloroalkylsilanes and Ammonia – Theory Meets Experiment, <i>Simon Elliott</i> , Schrödinger, Ireland; <i>Jiyeon Kim, Paul Lemaire, Dennis Hausmann</i> , Lam Research	ALD Fundamentals Session AF1-TuM Mechanism and Theory I Moderators: Christophe Vallée , University of Albany, Charles H. Winter , Wayne State University
8:15am	AF1-TuM-2 Mechanistic Studies on Area Selective ALD of Iridium, <i>Heta-Elisa Nieminen, Matti Putkonen, Mikko Ritala</i> , University of Helsinki, Finland	
8:30am	AF1-TuM-3 ALD Outstanding Presentation Award Finalist: Like Boots or Hearts: The Kinetics of Precursor Decomposition, <i>Sean Barry</i> , Carleton University, Canada	
8:45am	AF1-TuM-4 Reaction Mechanism of Atomic Layer Deposition of Zirconium Oxide Using Tris(dimethylamino)cyclopentadienyl Zirconium, <i>Yong Richard Sriwijaya (Graduate Student)</i> , <i>Hye-Lee Kim, Okhyeon Kim, Khabib Khumaini</i> , Sejong University, Republic of Korea; <i>Romel Hidayat</i> , PT PLN, Indonesia; <i>Won-Jun Lee</i> , Sejong University, Republic of Korea	
9:00am	AF1-TuM-5 A Study on the Correlation of Surface Chemistry to Electrical Properties of Ultra-thin Oxide Semiconductors by Atomic Layer Deposition: A Case Study of Indium Oxides Thin Films, <i>Joohyeon Lee (Graduate Student)</i> , Ajou University, Republic of Korea; <i>Dohee Kim, Ja Yong Kim, Jong Young Lee, Seung Wook Ryu</i> , SK hynix, Republic of Korea; <i>Il Kwon Oh</i> , Ajou University, Republic of Korea	
9:15am	AF1-TuM-6 Catalytic Role of Silane(SiH ₄) in Enhancing Titanium Nitride(TiN) Atomic Layer Deposition(ALD), <i>Hu Li</i> , Tokyo Electron America Inc.; <i>Taichi Monden, Masaaki Matsukuma</i> , Tokyo Electron Technology Solutions Ltd., Japan; <i>Jianping Zhao</i> , Tokyo Electron America Inc.; <i>Yoshitada Morikawa</i> , Osaka University, Japan; <i>Peter Ventzek</i> , Tokyo Electron America Inc.	
9:30am	AF1-TuM-7 Correlation of Hydroxyl Group and Growth Characteristics in Atomic Layer Deposition of Ternary Oxide Depending on Growth Temperature, <i>Sanghun Lee (Graduate Student)</i> , Yonsei University, Republic of Korea; <i>Il-Kwon Oh</i> , Ajou University, Republic of Korea; <i>Hyungjun Kim</i> , Yonsei University, Republic of Korea	
9:45am	AF1-TuM-8 Atomistic Modeling of Oxygen Recombination Reactions in the ALD of SiO ₂ and Al ₂ O ₃ , <i>Suresh Kondati Natarajan</i> , Synopsys Inc., Denmark; <i>Rafshan Ul Atik</i> , Synopsys India Pvt. Ltd., India; <i>Yong-Ju Kang</i> , Synopsys Korea Inc., Republic of Korea; <i>Jess Wellendorff, Søren Smidstrup</i> , Synopsys Denmark ApS, Denmark	
10:00am	BREAK & EXHIBITS	
10:45am	AF2-TuM-12 Screening Volatile Metal Complex for ALD Precursor by Modified COSMO-SAC Method and Estimating Its Reactivity by Atomistic Simulator Using Neural Network Potential, <i>Noboru Sato</i> , The University of Tokyo, Japan; <i>Naoyuki Hoshiya, Akiyoshi Yamauchi, Shigehito Sagisaka, Yosuke Kishikawa</i> , DAIKIN INDUSTRIES, LTD., Japan; <i>Yuxuan Wu, Jun Yamaguchi, Atsuhiko Tsukune, Yukihiko Shimogaki</i> , The University of Tokyo, Japan	ALD Fundamentals Session AF2-TuM Mechanism and Theory II Moderators: Seung-Min Chung , Hoseo University, Republic of Korea, Atsushi Sakurai , ADEKA CORPORATION, Japan
11:00am	AF2-TuM-13 Adsorption State Study of Trimethylaluminum Using Neural Network Potential Computation and High Accuracy in-situ Quartz Crystal Microbalance, <i>Yuxuan Wu (Graduate Student)</i> , The University of Tokyo, Japan, China; <i>Jun Yamaguchi, Noboru Sato, Atsuhiko Tsukune, Yukihiko Shimogaki</i> , The University of Tokyo, Japan	
11:15am	AF2-TuM-14 Atomistic Insights into the Surface Chemistry Driving ALD of IGZO Films from First-Principles and Machine-Learning Simulations, <i>Alex Watkins (Graduate Student)</i> , University of Warwick, UK	
11:30am		
11:45am		

Tuesday Morning, June 24, 2025

Room Samda Hall		
8:00am	INVITED: ALE1-TuM-1 Thermal Atomic Layer Etching in Next Generation 3D Devices, <i>Younghee Lee</i> , Lam Research Corporation	Atomic Layer Etching Session ALE1-TuM Thermal Gas Phase ALE Moderators: Steven M. George , University of Colorado at Boulder, Chanmin Lee , Samsung Electronics, Republic of Korea
8:30am	ALE1-TuM-3 Isotropic Atomic Layer Etching of HfO ₂ using Plasma Fluorination with NF ₃ and Ligand Exchange with BCl ₃ , <i>Hyeongwu Lee (Graduate Student)</i> , <i>Heeju Ha</i> , <i>Daeun Hong</i> , <i>Heeyeop Chae</i> , Sungkyunkwan University (SKKU), Republic of Korea	
8:45am	ALE1-TuM-4 Thermal Atomic Layer Etching of Mo with NbCl ₅ and O ₂ , <i>Juha Ojala (Graduate Student)</i> , <i>Mykhailo Chundak</i> , <i>Anton Vihervaara</i> , <i>Marko Vehkamäki</i> , <i>Mikko Ritala</i> , University of Helsinki, Finland	
9:00am	ALE1-TuM-5 Film and Surface Stress During Thermal Atomic Layer Etching of Al ₂ O ₃ and Tungsten, <i>Ryan B. Vanfleet (Graduate Student)</i> , <i>Steven M. George</i> , University of Colorado at Boulder	
9:15am	ALE1-TuM-6 The Invention of Atomic Layer Etching: on the Conception of Cycled Exposures of Silicon to Halogens and Pulses of Heat, Ions, and More, by Seiichi Iwamatsu, <i>Fred Roozeboom</i> , University of Twente, Netherlands; <i>Dmitry Suyatin</i> , <i>Jonas Sundqvist</i> , AlixLabs A.B., Sweden; <i>Kuniyuki Kakushima</i> , Tokyo Institute of Technology, Japan	
9:30am		
9:45am		
10:00am	BREAK & EXHIBITS	
10:45am	INVITED: ALE2-TuM-12 Enhancing 3D NAND Flash Memory Production: Addressing High Aspect Ratio Etching Challenges with Atomic Layer Etching, <i>Jaewon Lee</i> , <i>Huichan Seo</i> , SK hynix Inc., Republic of Korea	Atomic Layer Etching Session ALE2-TuM ALE Applications I Moderators: Reza Jafari Jam , AlixLabs, Sweden
11:00am		
11:15am	ALE2-TuM-14 Controlled Electron-Enhanced Silicon Etching with H ₂ Background Gas and Positive Sample Voltage, <i>Sumaira Yasmeen</i> , University of Colorado at Boulder; <i>Harsono Simka</i> , Samsung Semiconductor; <i>Steven George</i> , University of Colorado at Boulder	
11:30am	ALE2-TuM-15 Suppressing Surface Roughness in Tungsten Wet Atomic Layer Etching using Halogenation, <i>Tulashi Dahal</i> , <i>Kate Abel</i> , Tokyo Electron America Inc.,; <i>Karthik Pillai</i> , TEL Technology Center, America, LLC; <i>Trace Hurd</i> , <i>Antonio Rotondaro</i> , Tokyo Electron America Inc.,	
11:45am	ALE2-TuM-16 Plasma-Enhanced Isotropic Atomic Layer Etching of Molybdenum with Fluorocarbon Layer Formation Followed by Plasma Oxidation, <i>Heeju Ha (Graduate Student)</i> , <i>Hyeongwu Lee</i> , <i>Heeyeop Chae</i> , Sungkyunkwan University (SKKU), Republic of Korea	

Tuesday Morning, June 24, 2025

Room Tamna Hall A		
8:00am	AA1-TuM-1 Effect of Ga Doping on Coercive Field Reduction and Endurance Enhancement in Atomic Layer Deposited HfO ₂ -based Thin Film for FeRAM Applications, Zi-Ying Huang , <i>Yu-Chun Li</i> , Fudan University, China; <i>Ming Li</i> , Peking University, China; <i>Ye Zhu</i> , Hong Kong Polytechnic University, China; <i>David Wei Zhang</i> , <i>Hong-Liang Lu</i> , Fudan University, China	ALD Applications Session AA1-TuM Memory Applications II Moderators: Pinyen Lin , TSMC, Taiwan, Seung Wook Ryu , SK hynix, Republic of Korea
8:15am	AA1-TuM-2 Realization of Selector-Only Memory via Supercycle Atomic Layer Deposition of Ge-Sb-Se Ternary Alloy, Jeongwoo Seo (Graduate Student) , <i>Minu Cho</i> , <i>Inkyu Sohn</i> , Yonsei University, Korea; <i>Youngjae Kang</i> , <i>Jong-bong Park</i> , <i>Kiyeon Yang</i> , <i>Wooyoung Yang</i> , Samsung Advanced Institute of Technology, Republic of Korea; <i>Hyungjun Kim</i> , Yonsei University, Korea	
8:30am	AA1-TuM-3 Atomic-Scale Thickness Control of Antiferroelectric ZrO ₂ via Morphotropic Phase Boundary Engineering for Enhanced Ferroelectricity, Chun-Ho Chuang (Graduate Student) , <i>Ting-Yun Wang</i> , <i>Yu-Sen Jiang</i> , <i>Miin-Jang Chen</i> , Department of Materials Science and Engineering, National Taiwan University, Taiwan	
8:45am	AA1-TuM-4 Metastable Rutile TiO ₂ Growth on Non-Lattice-Matched Substrates via a Sacrificial Layer Strategy, Jihoon Jeon , <i>Kim Seong Keun</i> , Korea Institute of Science and Technology (KIST), Republic of Korea	
9:00am	AA1-TuM-5 EWF Modulation and Electrical Performance Enhancement Using Fluorine Surface Treatment in Yttrium Oxide-based Dipole-First Gate Stack, Sangkuk Han (Graduate Student) , <i>Changhwan Choi</i> , <i>Wonjae Choi</i> , Hanyang University, Korea	
9:15am	AA1-TuM-6 ALD Young Investigator Award Finalist: Reconfigurable Memristor Crossbar for Graphlet Computing, Kyung Seok Woo , Sandia National Laboratories; <i>Nestor Ghenzi</i> , Seoul National University; <i>Hyungjun Park</i> , Seoul National University, Republic of Korea; <i>A. Alec Talin</i> , Sandia National Laboratories; <i>Cheol Seong Hwang</i> , Seoul National University, Republic of Korea; <i>R. Stanley Williams</i> , <i>Suhas Kumar</i> , Sandia National	
9:30am	AA1-TuM-7 Tuning of Effective Work Function in Cl Free TiAlN ALD Through Fine Al Doping Process for Gate Electrode Application, Gyeong Min Jeong (Graduate Student) , <i>Hae Dam Kim</i> , <i>Jin-Seong Park</i> , Hanyang University, Republic of Korea	
9:45am	AA1-TuM-8 Optimizing Grain Structure in Mo-Ru Alloys for High Conductivity, <i>Changhwan Choi</i> , Hyunjin Lim (Graduate Student) , <i>Youngseo Na</i> , <i>Yeh Been Im</i> , Hanyang University, Korea	
10:00am	BREAK & EXHIBITS	
10:45am	AA2-TuM-12 Defect-free Carbon based EUV Pellicle by using Bi-layer Capping with Atomic Layer Deposition, Jihoon Park (Undergraduate) , <i>Yoon Hwi</i> , Yonsei University, Korea; <i>Wi Seong Ju</i> , <i>Lee Yunhan</i> , <i>Lee Byunghoon</i> , <i>Bae Sukjong</i> , <i>Choi Jin</i> , Samsung Electronics, Republic of Korea; <i>Kim Hyungjun</i> , Yonsei University, Korea	ALD Applications Session AA2-TuM EUV and Patterning Applications Moderators: Jiyoung Kim , University of Texas at Dallas, Hanjin Lim , Samsung Electronics Co., Inc., Republic of Korea
11:00am	AA2-TuM-13 Three-Step Plasma-Enhanced ALD of Ultra-Thin SiN _x with Enhanced Etch Resistance for EUV Pellicle Applications, Hye-Young Kim , <i>Hyun-Mi Kim</i> , <i>Yoonjeong Shin</i> , <i>Jonghyuk Yoon</i> , Korea Electronics Technology Institute, Republic of Korea; <i>Ji-Beom Yoo</i> , Sungkyunkwan University (SKKU), Republic of Korea; <i>Il Hwi Lee</i> , SurplusGLOBAL, Inc., Republic of Korea; <i>Nam Young Kim</i> , SurplusGLOBAL Inc., Republic of Korea; <i>Seul-Gi Kim</i> , <i>Hyeongkeun Kim</i> , Korea Electronics Technology Institute, Republic of	
11:15am	AA2-TuM-14 Mo ₂ C-Coated CNT with Hydrogen Radical Resistance for EUVL Pellicles, <i>Hyeongkeun Kim</i> , Su Min Lee , <i>Yongkyung Kim Kim</i> , <i>Jonghyuk Yoon</i> , <i>Kihun Seong</i> , <i>Heongyu Lee</i> , <i>Sun Gil Kim</i> , <i>Hyun-Mi Kim</i> , Korea Electronics Technology Institute (KETI), Republic of Korea; <i>Gu Young Cho</i> , Dankook University, Republic of Korea; <i>Seul-Gi Kim</i> , Korea Electronics Technology Institute (KETI), Republic of Korea	
11:30am	AA2-TuM-15 ALD Outstanding Presentation Award Finalist: Vapor-Phase Infiltration of Hafnium in Poly(Methyl Methacrylate) Thin Films for Extreme Ultraviolet Lithography Applications, <i>Md Istiaque Chowdhury</i> , <i>Xinpei Wu</i> , Brookhaven National Laboratory; <i>Won-Il Lee</i> , <i>Mueed Ahmad</i> , Stony Brook University; <i>J. Anibal Boscoboinik</i> , <i>Kim Kisslinger</i> , <i>Aaron Stein</i> , <i>Nikhil Tiwale</i> , Brookhaven National Laboratory; <i>Jiyoung Kim</i> , University of Texas at Dallas; Chang-Yong Nam , Brookhaven National Laboratory	

Tuesday Morning, June 24, 2025

Room Tamna Hall BC		
8:00am		ALD Fundamentals Session AF3-TuM Precursor Chemistry II Moderators: Venkateswara Pallem, AirLiquide, Paul Williams, Pegasus Chemicals
8:15am	AF3-TuM-2 ALD of SnO ₂ Thin Films using Tin(IV) Acetate as a Novel Precursor, Anjan Deb (Graduate Student) , Miika Mattinen, Mikko J. Heikkilä, Mykhailo Chundak, Anton Vihervaara, Kenichiro Mizohata, Mikko Ritala, Matti Putkonen, University of Helsinki, Finland	
8:30am	AF3-TuM-3 Revealing the Effect of Defect and Hydrogenation on Borazine-based Atomic Layer Deposition using First Principles Calculations, Tsung-Hsuan Yang , Tokyo Electron America; Gyeong Hwang, University of Texas at Austin; Hu Li, Jianping Zhao, Peter Ventzek, Tokyo Electron America	
8:45am	AF3-TuM-4 Novel Heteroleptic Precursors for Oxide Semiconductor Films (In-, Ga-, Zn-, Sn-Ox), Aimed at Co-dosing Process and Cocktail Precursor, Nana Okada , Ryota Fukushima, Keisuke Takeda, Masaki Enzu, Tomoharu Yoshino, Atsushi Yamashita, Yoshiki Oe, Akio Saito, Yutaro Aoki, Akihiro Nishida, Atsushi Sakurai, ADEKA CORPORATION, Japan	
9:00am	AF3-TuM-5 Investigation of Fluorinated Copper and Gold Alkoxides as Precursors for Atomic Layer Deposition, Nick A. Hoffman (Graduate Student) , David J. H. Emslie, McMaster University, Canada	
9:15am	AF3-TuM-6 ALD of Al ₂ O ₃ for Gas Barrier Applications: Impact of Al Precursors, Jean-Pierre Glauber (Graduate Student) , Leibniz Institute for Solid State and Materials Research, Germany; Maximilian Gebhard, Lukas Mai, Ruhr University Bochum, Germany; Harish Parala, Anjana Devi, Leibniz Institute for Solid State and Materials Research, Germany	
9:30am	AF3-TuM-7 Atomic Layer Deposition of Nb ₂ O ₅ using New Nb Precursor, Daehyeon Kim , Suhyun Kim, Jinhyung Park, Air Liquide, Republic of Korea	
9:45am	AF3-TuM-8 Atomic Layer Deposition of Mo Thin Film using Metal Organic Mo Precursor, Han-Bo-Ram Lee , Bonwook Gu, Incheon National University, Republic of Korea; T. Barry Sean, Kieran Lawford, Carleton University, Canada; Kwangyong An (Undergraduate) , incheon National University, Republic of Korea	
10:00am	BREAK & EXHIBITS	
10:45am	INVITED: EM-TuM-12 Zeolite-Like Frameworks Created by ALD/MLD as an All-Dry Resist Technology, Howard Fairbrother , Department of Chemistry, Johns Hopkins University; Peter Corkery, Kayley Waltz, Department of Chemical and Biomolecular Engineering, Johns Hopkins University; Patrick Eckhart, Department of Chemistry, Johns Hopkins University; Michael Tsapatsis, Department of Chemical and Biomolecular Engineering, Johns Hopkins University	Emerging Materials Session EM-TuM Molecular Layer Deposition & Hybrid Materials I Moderators: Jin-Seong Park, Hanyang University, Republic of Korea, Henrik Pedersen, Linköping University, Sweden
11:15am	EM-TuM-14 Atomic Layer Regulation of MIL-53 Metal-Organic Framework as Interconnect Low-k Dielectrics, Fan Yang , Huazhong University of Science and Technology, China; Jisheng Song, Rong Chen, Huazhong University of Science and Technology, China	
11:30am	EM-TuM-15 Nanolaminated Films with Negative Capacitance Fabricated by ALD, Xiang Yang Kong , School of Materials Science Engineering Shanghai Jiao Tong University, Shanghai 200240, China	
11:45am	EM-TuM-16 Thermal Annealing of Molecular Layer-Deposited Tincone : Unveiling Sulfur's Structural Impacts in Graphitic Carbon Formation, Jin-Seong Park , Gi-Beom Park (Graduate Student) , Hyolim Jung, Hae Lin Yang, Ji-Min Kim, C.-K. Park, Jin-Seong Park, Hanyang University, Korea	

Tuesday Afternoon, June 24, 2025

Room Halla Hall		
1:30pm		ALD Fundamentals Session AF1-TuA Analysis Moderators: Christophe Detavernier , Ghent University, Belgium, Adrie Mackus , Eindhoven University, Netherlands
1:45pm	AF1-TuA-2 Interface Evolution in ALD of HfO ₂ on TiN: LEIS and XPS in Vacuo Studies, Mykhailo Chundak , Heta-Elisa Nieminen, Marko Vehkamäki, Laura Keränen, Matti Putkonen, Mikko Ritala, University of Helsinki, Finland	
2:00pm	AF1-TuA-3 Development of a Home-Built Atomic Layer Deposition Reactor for in-Situ Synchrotron GISAXS and XAS Characterization, Marina Armengol-Profítós , Jordi Prat, Montserrat Prieto, Zbigniew Reszela, Cristián Huck-Iriart, Massimo Tallarida, Eduardo Solano, Carlos Escudero, ALBA synchrotron light source, Spain	
2:15pm	AF1-TuA-4 Evaluation of Initial Nucleation of Co-ALD by CCTBA Using in-Situ Reflectance Monitoring and Atomistic Simulator Based on Neural Network Potential, Naoki Tamaoki , The University of Tokyo, Japan; Yubin Deng , The University of Tokyo, China; Jun Yamaguchi , Noboru Sato , Atsuhiko Tsukune , Yukihiro Shimogaki , The University of Tokyo, Japan	
2:30pm	AF1-TuA-5 Low Energy Ion Scattering Analysis of GC/IrOX/SiO ₂ Layer Structure, Philipp Brüner , Thomas Grehl , IONTOF GmbH, Germany; Rens Kamphorst , Katherine S. Encalada Flores , Ruud Kortlever , Ruud van Ommen , TU Delft, Netherlands	
2:45pm	AF1-TuA-6 Tailoring Interface and Bulk Properties: An Oxidant Co-Dosing Approach to ALD Growth of Hafnia Thin Films, Dushyant Narayan , Dan Le , Soham Shirodkar , Soubhik De , Geon Park , Minjong Lee , Thi Thu Huong Chu , Jin-Hyun Kim , The University of Texas at Dallas; Walter Hernandez , Adrian Alvarez , Josh Garretson , Jeffrey Spiegelman , RASIRC; Jiyoung Kim , The University of Texas at Dallas	
3:00pm	AF1-TuA-7 Mechanical Properties and Wear Resistance of Atomic Layer Deposited Ternary Cr-Hf-O Films: A Comparative Study with Binary Chromium Oxide and Hafnium Oxide Films, Mahtab Salari Mehr (Graduate Student) , Lauri Aarik , Taivo Jõgiaas , Hugo Mändar , University of Tartu, Estonia	
3:15pm	AF1-TuA-8 In-situ X-ray photoelectron spectroscopy for determining oxidation state, composition, and morphology of ALD-based CeO _x , SnO _x , and Ce _x Sn _{1-x} O _y deposits, Rudi Tschammer (Graduate Student) , Dominic Guttman , BTU Cottbus, Germany; Marcel Schmickler , Anjana Devi , Leibniz Institute for Solid State and Materials Research, Germany; Karsten Henkel , Carlos Morales , Jan Ingo Flege , BTU Cottbus, Germany	
3:30pm	BREAK & EXHIBITS	
4:00pm	AF2-TuA-11 Controlling the Crystalline Nature of PEALD Thin Films Through Tuning of Plasma Characteristics, Peter Litwin , Naval Research Laboratory, USA; Marc Currie , Neeraj Nepal , Maria Sales , David Boris , US Naval Research Laboratory; Michael Johnson , Naval Research Laboratory, USA; Scott Walton , Virginia Wheeler , US Naval Research Laboratory	ALD Fundamentals Session AF2-TuA Plasma ALD Moderators: Ruud van Ommen , Delft University of Technology, Netherlands, Seung-Yeul Yang , Samsung, Republic of Korea
4:15pm	AF2-TuA-12 Comparative Study of CeO ₂ Thin Films Prepared by Plasma-Enhanced and Thermal Atomic Layer Deposition Using a New Liquid Ce Precursor, Yewon Seo (Graduate Student) , Sang Bok Kim , Soo-Hyun Kim , Graduate School of Semiconductor Materials and Devices Engineering, Ulsan National Institute of Science and Technology (UNIST), Ulsan, Republic of Korea	
4:30pm	AF2-TuA-13 Tuning Crystallinity of Plasma-Enhanced Atomic Layer Deposited Aluminum Nitride Thin Films using an Electron Cyclotron Resonance Microwave Source, Julian Pilz , Tai Nguyen , Silicon Austria Labs, Austria; Paul Dreher , Evatec AG, Switzerland; Marco Deluca , Silicon Austria Labs, Austria	
4:45pm	AF2-TuA-14 Plasma-Enhanced Atomic Layer Deposition of High-Quality InN Thin Films Using a Novel In Precursor and NH ₃ Plasma, Yejun Kim (Graduate Student) , Chaehyun Park , Minjeong Kweon , Soo-Hyun Kim , Ulsan National Institute of Science & Technology, Republic of Korea	
5:00pm	AF2-TuA-15 Insights Into Tuning TiO ₂ Film Property Distribution in 3D Structures During Peald Process, Takashi Hamano , Nobuyuki Kuboi , Hiroyasu Matsugai , Shoji Kobayashi , Yoshiya Hagimoto , Hayato Iwamoto , Sony Semiconductor Solutions Corporation, Japan	
5:15pm	AF2-TuA-16 Plasma-Enhanced ALD Process for Boron Carbide Films: Towards Tunable B:C Ratio, Catherine Marichy , Neil Richard Innis , Abdulhamid Afolabi , Olivier Boisron , Didier Leonard , Colin Bousige , Catherine Journet , Universite Claude Bernard Lyon 1, France	

Tuesday Afternoon, June 24, 2025

Room Samda Hall		
1:30pm	INVITED: ALE1-TuA-1 Isotropic and Anisotropic ALE: Tool Aspects, Processes, and Applications, <i>Harm Knoops</i> , Oxford Instruments Plasma Technology, UK	Atomic Layer Etching Session ALE1-TuA ALE Tools & ALE Modeling Moderators: Takayoshi Tsutsumi, Nagoya University, Japan
2:00pm	ALE1-TuA-3 Study on Plasma Induced Damaged Layer Formation Using Molecular Dynamics, <i>Junghwan Um, Sung-Il Cho</i> , Samsung Electronics Co., Republic of Korea	
2:15pm	ALE1-TuA-4 Theoretical Analysis on Crystalline Phase-Dependent Surface Fluorination of HfO ₂ for Atomic Layer Etching, <i>Sujin Kwon (Graduate Student), Bonggeun Shong</i> , Hongik University, Republic of Korea	
2:30pm	ALE1-TuA-5 Removal Reaction Mechanisms During Thermal Atomic Layer Etching of Aluminum Oxide: A First-Principles Study, <i>Khabib Khumaini, Gyejun Cho, Hye-Lee Kim, Won-Jun Lee</i> , Sejong University, Republic of Korea	
2:45pm	ALE1-TuA-6 Multiscale Modeling of Gallium Nitride Atomic Layer Etching in Chlorinated Plasmas: A Combined Dynamic Global Model, Ab-initio and Kinetic Monte Carlo Approaches, <i>Tojo Rasoanarivo (Graduate Student), Cédric Mannequin, Isabelle Braems</i> , Institut des Matériaux de Nantes Jean Rouxel, France; <i>Fabrice Roqueta, Mohamed Boufnichel</i> , STMicroelectronics, France; <i>Ahmed Rhallabi</i> , Institut des Matériaux de Nantes Jean Rouxel, France	
3:00pm	ALE1-TuA-7 Characteristics of the Power Delivery System of Transformer-Coupled Plasma Source for Remote Plasma Process in Semiconductor Manufacturing, <i>Tae S. Cho, Hakmin Kim, Giwon Shin, Jaehoon Choi, Sooyoung Hwang, Jihyun Kim</i> , Wonik IPS, Republic of Korea	
3:15pm		
3:30pm	BREAK & EXHIBITS	
4:00pm	ALE2-TuA-11 Development of an Atomic Layer Etching Process Dedicated to Diamond Material, <i>Marine Régnier (Graduate Student)</i> , Univ. Grenoble Alpes, CNRS, Grenoble INP, Institut Néel; Institute of Applied Physics, University of Tsukuba; Japanese-French Laboratory for Semiconductor Physics and Technology J-FAST, CNRS, Univ. Grenoble Alpes, University of Tsukuba, France; <i>Aboulaye Traoré</i> , LSPM, CNRS, Université Sorbonne Paris Nord, France; <i>Marceline Bonvalot</i> , Univ. Grenoble Alpes, CNRS, Grenoble INP, LTM; Japanese-French Laboratory for Semiconductor Physics and Technology J-FAST, CNRS, Univ. Grenoble Alpes, University of Tsukuba, France; <i>Etienne Gheeraert</i> , Univ. Grenoble Alpes, CNRS, Grenoble INP, Institut Néel; Institute of Applied Physics, University of Tsukuba; Japanese-French Laboratory for Semiconductor Physics and Technology J-FAST, CNRS, Univ. Grenoble Alpes, University of Tsukuba, France	Atomic Layer Etching Session ALE2-TuA ALE Applications II Moderators: Harm C.M. Knoops, Oxford Instruments Plasma Technology, Netherlands, Jaewon Lee, SK hynix, Republic of Korea
4:15pm	ALE2-TuA-12 Atomic Layer Etching of MgO-doped Lithium Niobate Using Sequential Plasma Exposures, <i>Austin Minnich, Ivy Chen (Graduate Student), Jennifer Solgaard, Ryoto Sekine, Azmain Hossain, Anthony Ardizzi, David Catherall, Alireza Marandi, Caltech; James Renzas</i> , University of Nevada, Reno; <i>Frank Greer</i> , Jet Propulsion Laboratory (NASA/JPL)	
4:30pm	ALE2-TuA-13 Comparison of Gas-Pulsing Atomic Layer Etching (ALE) Characteristics Between Low-GWP Alternative Gases C ₄ F ₆ , C ₄ H ₂ F ₆ and a Conventional Gas C ₄ F ₈ , <i>Shinjae You</i> , Department of Physics, Chungnam National University and Institute of Quantum Systems (IQS), Chungnam National University, Republic of Korea; <i>Dongki Lee (Graduate Student), Inho Seong</i> , Department of Physics, Chungnam National University, Republic of Korea; <i>Young-seok Lee</i> , Tokyo Electron Korea Ltd., Republic of Korea; <i>Sijun Kim</i> , Laboratoire de Physique des Plasmas (LPP), CNRS, Sorbonne Université, École Polytechnique, Institut Polytechnique de Paris, Republic of Korea; <i>Chul_Hee Cho, Wannyoung Jeong</i> , Department of Physics, Chungnam National University, Republic of Korea; <i>Ehsanul Haque Jami</i> , Department of Physics, Chungnam National University, Bangladesh; <i>Min-su Choi, Byeongyeop Choi, Seonghyun Seo, Isak Lee, Woobeen Lee, Wonyun Park, Jinhyeok Jang</i> , Department of Physics, Chungnam National University, Republic of Korea	
4:45pm	ALE2-TuA-14 The Influence of Laminar Doping of Atomic Layer Etching of Zinc Oxide, <i>Sabir Hussain, Emily Duggan, Lynette Keeney, Jun Lin, Ian Povey</i> , Advanced Materials and Surfaces Group, Tyndall National Institute, University College Cork, Lee Maltings Complex, Dyke Parade, Ireland; <i>Mark Sowa, Laurent Lecordier</i> , Veeco Instruments	
5:00pm	ALE2-TuA-15 Ale of Tin Using S _f ₆ :H ₂ Plasma: The Role of H, F, and Hf in Defining the Ale Window, <i>Guillaume Krieger, Silke Peeters, Erwin Kessels</i> , Eindhoven University of Technology, The Netherlands; <i>Harm Knoops</i> , Oxford Instruments Plasma Technology, UK, Eindhoven University of Technology, Netherlands	
5:15pm	ALE2-TuA-16 Atomic Layer Etching of Ruthenium Using Surface Oxidation with O ₂ Plasma and Chelation with Formic Acid, <i>Hojin Kang (Graduate Student), Eunsu Lee, Minsung Jeon, Heeyeop Chae</i> , Sungkyunkwan University (SKKU), Republic of Korea	

Tuesday Afternoon, June 24, 2025

Room Tamna Hall A		
1:30pm	<p>INVITED: AA-TuA-1 Characteristics of ALD IGZO for the application in Stackable DRAM Cell, <i>Seung Wook Ryu</i>, R&D Process, R&D division SK hynix Inc, Republic of Korea</p>	<p>ALD Applications Session AA-TuA 3D Semiconductor Devices Moderators: Dennis Hausmann, Lam Research, Reza Jafari Jam, AlixLabs, Sweden</p>
2:00pm	<p>AA-TuA-3 5 nm Thick Indium Nitride Channel Layers Fabricated by PEALD for 3D 6T Transistor Architectures, <i>Doo San Kim, Minjong Lee, Min Gyeong Jo, Thi Thu Huong Chu, Dushyant Narayan, Dan Le</i>, The University of Texas at Dallas; <i>Youngbae Ahn, Ja-Yong Kim, Seung Wook Ryu</i>, SK hynix, Republic of Korea; <i>Jiyoung Kim</i>, The University of Texas at ...</p>	
2:15pm	<p>AA-TuA-4 Bottom-Up Mo Fill for Metal Interconnect Applications: Selective and Superconformal Approaches, <i>David Mandia, Matthew Griffiths, Arya Shafiefarhood, Justin Kim, Aleksandr Plokhikh, Youness Alvandi, Nick De Marco, Ben Natinsky, Andrew Melton, Jennifer O'Loughlin</i>, Lam Research Corporation</p>	
2:30pm	<p>AA-TuA-5 Thermal Atomic Layer Deposition of Sn-incorporated MoO₂ Electrode Films for High-performance TiO₂-based DRAM Capacitors, <i>Jae Hyeon Lee (Undergraduate)</i>, <i>Jeong Hwan Han</i>, Seoul National University of Science and Technology, Republic of Korea</p>	
2:45pm	<p>AA-TuA-6 Highly Ordered Crystalline ALD-InGaO Thin Films with High Mobility and Thermal Stability for Next-Generation 3D Memory Devices, <i>Seong-Hwan Ryu (Graduate Student)</i>, <i>Hye-Mi Kim, Dong-Gyu Kim, Jin-Seong Park</i>, Hanyang University, Korea</p>	
3:00pm	<p>AA-TuA-7 Amino Acid-Based Biomimetic Organic-Inorganic Hybrid Memristors by Molecular Layer Deposition for Neuromorphic Applications, <i>Lin Zhu, Ai-Dong Li, Song Sun</i>, Nanjing University, China; <i>Yan-Qiang Cao</i>, Nanjing University of Science and Technology, China</p>	
3:15pm	<p>AA-TuA-8 Design of Crystalline InGaO Channels with High-Temperature Stability via Thermal ALD Process Parameter Variations, <i>Hye-Jin Oh (Graduate Student)</i>, Hanyang University, Korea; <i>Dong-Gyu Kim</i>, Hanyang University, Republic of Korea; <i>Tae Woong Cho, Hae Lin Yang</i>, Hanyang University, Korea; <i>Jihyun Kho, Yurim Kim, Bong Jin Kuh</i>, Samsung Electronics Co., Republic of Korea; <i>Jin-Seong Park</i>, Hanyang University, Korea</p>	
3:30pm	<p>BREAK & EXHIBITS</p>	
4:00pm	<p>INVITED: AS-TuA-11 Surface Chemistry Characterization for Area-Selective Atomic Layer Deposition of Ruthenium, <i>Eun-Hyoung Cho</i>, 2D Device TU(SAIT)/Samsung Electronics, Republic of Korea; <i>Young Min Lee, Yunseong Lee, Youngchul Leem, Giyoung Jo, Jeong Yub Lee, Kyung-Eun Byun, Jung Yeon Won, Bongsu Kim, Byeong Gyu Chae</i>, Samsung Advanced Institute of Technology, Republic of Korea; <i>Kyeongmin Min, Han-Bo-Ram Lee</i>, Incheon National University, Republic of Korea; <i>Iaon Cho, Myeong Kyun Nam, Bonggeun Shong</i>, Hongik University, Republic of Korea</p>	<p>Area Selective ALD Session AS-TuA Area Selective Deposition I Moderators: Stacey Bent, Stanford University, Mikko Ritala, University of Helsinki, Finland</p>
4:30pm	<p>AS-TuA-13 Area-Selective Solid-State Synthesis of Nickel Silicide Nanostructures, <i>Gabriele Botta</i>, Nanogune, Italy; <i>Mato Knez</i>, nanogune, Croatia</p>	
4:45pm	<p>AS-TuA-14 ALD Outstanding Presentation Award Finalist: High Temperature Area Selective ALD SiN by in-Situ Selective Surface Fluorination, <i>Haonan Liu, Ken Okoshi, Hiroki Murakami, Yamato Tonegawa</i>, Tokyo Electron Technology Solutions Ltd., Japan</p>	
5:00pm	<p>AS-TuA-15 Multifunctional Ru/ZnO Bilayer for Sustainable Cu Interconnects using Area-Selective Atomic Layer Deposition of barrier with Small Molecule Inhibitor, <i>Minwoo Kim (Graduate Student)</i>, <i>Yeseul Son, Sang Bok Kim, Soo-Hyun Kim</i>, Ulsan National Institute of Science and Technology (UNIST), Republic of Korea</p>	
5:15pm		

Tuesday Afternoon, June 24, 2025

Room Tamna Hall BC		
1:30pm	<p>INVITED: EM-TuA-1 Vapor Phase Infiltration for Membrane Modification, <i>David Bergsman</i>, University of Washington</p>	<p>Emerging Materials Session EM-TuA Molecular Layer Deposition & Hybrid Materials II Moderators: Jolien Dendooven, Ghent University, Belgium, Chang-Yong Nam, Brookhaven National Laboratory</p>
2:00pm	<p>EM-TuA-3 Dry Developing Process of Molecular Layer Deposited Hf-Based Hybrid Thin Films for EUV Lithography, <i>Minki Choe, Dan Le, Thi Thu Huong Chu, Hyunah Sung</i>, University of Texas at Dallas; <i>Nikhil Tiwale</i>, Brookhaven National Laboratory; <i>In-Hwan Baek, Rino Choi</i>, Inha University, Republic of Korea; <i>Chang-Yong Nam</i>, Brookhaven National Laboratory; <i>Jiyoung Kim</i>, University of Texas at Dallas</p>	
2:15pm	<p>EM-TuA-4 ALD Young Investigator Award Finalist: Inverted Living Molecular Layer Deposition: Rapid Conformal Polymer Coatings through Vapor-Phase Living Polymerization, <i>Karina Ashurbekova, Mato Knez</i>, CIC nanoGUNE, Spain</p>	
2:30pm	<p>EM-TuA-5 ALD Outstanding Presentation Award Finalist: Recent Advancement of Inorganic-Organic Hybrid Resist Thin Films Deposited via Molecular Atomic Layer Deposition for Dry EUV Resist Platforms, <i>Dan N. Le, Thi Thu Huong Chu, Hyunah Daniela Sung, Minki Choe, Minjong Lee</i>, University of Texas at Dallas; <i>Won-Il Lee</i>, Stony Brook University; <i>Nikhil Tiwale</i>, Brookhaven National Laboratory; <i>Jean-Francois Veyan, Doo San Kim</i>, University of Texas at Dallas; <i>Chang-Yong Nam</i>, Brookhaven National Laboratory; <i>Jiyoung Kim</i>, University of Texas at Dallas</p>	
2:45pm	<p>INVITED: EM-TuA-6 ALD Young Investigator Award Finalist: Rethinking Thermoelectrics: The „Power” of Hybrids Engineered by Vapor Phase Infiltration, <i>Kristina Ashurbekova</i>, CIC nanoGUNE, Spain; <i>Maksim Naumochkin, Heiko Reith, Kornelius Nielsch</i>, Leibniz Institute for Solid State and Materials Research, Germany; <i>Mato Knez</i>, CIC nanoGUNE, Spain</p>	
3:15pm	<p>EM-TuA-8 Plasma-Pretreated ALD Growth of Platinum Catalysts on Carbon Nanotubes for Polymer Electrolyte Membrane Fuel Cell Applications, <i>Junmo Koo</i>, Korea Maritime and Ocean University, Republic of Korea; <i>Joon Hyung Shim</i>, Korea University, Republic of Korea</p>	
3:30pm	<p>BREAK & EXHIBITS</p>	
4:00pm	<p>INVITED: NS-TuA-11 Towards Low-Resistance P-Type Contacts to 2D Transition Metal Dichalcogenides Using Plasma-Enhanced Atomic Layer Deposition, <i>Ageeth Bol</i>, University of Michigan, Ann Arbor</p>	
4:30pm	<p>NS-TuA-13 Selective Passivation of 2D TMD Surface Defects by Atomic Layer Deposition for Enhancing Recovery Rate of Gas Sensor, <i>Minji Kim (Graduate Student), Inkyu Sohn, Dain Shin, Sangyoon Lee, Hwi Yoon, Jisang Yoo, Seung-min Jung, Hyungjun Kim</i>, Yonsei University, Korea</p>	
4:45pm	<p>NS-TuA-14 Beyond the conventional AB process: Advanced ALD approaches for controlling the properties and growth of MoS₂ and WS₂ 2D Materials, <i>Cindy Lam, Eryk Gruszecki, Erwin Kessels, Bart Macca</i>, Eindhoven University of Technology, The Netherlands</p>	
5:00pm	<p>NS-TuA-15 Deposition and Characterization of Transition Metal Oxide/2d Transition Metal Dichalcogenide Quantum Wells, <i>Shih-Hao Tseng (Graduate Student), Yu-Chuan Lin</i>, Department of Materials Science and Engineering, National Yang Ming Chiao Tung University, Hsinchu, Taiwan</p>	
5:15pm	<p>NS-TuA-16 Engineering Al₂O₃ Interlayer via Atomic Layer Deposition for Enhancing Contact Properties of MoS₂-Based FET, <i>Minu Cho (Undergraduate), Hwi Yoon, Sanghun Lee, Seongyeong Park, Inkyu Sohn, Hyungjun Kim</i>, Yonsei University, Korea</p>	

ALD Applications

Room Event Hall - Session AA-TuP

ALD Applications Poster Session

5:45 – 7:00 pm

AA-TuP-2 ALD on Particulate Materials: A Data-Driven Review of Technologies, Materials and Applications from the Bottom Up, **Peter M. Piechulla**, Mingliang Chen, Delft University of Technology, Netherlands; **Riikka L. Puurunen**, Aalto University, Finland; **J. Ruud van Ommen**, **Aris Goulas**, Delft University of Technology, Netherlands

AA-TuP-3 Atomic Layer Deposition of Silver Catalysts for Hydroxide Exchange Membrane Fuel Cells, **Gwon Deok Han**, Sookmyung Women's University, Republic of Korea; **Beum Geun Seo**, Korea University, Republic of Korea; **Hyung Jong Choi**, Stanford University; **Junmo Koo**, Korea Maritime & Ocean University, Republic of Korea; **Fritz Prinz**, Stanford University; **Joon Hyung Shim**, Korea University, Republic of Korea

AA-TuP-4 A Study on the Development of a New Ga Precursor for IGZO Thin Films and the Characteristics of Thin Films Using the Same, **Kyung-eun Lee**, **Min-hyuk Nim**, **Taek Seung Yang**, Iakematerials, Republic of Korea

AA-TuP-5 A Study on the Characteristics of Thin-Film Using New in Producers for IGZO Thin-Film, **Han-Bom Kim**, **Min-Hyuk Nim**, **Taek Seung Yang**, Iakematerials, Republic of Korea

AA-TuP-6 A Study on the Characteristics of IGZO Thin Films Using New Ga and In Precursors, **Yeon-Soo Kim**, **Kyung-Eun Lee**, **Min-Hyuk Nim**, **Taek Seung Yang**, **Chang Ho Song**, LAKE MATERIALS CO., LTD., Republic of Korea; **Nam Eun Kim**, **Ki-Seok An**, KRICT, Republic of Korea

AA-TuP-7 Effect of Al₂O₃ Passivation Layer on Atomic Layer Deposited ZnSnO and Al-doped ZnSnO Thin-Film Transistors with Remarkable Bias-Stress Stability, **Jinheon Choi (Graduate Student)**, **Sahngik Mun**, **Juneseong Choi**, **Jaewon Ham**, **Hyungjeung Kim**, **Shihyun Kim**, **Subin Moon**, **Cheol Seong Hwang**, Seoul National University, Republic of Korea

AA-TuP-8 Ferroelectric-Like Tunnel Switch Behavior of an Antiferroelectric/Dielectric Hf_{1-x}Zr_xO₂/Al₂O₃ Bilayer Structure, **Seunghoon Choi (Graduate Student)**, **Seungyong Byun**, **Han Sol Park**, **Cheol Seong Hwang**, Seoul National University, Republic of Korea

AA-TuP-9 Demonstration of Amorphous Oxide Semiconductor Thin Film Transistors with Mold Structure via Channel-Last Process, **Cheol Seong Hwang**, **Subin Moon (Graduate Student)**, **Sukin Kang**, **Jinheon Choi**, **Sahngik Aaron Mun**, **Juneseong Choi**, **Jaewon Ham**, **Hyungjeung Kim**, **Shihyun Kim**, Seoul National University, South Korea

AA-TuP-10 Utilizing Ethanol as a Pre-reducing Agent for Atomic Layer Deposition MoO₂/TiO₂-Based Metal-Insulator-Metal Capacitors to Enhance Electrical Properties, **Soomin Yoo (Graduate Student)**, Kyunghee University, Republic of Korea; **Seungwoo Lee**, Kyunghee University, Republic of Korea; **Chaeyeong Hwang**, **Woojin Jeon**, Kyunghee University, Republic of Korea

AA-TuP-11 Nontemplate *in-Situ* Crystallization of Atomic Layer Deposited Molybdenum Dioxide via Substitutional Doping of Ruthenium, **Chaeyeong Hwang (Graduate Student)**, Kyunghee University, Republic of Korea; **Myeong Ho Kim**, **Yoon-A Park**, **Jin-Sik Kim**, R&D Team 1, UP Chemical Co., Ltd., Republic of Korea; **Woojin Jeon**, Kyunghee University, Republic of Korea

AA-TuP-14 Atomic Layer Deposited Single-Atom Catalysts of Pt/Co3O4 for Improved Electrocatalytic Hydrogen Evolution Reaction Performance, **Yue Huang**, **Ying-Jie Ma (Graduate Student)**, **Ai-Dong Li**, Nanjing University, China

AA-TuP-15 Atomic Layer Deposited Amorphous High-entropy Oxide Protective Layer for Stable Zinc Metal Anode, **Li-Ling Fu**, **Ai-Dong Li**, Nanjing University, China

AA-TuP-18 Inducing the Tetragonal-Phase HfO₂ in ZrO₂/HfO₂ Stack by Introducing the Controlled Interfacial Layer, **Woo Young Park**, WONIKIPS, Republic of Korea

AA-TuP-22 Enhanced Growth Stability of ZrO₂, HfO₂, and In₂O₃ Deposited by Liquid Injection Atomic Layer Deposition, **Il-Kwon Oh**, **Soon-Kyeong Park (Graduate Student)**, **Ji-Won Jang**, Ajou University, Republic of Korea

AA-TuP-24 Thermal Atomic Layer Deposition of Ru-incorporated Molybdenum Carbide Thin Films via Inter-ligand Reaction for Advanced Copper Metallization, **Jeong Hwan Han**, **Ji Sang Ahn (Graduate Student)**, Seoul National University of Science and Technology, Republic of Korea

AA-TuP-25 Stabilization of Metastable Rutile TiO₂ Through Engineering of the Upper Layer for Memory Applications, **Jeon Ji Hoon**, **Kim Seong Keun**, Korea Institute of Science and Technology (KIST), Republic of Korea

AA-TuP-26 Enhancing Plasma Resistance in Semiconductor Equipment with Atomic Layer Deposition Thin Films, **Young Yeon Ji**, **Bongjun Koo**, **Changsup Kwon**, **In-rae Park**, Hansol IONES, Republic of Korea

AA-TuP-31 Evaluation of Molybdenum Oxidation for the Growth of Rutile TiO₂, **Jin Tae Noh**, **Kyong Min Kim**, **Byeong Hyeon Kang**, **Seokjun Han**, **Seok Nam Koh**, **Tae Wan Lee**, Wonik IPS, Republic of Korea

AA-TuP-32 Fast, Remote Plasma ALD of Highly Conductive TiN for Quantum Applications, **Arpita Saha**, **Dmytro Besprozvannyi**, **Yi Shu**, **Agnieszka Kurek**, Oxford Instruments Plasma Technology, UK; **Harm Knoops**, Oxford Instruments Plasma Technology, UK, Eindhoven University of Technology, UK

AA-TuP-33 Optimized Interface Engineering of ALD SrTiO₃ for DRAM Capacitors, **Seong Keun Kim**, **Seungwan Ye (Graduate Student)**, **Hong Keun Chung**, **Jihoon Jeon**, Korea Institute of Science and Technology (KIST), Republic of Korea

AA-TuP-34 Urea Production from Polluted Seawater by Atomic Layer Deposited Catalytic Layers, **Rens Kamphorst**, **Peter M. Piechulla**, **Ruud J. van Ommen**, Delft University of Technology, Netherlands

AA-TuP-35 Tailoring the Scavenging Effect of ALD-Al₂O₃ Passivation Layer via Oxidant Engineering for High-Performance Tellurium Transistors, **Jaeyoon Shim (Undergraduate)**, **Jaemin Jung**, **In-Hwan Baek**, Inha University, Republic of Korea

AA-TuP-36 Selective Surface Passivation for Ultrathin and Continuous Metallic Films via Atomic Layer Deposition, **Seong Keun Kim**, KU-KIST Graduate School of Converging Science & Technology, Korea University, Republic of Korea; **Han Kim**, **Taeseok Kim**, **Minseok Kim (Graduate Student)**, **Jihoon Jeon**, **Gwang Min Park**, KU-KIST Graduate School of Converging Science and Technology, Korea University, Republic of Korea; **Sung-Chul Kim**, **Sung Ok Won**, Korea Institute of Science and Technology (KIST), Republic of Korea; **Ryosuke Harada**, TANAKA, Japan; **Sangtae Kim**, Department of Nuclear Engineering, Hanyang University, Republic of Korea

AA-TuP-37 Towards Atomic Layer Deposition-Enabled Lateral Conversion of Transition Metal Dichalcogenides for Electrochemical Hydrogen Generation, **Asem Jakyip (Graduate Student)**, Nazarbayev University, Kazakhstan; **Aidar Kemelbay**, Lawrence Berkeley National Laboratory; **Arman Tuigynbek**, **Alexander Tikhonov**, Nazarbayev University, Kazakhstan

AA-TuP-38 Low-Temperature Thermal Atomic Layer Deposition of Gallium Nitride Thin Films, **Jian Heo (Graduate Student)**, **Yerim Choi**, **Hyeji Kim**, **Okhyeon Kim**, **Hye-Lee Kim**, **Won-Jun Lee**, Sejong University, Republic of Korea

AA-TuP-39 High-Performance p-Type SnO Thin Film Transistor with Raised Source/Drain using Dry Etching Method, **Jaemin Jung**, **Jaeyoon Shim**, **InHwan Baek**, InHa University, Republic of Korea

AA-TuP-40 Gain Enhancement of Microchannel Plate Detectors via ALD Coatings Inside the Channels, **Sun Gil Kim**, **Min Seop Song (Graduate Student)**, **Hyun Mi Kim**, **Ki Hun Seong**, **Sung Kyu Jang**, **Jong Hyun Choi**, Korea Electronics Technology Institute (KETI), Republic of Korea; **Yu Bin Nam**, Kyonggi University, Republic of Korea; **Jeong Gil Na**, **Kyung Hwan Jeong**, JJ CNS, Republic of Korea; **Seul Gi Kim**, **Hyeong Keun Kim**, Korea Electronics Technology Institute (KETI), Republic of Korea

AA-TuP-41 Effects of Alkali-Metal Doping on Aluminum-Silicate Coated Titanium Oxide Thin Film Transistors Prepared by Atomic Layer Deposition, **Ryo Miyazawa (Graduate Student)**, **Haruto Suzuki**, **Hibiki Takeda**, **Bashir Ahmad Arima**, **Fumihiko Hirose**, Graduate School of Science and Engineering, Yamagata University, Japan

AA-TuP-42 Influence of Atomic-layer-deposited MoNx Layers on Ferroelectric Properties of Hf-Zr-O Capacitors, **Jeong Hwan Han**, **Jeong min Han (Undergraduate)**, **Wangu Kang**, Seoul National University of Science and Technology, Republic of Korea

AA-TuP-43 Enhanced Stability of Ultrathin Mo-Passivated RuO₂ Bottom Electrodes for TiO₂-Based DRAM Capacitors, **Jeong Hwan Han**, **Seon Gu Choi (Graduate Student)**, **Jae Hyeon Lee**, Seoul National University of Science and Technology, Republic of Korea

AA-TuP-44 Towards Ultra-Low Resistivity of Titanium Nitride PEALD Layers Grown on an Amorphous SiO₂ Substrate with Aluminum Nitride Interfacial Layer, **Valentina Korchnoy**, Technion Israel Institute of Technology, Israel; **Inna Popov**, The Hebrew University of Jerusalem, Israel; **Yael Etinger**, Technion Israel Institute of Technology, Israel; **Michael Lisiansky**, Tower Semiconductors, Israel

AA-TuP-45 High-Performance TiO₂ Hardmask for sub-10 Nm Advanced Memory Patterning, **Heongyu Lee (Graduate Student)**, **Seul-Gi Kim**, **Cheongha Kim**, **sumin Lee**, **Hyun-mi Kim**, **Sun Gil Kim**, **Jong Hyun Choi**, **Hyeongkeun Kim**, Korea Electronics Technology Institute (KETI), Republic of Korea

AA-TuP-46 Machine Learning-Driven Thermal Budget Analysis for Ferroelectric $\text{Hf}_{0.5}\text{Zr}_{0.5}\text{O}_2$ Capacitors, **Minjong Lee (Graduate Student)**, University of Texas at Dallas; *Jongmug Kang*, Kangwon National University, Republic of Korea; *Dushyant Narayan, Geon Park, Dan Le*, University of Texas at Dallas; *Seungbin Lee, Hyeonhong Min, Gwanghyeon Jang, Si Joon Kim*, Kangwon National University, Republic of Korea; *Jiyoung Kim*, University of Texas at Dallas

AA-TuP-48 Atomic Layer Deposition of Ru-Ir Binary Alloy Thin Films for Advanced Interconnects, *Se-Hun Kwon, Yeong-Seo Cho (Graduate Student)*, *Myung-Jin Jung*, Pusan National University, Republic of Korea

AA-TuP-49 Nanolaminated $\text{Al}_2\text{O}_3/\text{ZrO}_2$ film using Atomic Layer Deposition to enhance corrosion resistance on SUS304 steel, *Se-Hun Kwon, Jae-Hyun Kim (Graduate Student)*, Pusan National University, Republic of Korea

AA-TuP-50 Impact of Al Gradient Doping on HfO_2 Based Metal – Insulator – Metal DRAM Capacitor, **Taelim Lee, Jungwoo Bong, Hosung Lee, Seongmin Jin, Keun Heo**, Jeonbuk National University, Republic of Korea

AA-TuP-51 Aero-TiO₂ Three-Dimensional Nanoarchitecture for Photocatalytic Degradation of Tetracycline, **Sebastian Lehmann, Kornelius Nielsch**, Leibniz Institute for Solid State and Materials Research, Germany; *Vladimir Ciobanu, Tatiana Galatonova, Tudor Braniste, Ion Tiginyanu*, National Centre for Materials Study and Testing, Moldova (Republic of)

AA-TuP-54 Advancements in ALD for DRAM: High-Performance Films for Capacitor and Electrode Applications, **Tejinder Singh**, Eugenius, Inc.

AA-TuP-55 Optimization of Low-Temperature PEALD for High-Performance $\text{TiO}_2/\text{SiO}_2$ Optical Coatings, **Duy Thanh Cu (Graduate Student)**, *Guan-Yu Ke*, National Central University, Taiwan; *Wen-Hao Cho*, Taiwan Instrument Research Institute, National Applied Research Laboratories, Taiwan; *Chien-Cheng Kuo*, National Central University, Taiwan

AA-TuP-56 Analysis of the Ambipolar Conduction of Atomic-layer-deposited Tin Monoxide Thin-Film Transistors with Indium Tin Oxide Electrodes, *Cheolseong Hwang, Sahngik Mun (Graduate Student)*, *Seoryong Park, Yonghee Lee, Sukin Kang, Jinheon Choi, Jaewon Ham, Juneseong Choi*, Seoul National University, Republic of Korea

AA-TuP-58 Enhancement of Stress Distribution through Patterned Island Design Using Atmospheric Pressure Spatial-ALD, **Min-Seo Kim, Won-Bum Lee, Chi-Hoon Lee, Jin-Seong Park**, Hanyang University, Korea

AA-TuP-59 Demonstration of Reliable Ferroelectric Memory with Optimized 4 Nm-Thick $\text{Hf}_{1-x}\text{Zr}_x\text{O}_2$ Films and an Ultra-Thin Al_2O_3 Capping Layer, **Han Sol Park, Cheol Seong Hwang**, Seoul National University, Republic of Korea

AA-TuP-60 Zirconium Carbide (ZrC_x) Thin Films as Next-generation Diffusion Barriers for Cu and Ru Interconnects Prepared by Plasma Enhanced Atomic Layer Deposition, **Minjeong Kweon (Graduate Student)**, *Chaehyun Park, Sang bok Kim, Soo-Hyun Kim*, Ulsan National Institute of Science and Technology (UNIST), Republic of Korea

AA-TuP-61 Centralized Bulk Precursor Delivery by Means of Direct Liquid Injection, **Ehsan Mohseni, Johannes Gröbler, Joerg Koch**, SEMPA SYSTEMS GmbH, Germany

AA-TuP-62 Highly-Conductive ALD-WC_x Thin Films Using a New Fluorine-Free W Precursor for Cu & Ru Interconnects, **Dongbeom Seo (Graduate Student)**, *Soo-Hyun Kim, Sang Bok Kim*, Ulsan National Institute of Science and Technology, UNIST, Republic of Korea

AA-TuP-64 Trap Density Reduction in High-k Dielectrics: A Dual Approach with ALD Optimization and HPDA, **Taewon Hwang (Undergraduate)**, *Su-Hwan Choi, Chang-Kyun Park, Jin-Seong Park*, Hanyang University, Korea

AA-TuP-66 Optimization of High-k Gate Insulators for Amorphous IGZO channel-based 3D DRAM: Materials and Process Development, **Seonyeong Park (Graduate Student)**, *Jisang Yoo*, Yonsei University, Korea; *Jeongwoo Park, Pilsang Yun, Daewon Ha*, Samsung Electronics Co., Republic of Korea; *Hyungjun Kim*, Yonsei University, Korea

AA-TuP-70 Influence of Thermal Annealing on Interdiffusion and Electrical Characteristics of Ferroelectric FETs Interface of IGZO/HZO, **HyeJoo Kang (Graduate Student)**, Ajou University, Republic of Korea; *Seung Wook Ryu, Dohee Kim, Jongyoung Lee*, SK hynix, Republic of Korea; *Il-Kwon Oh*, Ajou University, Republic of Korea

AA-TuP-71 Plasma Enhanced Atomic Layer Deposition of HfO_2 with Applying DC Bias, **Hee Jun Yoon (Graduate Student)**, *Taeyoon Lee, Hyeonntag Jeon*, Hanyang University, Korea; *Yoon Soo Hyun*, Hanyang University, Republic of Korea

AA-TuP-72 Development of High-Performance 2 nm In_2O_3 Thin-Film Transistors via BEOL-Compatible ALD Process Using DBADMI_n Precursors, *In-Hwan Baek, InHong Hwang*, Inha University, Republic of Korea

AA-TuP-73 Influence of Process Conditions on Stability and Plasma Resistance of ALD Y_2O_3 Thin Films, **Min Joo Koo, Hyun Mi Kim, Hye Young Kim**, Korea Electronics Technology Institute, Republic of Korea; *Chang sub Park, Yong Soo Lee, Jeong Min Yang, Dong Jun Song*, KoMiCo Ltd., Republic of Korea; *Sung Kyu Jang, Jong Hyun Choi, Seul Gi Kim, Sun Gil Kim, Hyeong keun Kim, Ji hun Kim*, Korea Electronics Technology Institute, Republic of Korea

AA-TuP-75 Plasma-Enhanced and Thermal Atomic Layer Deposition of Superconducting Nitride Thin Films, **Zahra Ahali, Sanaz Zarabi**, Beneq Oy, Finland; *Ziying Wang, Peter Liljeroth*, Aalto University, Finland; *Otto Laitinen*, Beneq Oy, Finland

AA-TuP-76 Effect of Interfacial Layer on Ferroelectricity of $\text{Hf}_{1-x}\text{Zr}_x\text{O}_2$ Thin Films in MFIS Structure, **Hyo-Bae Kim (Graduate Student)**, *Ji-Hoon Ahn*, Hanyang University, Republic of Korea

AA-TuP-77 Lanthanum ALD Precursors for the Application fo High-k Gate Dielectrics, **I-Cheng Tseng, Yong-Jay Lee**, Industrial Technology Research Institute, Taiwan

AA-TuP-78 Charge Trapping Memory Structure with Low Interface Defect Density of $<10^{12}$ cm⁻² eV⁻¹ via Remote Plasma-Based Hydrogen Post-Treatment, **ChanHee Lee (Graduate Student)**, *Hee chul Lee*, Department of Advanced Materials Engineering, Tech university of korea

AA-TuP-81 Mitigating Crystallinity Degradation and Leakage Current of Rutile TiO_2 Dielectric Thin Films via Mg Doping, **Seungwoo Lee (Graduate Student)**, *Soomin Yoo, Chaeyeong Hwang*, Kyung Hee University, Republic of Korea; *Hansol Oh, Daeyeong Kim, Yongjoo Park*, SK Trichem, Republic of Korea; *Woojin Jeon*, Kyung Hee University, Republic of Korea

AA-TuP-83 The Impact of Chromium Ion Implantation on ALD Lead Chalcogenide Thin Films, *Haifeng Cong*, Old Dominion University; *Charlotte Poterie, Jean Francois Barbot*, Universite de Poitiers-CNRS, France; **Helmut Baumgart**, Old Dominion University

AA-TuP-85 Thin Conductive Cu Films by Post-Reduction of Atomic Layer Deposited CuO, **Maria Gabriela Sales, Neeraj Nepal, Peter Litwin, David Boris, Scott Walton, Virginia Wheeler**, U.S. Naval Research Laboratory

AA-TuP-86 Enhanced Dielectric Properties of HfO_2 Thin Films Produced Via Novel Catalytic Atomic Layer Deposition Process, *Sara Harris, Dane Lindblad, Aaron Wang, Arrelaine Dameron, Matthew Weimer, Brandon Woo*, Forge Nano

AA-TuP-87 MoO₂Cl₂: how the first large volume solid precursor has been enabled for HVM, **Jeffrey Yoder, Shasha Liu**, Air Liquide

AA-TuP-89 Study of Resistivity in TiN Films with SiH₄ Doping in the Thermal ALD Process, **Siun Song, Chaewon Kwak, Yoosong Kim, Kyubeom Lee, Dongwon Seo**, Hanwha Semitech, Republic of Korea

AA-TuP-90 Atomic Layer Deposition of Al_2O_3 and ZrO_2 Coatings on Single-Crystal NCM Cathodes: A Parametric Study for Enhanced Lithium-Ion Battery Performance, **Sung Eun Jo (Graduate Student)**, *Woosong Kim, Hyongjune Kim*, Pohang University of Science and Technology (POSTECH), Republic of Korea; *Jungwoo Park, POSCO Holdings*, Republic of Korea; *Jihwan An*, Pohang University of Science and Technology (POSTECH), Republic of Korea

AA-TuP-91 Effect of Tungsten Insertion Layer on the Electrical Properties of PEALD HZO Thin Films for Semiconductor Memory Applications, *Hee Chul Lee, Ha Jeong Kim, Jea Hyuk Choi*, Semicon Plasma Process LAB, Republic of Korea

AA-TuP-92 Implementation of Firing Type Threshold Device Using Atomic Layer Deposited Vanadium Oxide, **Yong Tae Kim (Graduate Student)**, *Jaeyeong Heo*, Chonnam National University, Republic of Korea; *Pyeongkang Hur, Junwoo Son*, Seoul National University, Republic of Korea

AA-TuP-93 Introducing a Surface Acoustic Wave-Based Miniaturized Aerosol Source for Controlled Liquid Precursor Delivery in ALD Processes, **Mehrzad Roudini, Andreas Winkler**, IFW, Germany

AA-TuP-94 Enhancing Stability and Performance of LMBs Through Al_2O_3 -Assisted SEI Protection on SnO₂-Coated Cu Current Collectors by ALD, *Roy Byungkyu Chung*, Kyungpook national university; **Dawon Lee (Graduate Student)**, *Jiseop Byeon*, Kyungpook national university, Republic of Korea

AA-TuP-95 Low-Temperature Processed Al-Doped HfO_2/IGZO Ferroelectric Thin Films for High-Performance Non-Volatile Memory Devices, **Lee Gahong (Graduate Student)**, Sungkyunkwan University, Republic of Korea

AA-TuP-96 Effect of Proton Irradiation on the Electrical Performance on SnO₂ Thin Film Transistor with ITO Electrodes, **Huiseung Kim (Graduate Student)**, *Suhyeon Park, Dawon Lee, Jiseop Byeon, Jeongin Seo*, Kyungpook National University, Daegu, Republic of Korea; *Jeongtae Kim, Dong-seok Kim*, Korea Atomic Energy Research Institute, Republic of Korea; *Roy Byungkyu Chung*, Kyungpook National University, Daegu, Republic of Korea

AA-TuP-97 Fabrication of p-type SnO Thin Films via Thermal ALD, *Suhyeon Park (Graduate Student)*, HuiSeung Kim, Dawon Lee, Jiseop Byeon, Jeongin Seo, Roy Byung Kyu Chung, Kyungpook National University, Daegu, Republic of Korea

AA-TuP-99 Atomic Layer Infiltration of ZnO on Polyimide Substrates for Flexible Encapsulation Hybrid Film, *Ji Ho Jeon (Undergraduate)*, Jeong Hwan Han, Byung Joon Choi, Su Min Eun, Si Eun Jung, Ye Jin Jung, Seoul National University of Science and Technology, Republic of Korea; *Kwanhyuck Yoon, Woo Yong Sung*, Samsung, Republic of Korea

AA-TuP-100 Effect of Different Counter Reactants on Interfacial Oxidation and Electrical Properties of HfO₂ Grown on TiN by Atomic Layer Deposition, *Aravind H. Patil*, Byung Chan Lee, Seoung won Shim, Su min An, Minheyok Lee, Young-ho Kang, Han-Bo-Ram Lee, Incheon National University, Republic of Korea

Area Selective ALD

Room Event Hall - Session AS-TuP

Area Selective ALD Poster Session

5:45 – 7:00 pm

AS-TuP-2 Advancements in Area-Selective Deposition by Merck: From Fundamental Principles to Industrial Applications, *Isiah Liu*, The Electronics business of Merck KGaA Darmstadt Germany.; *Lanxia Cheng, Tingmin Wang, Matthew MacDonald, Bhushan Zope*, Merck KGaA, Darmstadt; *Chang-won Lee*, Merck KGaA, Darmstadt, Republic of Korea; *Masashi Jinguji, Xinjian Lei*, Merck KGaA, Darmstadt

AS-TuP-3 Comparative Study of Experimental and DFT Calculations of Trimethylaluminum Adsorption on SiO₂, SiN, and Si for Area-Selective Deposition, *Genki Hayashi*, Ni Zeyuan, Yumiko Kawano, Shinichi Ike, Shuji Azumo, Tokyo Electron Technology Solutions Limited, Japan

AS-TuP-4 An Automated Adsorption Simulation Workflow for Efficient High-Throughput Molecule Screening for Area-Selective Deposition, *Zeyuan Ni, Michitaka Aita*, Tokyo Electron Technology Solutions Ltd., Japan; *Ayuta Suzuki*, TEL Technology Center, America, LLC; *Genki Hayashi, Yumiko Kawano, Shinichi Ike, Shuji Azumo*, Tokyo Electron Technology Solutions Ltd., Japan

AS-TuP-6 Optimization of Small Molecular Inhibitors for Area-Selective Atomic Layer Deposition by Controlling Alkyl Chain Length, *EunChong Cho (Graduate Student)*, Korea Research Institute of Chemical Technology (KRICT), Republic of Korea; *Hae Lin Yang*, Hanyang University, Korea; *Jung-Hoon Lee*, Korea Research Institute of Chemical Technology (KRICT), Republic of Korea; *Jin-Seong Park*, Hanyang University, Korea; *Youngkwon Kim*, Korea Research Institute of Chemical Technology (KRICT), Republic of Korea

AS-TuP-7 Area-Selective Atomic Layer Deposition of Amino Silane-Based Small Molecule Inhibitor for Enhancement of Selectivity, *Jae Hun Hwang (Graduate Student)*, *EunChong Cho, Youngkwon Kim*, Korea Research Institute of Chemical Technology (KRICT), Republic of Korea

AS-TuP-8 Substrate-Driven Selectivity in Area-Selective Atomic Layer Deposition of ZnO: A Theoretical Investigation, *Semin Kim*, *Yeseul Son, Taeyoung Kim (Graduate Student)*, *Soo-Hyun Kim, Byungjo Kim*, UNIST, Republic of Korea

AS-TuP-9 Inherent Area-Selective Atomic Layer Deposition of Molybdenum Carbide for Bottom-up Semiconductor Manufacturing, *Jeong Hwan Han, Min Seok Kim (Undergraduate)*, *Ji Sang Ahn*, Seoul National University of Science and Technology, Republic of Korea

AS-TuP-10 Photo-Assisted Atomic Layer Deposition of Metallic Nickel, *Yupu Tang (Graduate Student)*, *Ion Lambrou, Ville Jokinen, Ville Miikkulainen*, Aalto University, Finland

AS-TuP-12 Impurity-Free Accelerators in Atomic Layer Deposition: Driving the Growth of Low-Resistivity Ultrathin Iridium Films, *Se-Hun Kwon, Myung-Jin Jung (Graduate Student)*, Pusan National University, Republic of Korea

AS-TuP-13 Area-Selective Atomic Layer Deposition of High-K Dielectric Oxides on Self-Assembled Monolayer Functionalized Nitride Substrates, *Ting-I Wu (Graduate Student)*, *Shih-Hao Tseng*, Department of Materials Science and Engineering, National Yang Ming Chiao Tung University, Hsinchu, Taiwan; *Thanh Danh La Duc*, Department of Materials Science and Engineering, National Yang Ming Chiao Tung University, Hsinchu, Viet Nam; *Yu-Chuan Lin, Hong-Cheu Lin, Yung-Jung Hsu*, Department of Materials Science and Engineering, National Yang Ming Chiao Tung University, Hsinchu, Taiwan

AS-TuP-14 Stabilization of Metal Coated Silicon Photocathodes for Light Assisted CO₂ Conversion by Area Selective-Atomic Layer Deposition, *Encarnacion Torralba Penalver, Harsh Chaliyawala, Nikola Ilic*, CNRS-ICMPE, France; *Damien Coutancier*, CNRS-IPVF, France; *Stephane Bastide, Kadiatou Bah, Christine Cachet-Vivier*, CNRS-ICMPE, France; *Negar Naghavi, Nathanaelle Schneider*, CNRS-IPVF, France

AS-TuP-16 Photocatalytic Surface Initiation for Area-Selective Deposition of Polymer Thin Films and Sustainable Nanomanufacturing, *Yuanhao Shen (Graduate Student)*, *Xinlei He, Xiaocheng Huang, Pengzhe Cai, Delong Liu, Junjie Zhao*, Zhejiang University, China

AS-TuP-17 Atomistic Modeling of Selective SiO₂ Deposition: Inhibiting Si₃N₄ with Benzaldehyde, *Seungwon Shim (Graduate Student)*, *Byung Chan Lee, Youngho Kang*, Incheon National University, Republic of Korea; *Soo-Hyun Kim*, Ulsan National Institute of Science and Technology, Republic of Korea; *Han-Bo-Ram Lee*, Incheon National University, Republic of Korea

Emerging Materials

Room Event Hall - Session EM-TuP

Emerging Materials Poster Session

5:45 – 7:00 pm

EM-TuP-1 A Novel Topological Semi-Metal: MoP Pathfinding for Future Interconnects at Nanoscale, *Jeong-Seok Na, Kyle Blakeney, David Mandia, Jeremie Dalton*, LAM Research

EM-TuP-2 Vapor Phase Infiltration of Poly(1-Trimethylsilyl-1-Propyne) with Trimethylaluminum, *Jonathan Jenderny*, Applied Electrodynamics and Plasma Technology, Ruhr-University Bochum, Germany; *Nils Boysen*, Fraunhofer Institute for Microelectronic Circuits and Systems, Duisburg, Germany; *Florian Preischel*, Inorganic Materials Chemistry, Ruhr-University Bochum, Germany; *Teresa de los Arcos*, Technical and Macromolecular Chemistry, Paderborn University, Germany; *Aleksander Kostka*, Center for Interface-Dominated High-Performance Materials, Ruhr-University Bochum, Germany; *Peter Awakowicz*, Applied Electrodynamics and Plasma Technology, Ruhr-University Bochum, Germany; *Jean-Pierre Glauber*, Leibniz Institute for Solid State and Materials Research, Germany; *Harish Parala*, Institute for Materials Chemistry, Leibniz Institute for Solid State and Materials Research, IFW Dresden, Germany; *Anjana Devi*, Institute for Materials Chemistry, Leibniz Institute for Solid State and Materials Research, Germany

EM-TuP-3 Study of (TaN)_{1-x}C_x Electrode to Investigate Its Impact on OTS Selector Devices, *Minkyu Lee (Graduate Student)*, *Taeyoon Lee*, Yonsei University, Korea

EM-TuP-4 Study for Deposition of CuI onto Indium-Gallium-Zinc-Oxide for Light Detection Application, *Woosuk Sohn (Graduate Student)*, *Taeyoon Lee*, Yonsei University, Korea

Wednesday Morning, June 25, 2025

Room Halla Hall	
8:00am	<p>INVITED: AA1-WeM-1 Atomic Layer Deposition for Highly Durable Hydrogen Fuel Cells: from Catalyst to Cell, <i>Xiao Liu, Hang Liu, Yuxin Gao, Jianhua Wu, Rong Chen</i>, Huazhong University of Science and Technology, China</p>
8:30am	<p>AA1-WeM-3 Interfacial Properties of ALD-Grown In₂S₃ Catalysts in CO₂ Electroreduction, <i>Järi Van den Hoek</i>, University of Antwerp, Belgium; <i>Femi Mathew, Ruben Blomme</i>, Ghent University, Belgium; <i>Lieven Hintjens, Brend De Coen</i>, University of Antwerp, Belgium; <i>Eduardo Solano</i>, ALBA synchrotron, Spain; <i>Matthias Minjauw</i>, Ghent University, Belgium; <i>Nick Daems, Daniel Choukroun</i>, University of Antwerp, Belgium; <i>Christophe Detavernier</i>, Ghent University, Belgium; <i>Tom Breugelmans</i>, University of Antwerp, Belgium; <i>Jolien Dendooven</i>, Ghent University, Belgium</p>
8:45am	<p>AA1-WeM-4 Scaling Up Platinum on Carbon Catalyst Fabrication for Proton Exchange Membrane Water Electrolysis, <i>Peter Michael Piechulla, Mingliang Chen, Sophie van Beusekom</i>, Delft University of Technology, Netherlands; <i>Mena-Alexander Kräenbring, Fatih Özcan, Doris Segets</i>, University of Duisburg-Essen, Germany; <i>Ruud van Ommen</i>, Delft University of Technology, Netherlands</p>
9:00am	<p>AA1-WeM-5 Platinum Promoted Cobalt based Fischer-Tropsch Thin-Film Catalysts, <i>Muhammad Hamid Raza, Avela Kunene, Imane El Arrouji</i>, PVcomB, Helmholtz-Zentrum Berlin für Materialien und Energie (HZB), Berlin, Germany; <i>Catalina E. Jiménez</i>, Department Interface Design, HZB, Berlin, Germany; <i>Alexander Steigert, Martin Muske, Tobias Köhler, Ali Shan Malik</i>, PVcomB, Helmholtz-Zentrum Berlin für Materialien und Energie (HZB), Berlin, Germany; <i>Marcus Bär</i>, Department Interface Design, HZB, Berlin, Germany. Helmholtz Institute Erlangen-Nürnberg for Renewable Energy (HI ERN), Erlangen, Germany. Dept. Chemistry and Pharmacy, Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Erlangen, Germany; <i>Nicola Pinna</i>, Department of Chemistry and The Center for the Science of Materials Berlin, Humboldt-Universität zu Berlin, Berlin, Germany; <i>Rutger Schlatmann, Daniel Amkreutz</i>, PVcomB, Helmholtz-Zentrum Berlin für Materialien und Energie (HZB), Berlin, Germany</p>
9:15am	<p>AA1-WeM-6 Selectively Located Pt Clusters on Au/CeO₂ for Highly Robust Water-Gas Shift Reaction via Atomic Layer Deposition, <i>Xiao Liu, Yuanting Tang, Bin Shan, Rong Chen</i>, Huazhong University of Science and Technology, China</p>
9:30am	<p>AA1-WeM-7 Fluorine-Free and Freestanding Bipolar Membranes Based on Metal-Oxide Ald-Coated Electrospun Nanofibers for Water Electrolysis and Fuel Cells, <i>Arnaud Demore (Graduate Student), Damien Voiry</i>, IEM - CNRS, France; <i>Philippe Miele</i>, IEM - ENSCM, France; <i>Mikhael Bechelany</i>, IEM - CNRS, France</p>
9:45am	<p>AA1-WeM-8 Efficient Alkaline Hydrogen Evolution Reaction with Iridium Nanostructures synthesized by Atomic Layer Deposition, <i>Jhonatan Rodriguez Pereira (Graduate Student), Raul Zazpe, Jan Macak</i>, University of Pardubice, Czechia</p>
10:00am	<p>BREAK & EXHIBITS</p>
10:45am	<p>INVITED: AA3-WeM-12 Using Area-Selective Ald for Dual Site Catalysis for Photocatalytic Water Splitting, <i>Katherine Hurst, Wilson McNeary</i>, National Renewable Energy Laboratory; <i>William Stinson</i>, Columbia University; <i>Shane Ardo</i>, University of California Irvine; <i>Daniel Esposito</i>, Columbia University</p>
11:15am	<p>AA3-WeM-14 Impact of Tetrakis(dimethylamido)titanium(IV) Degradation on Atomic Layer Deposition of Tin Oxide Films and Perovskite Solar Cells, <i>Shuang Qui, Augusto Amaro</i>, University of Victoria, Canada; <i>Diana Fabulyak, Avantor</i>, Canada; <i>Julien Appleby-Millette</i>, University of Victoria, Canada; <i>Cassidy Conover</i>, Avantor, Canada; <i>Dongyang Zhang, Vishal Yeddu, I. Teng Cheong, Irina Paci, Makhud Saidaminov</i>, University of Victoria, Canada</p>
11:30am	<p>AA3-WeM-15 Ultrathin Oxygen Deficient SnOx Films as Electron Extraction Layers for Perovskite Solar Modules, <i>Helen Hejin Park, Joshua Sraku Adu (Graduate Student)</i>, Korea Research Institute of Chemical Technology (KRICT), Republic of Korea</p>
11:45am	<p>AA3-WeM-16 Charge Transport Layers Rafted by Atomic Layer Deposition for Large-Area Perovskite-Based Solar Modules, <i>Femi Mathew</i>, Institut Photovoltaïque d'Ile-de-France (IPVF), France; <i>Damien Coutancier</i>, CNRS-IPVF, France; <i>Getaneh Gesesse, Marion Provost, Nadia Nazi</i>, Institut Photovoltaïque d'Ile-de-France (IPVF), France; <i>Nathanaelle Schneider</i>, CNRS-IPVF, France</p>

**ALD Applications
Session AA1-WeM
Catalyst and Fuel Cell Applications
Moderators:**
Ji Hwan Ahn, POSTECH, Republic of Korea,
Hao Van Bui, Phenikaa University, Viet Nam

**ALD Applications
Session AA3-WeM
Other Energy Applications
Moderators:**
Rong Chen, Huazhong University of Science and Technology, China,
Hyeontag Jeon, Hanyang University, Republic of Korea

Wednesday Morning, June 25, 2025

Room Samda Hall	
8:00am	<p>INVITED: ALE1-WeM-1 Centering Sustainability in Future Plasma-Enhanced ALE Processes, Nathan Marchack, Robert Bruce, Eric Joseph, IBM Research Division, T.J. Watson Research Center</p>
8:30am	<p>ALE1-WeM-3 Cryogenic Atomic Layer Etching of SiO₂ by Physisorption of HF/C₂H₅OH and Ar Plasmas, Shih-Nan Hsiao, Makoto Sekine, Nagoya University, Japan; Yoshihide Kihara, Tokyo Electron Miyagi Limited, Japan; Masaru Hari, Nagoya University, Japan</p>
8:45am	<p>ALE1-WeM-4 Cryogenic ALE of SiO₂ using CF₄ Plasma, Madjid Adjabi, Jack Nos, Sylvain Iseni, GREMI - CNRS/Orleans University, France; Gilles Cunge, Martin Kogelschatz, LTM - CNRS/Grenoble Alpes University/Grenoble-INP, France; Philippe Lefauchaux, Loic Becerra, GREMI - CNRS/Orleans University, France; Emilie Despiau-Pujo, LTM - CNRS/Grenoble Alpes University/Grenoble-INP, France; Thomas Tillocher, Rémi Dussart, GREMI - CNRS/Orleans University, France</p>
9:00am	<p>ALE1-WeM-5 Atomic Layer Etching of Indium Oxide Thin Films via Ligand Addition and O₂ Plasma Reactions, Minchan Kim (Graduate Student), Jihyun Gwoen, Hae Lin Yang, Jin-Seong Park, Changkyun Park, Hanyang University, Korea</p>
9:15am	<p>ALE1-WeM-6 Development of a Novel Magnetically-Confined Plasma Source for Advanced Semiconductor Manufacturing, Tae S Cho, Wonik IPS; Jihyun Kim, Giwon Shin, Hakmin Kim, Jeonghun Kim, Sooyoung Hwang, Jaehoon Choi, Wonik IPS, Republic of Korea</p>
9:30am	
9:45am	
10:00am	BREAK & EXHIBITS
10:45am	<p>INVITED: ALE2-WeM-12 In-Situ Observation of Surface Reaction and Advanced Process for Damage-Less Atomic Layer Etching, Takayoshi Tsutsumi, Nagoya University, Japan</p>
11:15am	<p>ALE2-WeM-14 Isotropic ALE of 2D Crystalline MoS₂ using SF₆:H₂ Plasma and O₂ Plasma, Sanne Deijkers (Graduate Student), Christian Palmer, Nick Chittock, Guillaume Krieger, Silke Peeters, Marcel Verheijen, Eindhoven University of Technology, The Netherlands; Harm Knoops, Oxford Instruments Plasma Technology, Netherlands; Erwin Kessels, Adrie Mackus, Eindhoven University of Technology, The Netherlands</p>
11:30am	<p>ALE2-WeM-15 Enhanced Plasma Ignition and Sustaining of Transformer-Coupled Plasma Source with a Secondary Coil, Tae S Cho, Jae Hoon Choi, Hak Min Kim, Gi Won Shin, Soo Young Hwang, Ji Hyun Kim, Wonik IPS, Republic of Korea</p>
11:45am	

**Atomic Layer Etching
Session ALE1-WeM
Plasma and/Energy-Enhanced ALE + Sustainability
Moderators:**
Jane P. Chang, University of California, Los Angeles,
Sung-II Cho, Samsung Electronics, Republic of Korea

**Atomic Layer Etching
Session ALE2-WeM
ALE Applications III
Moderators:**
Keun Hee Bai, Samsung Electronics Co., Republic of Korea,
Younghee Lee, Lam Research Corporation, Republic of Korea

Wednesday Morning, June 25, 2025

Room Tamna Hall A	
8:00am	<p>INVITED: AS1-WeM-1 Area-selective ALD of ZnS on Atomic Layer Etched (ALE) Substrates via Growth Modulation, <i>Taewook Nam</i>, Sejong University, Republic of Korea</p>
	<p>Area Selective ALD Session AS1-WeM Area Selective Deposition II Moderators: Anjana Devi, Leibniz Institute, IFW Dresden, Il-Kwon Oh, Ajou University, Republic of Korea</p>
8:30am	<p>AS1-WeM-3 Passivation of Nitride Surface Using Aldehyde Inhibitor for Area Selective Atomic Layer Deposition of SiNx on Oxide Surface, <i>Summal Zoha (Graduate Student)</i>, <i>Ngoc Le Trinh</i>, <i>Bonwook Gu</i>, <i>Han-Bo-Ram Lee</i>, Incheon National University, Republic of Korea</p>
8:45am	<p>AS1-WeM-4 Blocking Effects of Small Molecule Inhibitors in Atomic Layer Deposition: An Off-lattice Kinetic Monte Carlo Study, <i>Zhaojie Wang (Graduate Student)</i>, <i>Yanwei Wen</i>, <i>Rong Chen</i>, <i>Bin Shan</i>, Huazhong University of Science and Technology, China</p>
9:00am	<p>AS1-WeM-5 Controlling the Surface Chemistry of Silicon Nitride Using a Plasma Pretreatment for Area-Selective Deposition, <i>Marc Merckx</i>, <i>Pengmei Yu</i>, Eindhoven University of Technology, Netherlands; <i>Jhon González</i>, Universidad Tecnica Federico Santa Maria, Chile; <i>Ilker Tezsevin</i>, eindhoven University of Technology, Netherlands; <i>Rachel Nye de Casto</i>, <i>Dennis Hausmann</i>, Lam Research Corporation; <i>Erwin Kessels</i>, Eindhoven University of Technology, Netherlands; <i>Tania Sandoval</i>, Universidad tecnica Federico Santa Maria, Chile; <i>Adriaan Mackus</i>, eindhoven University of Technology, Netherlands</p>
9:15am	<p>AS1-WeM-6 Enhancing Area Selective Deposition Through Sub-saturated ALD: A Pathway to High Volume Manufacturing, <i>Nupur Bihari</i>, Lam Research Corporation</p>
9:30am	<p>AS1-WeM-7 Inherent Area-Selective Deposition of Low-Resistivity Molybdenum Carbide Films by Thermal Atomic Layer Deposition, <i>Jeong Hwan Han</i>, <i>Ji Sang Ahn (Graduate Student)</i>, Seoul National University of Science and Technology, Republic of Korea</p>
9:45am	<p>AS1-WeM-8 Molecular Design of ALD Precursors Through Atomic-Level Simulation and Their Reactivity Analysis, <i>Yusuke Asano</i>, <i>Kota Matsumoto</i>, <i>Makoto Sato</i>, Preferred Computational Chemistry, Japan</p>
10:00am	<p>BREAK & EXHIBITS</p>
10:45am	<p>INVITED: AS2-WeM-12 Industrial ALD/ASD Perspectives: Atomic Level Process Control for Semiconductor Devices, <i>HanJin Lim</i>, Samsung Electronics, Republic of Korea</p>
	<p>Area Selective ALD Session AS2-WeM Area Selective Deposition III Moderators: Rick Chen, The Electronics business of Merck KGaA Darmstadt Germany, Kivin Im, SK hynix, Republic of Korea</p>
11:15am	<p>AS2-WeM-14 Area-Selective Deposition for Dielectric Films on Metal Substrates: Coupon to Full Wafer, <i>Rachel Nye de Castro</i>, <i>Paul Lemaire</i>, <i>Alexander Fox</i>, <i>Joel Smith</i>, <i>Nupur Bihari</i>, <i>Bill Nunn</i>, <i>Kevin McLaughlin</i>, <i>Dennis Hausmann</i>, LAM Research</p>
11:30am	<p>AS2-WeM-15 Redox-coupled Inherently Selective Atomic Layer Deposition of SiO₂ on SiO₂/Si₃N₄ for 3D NAND structure, <i>Kun Cao</i>, <i>Zilian Qi</i>, <i>Eryan Gu</i>, <i>Rong Chen</i>, Huazhong University of Science and Technology, China</p>
11:45am	<p>AS2-WeM-16 Area-selective Atomic Layer Deposition of Ruthenium via Plasma Surface Modification, <i>In-Hwan Baek</i>, <i>Dahui Jeon (Graduate Student)</i>, Inha university, Republic of Korea</p>

Wednesday Morning, June 25, 2025

Room Tamna Hall BC	
8:00am	AA2-WeM-1 Remarkable Productivity and Performance of OLED Encapsulation through Growth Dynamics Control via Atmospheric Pressure Spatial Atomic Layer Deposition, <i>Chi-Hoon Lee (Graduate Student)</i> , Kwang Su Yoo, Daejung Kim, Ji-Min Kim, Jin-Seong Park, Hanyang University, Republic of Korea
8:15am	AA2-WeM-2 Crystallinity Control through Composition Engineering for High-Performance MgIn _x O _y TFTs via Thermal Atomic Layer Deposition, <i>Ji-Su Bae (Graduate Student)</i> , Chi-Hoon Lee, Hanyang University, Republic of Korea; Sung-Hae Lee, Entegris, Republic of Korea; Jin-Seong Park, Hanyang University, Republic of Korea
8:30am	AA2-WeM-3 Nitrogen-Doped SiO ₂ Gate Insulator for Enhanced Stability in ALD-IGZO TFTs, <i>Tae-Heon Kim (Graduate Student)</i> , Dong-Gyu Kim, Jin-Seong Park, Hanyang University, Republic of Korea
8:45am	AA2-WeM-4 Engineering Hydrogen Content in SiN _x Thin Films via Precursor Control for Improved Oxide TFTs Characteristics, <i>Sang-Hyun Kim (Graduate Student)</i> , Tae Heon Kim, Jin-Seong Park, Hanyang University, Korea
9:00am	AA2-WeM-5 Remarkable Stability and Hydrogen Resistance on High-Mobility Oxide TFTs via N ₂ O Plasma Reactant in Atomic Layer Deposition, <i>So Young Lim (Undergraduate)</i> , Sang-Hyun Kim, Yoon-Seo Kim, Taewon Hwang, Tae Heon Kim, Haklim Koo, Jin-Seong Park, Hanyang University, Korea
9:15am	AA2-WeM-6 Highly Stable Fluorine-Anion Engineered ALD Indium Oxide Thin-Film Transistors towards BEOL Integration, <i>Jinxiong Li (Graduate Student)</i> , Xinwei Wang, School of Advanced Materials, Peking University, Shenzhen 518055, China
9:30am	AA2-WeM-7 High-Pressure Atomic Layer Deposition of Elemental Tellurium for Enhanced P-Type Semiconductors, <i>Myung Mo Sung, Dai Tran Cuong (Graduate Student)</i> , Hanyang University, Korea
9:45am	AA2-WeM-8 Ultrathin Sn-Doped In ₂ O ₃ Films for Scalable Semiconductor Transistors, <i>Seung Ho Ryu (Graduate Student)</i> , Korea University, Republic of Korea; Taiky Kim, Korea Institute of Science and Technology (KIST), Republic of Korea; Taeseok Kim, Seong Keun Kim, Korea University, Republic of Korea
10:00am	BREAK & EXHIBITS
10:45am	AF-WeM-12 High Crystallinity Yttrium-Doped ZrO ₂ under 2 nm Through Atomic Layer Modulation, <i>Ngoc Le Trinh (Graduate Student)</i> , Bonwook Gu, Wonjoong Kim, Minhyeok Lee, Incheon National University, Republic of Korea; Byung-ha Kwak, Ajou University, Republic of Korea; Hyun-Mi Kim, Hyeongkeun Kim, Korea Electronics Technology Institute, Republic of Korea; Youngho Kang, Incheon National University, Republic of Korea; Il-Kwon Oh, Ajou University, Republic of Korea; Han-Bo-Ram Lee, Incheon National University, Republic of Korea
11:00am	AF-WeM-13 ALD Outstanding Presentation Award Finalist: Ultrahigh Purity Plasma-Enhanced Atomic Layer Deposition and Electrical Properties of Epitaxial Scandium Nitride, <i>Bruce Rayner</i> , Noel O'Toole, Kurt J. Lesker Company; Bangzhi Liu, Jeffrey Shallenberger, The Pennsylvania State University; Jiadi Zhu, Tomas Palacios, Piush Behera, Suraj Cheema, Massachusetts Institute of Technology; Blaine Johs, Film Sense; Nicholas Strnad, DEVCOM Army Research Laboratory
11:15am	AF-WeM-14 Microwave Enhanced (ME) ALD of HfO ₂ , <i>Jessica Haglund-Peterson, John Conley</i> , Oregon State University
11:30am	AF-WeM-15 Atomic Level Engineering of Dy-doped HfO ₂ Ultra-thin Films via Controlling Lateral and Vertical Mixing, <i>Byung-Ha Kwak (Graduate Student)</i> , Ajou University, Republic of Korea; Ngoc Le Trinh, Incheon National University, Viet Nam; Bonwook Gu, Han-Bo-Ram Lee, Incheon National University, Republic of Korea; Il-Kwon Oh, Ajou University, Republic of Korea
11:45am	AF-WeM-16 Process-Structure-Properties of Atomic Layer Deposited Niobium Nitride and Evolution of Strain with Plasma Chemistry, <i>Neeraj Nepal, Joseph C Prestigiacomo, Maria Gabriela Sales, Peter M Litwin, Vikrant J Gokhale, Virginia D Wheeler</i> , U.S. Naval Research Laboratory

**ALD Applications
Session AA2-WeM
Display Applications
Moderators:
Fan Yang**, Huazhong University of Science and Technology, China,
Junjie Zhao, Zhejiang University, China

**ALD Fundamentals
Session AF-WeM
Material Growth I
Moderators:
John Conley**, Oregon State University,
Gregory N. Parsons, North Carolina State University

Wednesday Afternoon, June 25, 2025

Room Halla Hall	
1:30pm	AA1-WeA-1 ALD Young Investigator Award Finalist: Atomic Layer Deposition and Molecular Layer Deposition for Li and Na Metal Anodes, <i>Yang Zhao</i> , University of Western Ontario, Canada
1:45pm	AA1-WeA-2 Low Temperature Spatial Atomic Layer Deposition of LiF Films for Li-Ion Batteries, <i>Joost van Himste</i> , SparkNano, Netherlands; <i>Niels Hoogendoorn</i> , Eindhoven University of Technology, The Netherlands; <i>Jamie Greer</i> , Air Liquide Advanced Materials, Germany; <i>Nicolas Blasco</i> , Air Liquide Advanced Materials, France; Paul Poedt , SparkNano, and Eindhoven University of Technology, Netherlands
2:00pm	AA1-WeA-3 ALD Young Investigator Award Finalist: Advancing Nickel-Rich Layered Oxide Cathodes via Atomic-Scale Synthesis and Surface Engineering, <i>Jin Xie</i> , ShanghaiTech University, China
2:15pm	AA1-WeA-4 Unveiling the Unconventional ALD Chemistry of Trimethylaluminum (TMA) on Battery Materials, <i>Donghyeon Kang</i> , <i>Kyobin Park</i> , <i>Jeffrey Elam</i> , Argonne National Laboratory
2:30pm	AA1-WeA-5 Novel Li-Precursor for Interface Engineering in Li-Ion Batteries, Meike Pieters (Graduate Student) , <i>Cristian van Helvoirt</i> , <i>Lina Bartel</i> , <i>Niels Hoogendoorn</i> , <i>Mariadriana Creatore</i> , Eindhoven University of Technology, The Netherlands
2:45pm	AA1-WeA-6 Oxidative Molecular Layer Deposition of Polypyrrole on High Surface Area Powder Substrates for Li-ion Battery Applications, Brandon Woo , <i>Jaime DuMont</i> , <i>Markus Groner</i> , <i>Casey Christopher</i> , <i>Drew Lewis</i> , <i>Jessica Burger</i> , <i>Greg Pach</i> , <i>Wyatt Blevins</i> , Forge Nano; <i>Malachi Noked</i> , <i>Ortal Shalev</i> , Bar Ilan University, Israel; <i>Arrelaine Dameron</i> , Forge Nano
3:00pm	
3:15pm	
3:30pm	BREAK
4:00pm	
4:15pm	AA2-WeA-12 Role of the Precursor'S Stability for ALD Lithium-Containing Films, <i>Nicolas Massoni</i> , <i>Manon Letiche</i> , <i>Sylvain Poulet</i> , CEA/LETI-University Grenoble Alpes, France; <i>Katharina Märker</i> , <i>Pierre-Alain Bayle</i> , CEA-University Grenoble Alps, IRIG, France; <i>Névine Rochat</i> , CEA/LETI-University Grenoble Alpes, France; <i>Olivier Hernandez</i> , Nantes Université, CNRS, Institut des Matériaux de Nantes Jean Rouxel, IMN, France; <i>Messaoud Bedjaoui</i> , CEA/LETI-University Grenoble Alpes, France
4:30pm	AA2-WeA-13 Enabling Uniform Lithiation in Solid-State Synthesis by Preventing Pre-Matured Surface Grain Coarsening Through Grain Boundary Engineering, Yifan Wu (Graduate Student) , <i>Jin Xie</i> , ShanghaiTech University, China
4:45pm	AA2-WeA-14 Closing Remarks and Awards in Tamna Hall A

**ALD Applications
Session AA1-WeA
Battery Applications I
Moderators:**
Wei-Min Li, Jiangsu Leadmicro Nano-Equipment Technology Ltd., China,
Keith Wong, Applied Materials

**ALD Applications
Session AA2-WeA
Battery Applications II
Moderators:**
Il-Kwon Oh, Ajou University, Republic of Korea,
Junjie Zhao, Zhejiang University, China

Wednesday Afternoon, June 25, 2025

Room Samda Hall	
1:30pm	<p>INVITED: AM-WeA-1 Spatial Atomic Layer Deposition of Cu-Based Thin Films, <i>David Muñoz-Rojas</i>, CNRS, France</p>
2:00pm	<p>AM-WeA-3 Spatial ALD Deposited Functional Layers for Large-Area Inverted Perovskite Solar Modules, <i>Xuewei Jiang (Graduate Student)</i>, Huazhong University of Science and Technology, China; <i>Fan Yang</i>, Huazhong University of Science and Technology, China; <i>Bin Shan, Rong Chen</i>, Huazhong University of Science and Technology, China</p>
2:15pm	<p>AM-WeA-4 Atomic Layer Deposition on Highly Cohesive Granular Material in Fluidized Beds, <i>Rens Kamphorst</i>, Delft University of Technology, Netherlands; <i>Kaiqiao Wu</i>, Delft University of Technology, China; <i>Saeed Saedy, Gabrie M.H. Meesters, J. Ruud van Ommen</i>, Delft University of Technology, Netherlands</p>
2:30pm	<p>AM-WeA-5 High Deposition Rate TiO PEALD Process for Semiconductor Industry, <i>Sungbae Kim, Yeahyun Gu, Hyunchul Kim, Hyungjoo Shin</i>, ASM, Republic of Korea</p>
2:45pm	<p>AM-WeA-6 Advancing Atomic Layer Processing for Next Generation Devices: Atlant 3d'S Direct Atomic Layer Processing (Dalp™), <i>Mira Baraket</i>, ATLANT 3D Nanosystems, Denmark</p>
3:00pm	
3:15pm	
3:30pm	BREAK
4:00pm	
4:15pm	
4:30pm	
4:45pm	<p>AM2-WeA-14 Closing Remarks and Awards in Tamna Hall A</p>

**ALD for Manufacturing
Session AM-WeA
ALD Equipment
Moderators:**
Eun-Hyoung Cho, 2D Device TU(SAIT)/Samsung Electronics, Republic of Korea,
Woo Jae Lee, Pukyong National University, Republic of Korea,
Tae Wook Nam, Sejong University, Republic of Korea

Wednesday Afternoon, June 25, 2025

Room Tamna Hall A		
1:30pm		Area Selective ALD Session AS-WeA Area Selective Deposition IV Moderators: Jeffrey W. Elam , Argonne National Laboratory
2:00pm	AS-WeA-3 Area Selective Deposition of SiAlO _x Films for Self-Aligned Dielectric-on-Dielectric Application, Eryan Gu , Wang Li, Kun Cao, Rong Chen, Huazhong University of Science and Technology, China	
2:15pm	AS-WeA-4 Control of Three-Color Area-Selective Deposition of PEDOT Conjugated Polymer on SiN vs SiO ₂ and Si-H by Adjustment of Pre-Treatment Sequence, Jeremy Thelven (Graduate Student) , Nicholas Carroll, Gregory Parsons, North Carolina State University	
2:30pm	AS-WeA-5 Annealing PEDOT Thin Films to Generate a Selectively Deposited Etching Hard Mask Layer, Nicholas Carroll , Carwynn Rivera, Man Hou Vong, Hannah Margavio, North Carolina State University; Hwan Oh , Brookhaven National Laboratory; Gregory Parsons , North Carolina State University	
2:45pm	AS-WeA-6 Ring-Opening Enhanced Etching of Cyclosiloxanes for Area-Selective MLD of SiOC(H) Thin Films, Xiaocheng Huang (Graduate Student) , Weiwei Du, Yuanhao Shen, Pengzhe Cai, Delong Liu, Junjie Zhao, Zhejiang University, China	
3:00pm	AS-WeA-7 Area-Selective Molecular Layer Deposition of Polymer Thin Films for Contact Hole/Trench Shrinking, Pengzhe Cai (Graduate Student) , Junjie Zhao, Zhejiang University, China	
3:15pm	AS-WeA-8 Catalytic Oxygen Dissociation for Area-Selective HfO ₂ Deposition on Cobalt through Selective PMMA Etching, Enzo Novoselic (Graduate Student) , Christophe Vallée, Natalya Tokranova, University at Albany-SUNY	
3:30pm	BREAK	
4:00pm	AA3-WeA-11 Atomic Layer Deposition for Self-Healing Stone Cultural Heritage Preservation, Ancy Mini Vibin Lal Nayakom Mini , Gabriele Botta, Mato Knez, Aranzazu Sierra Fernández , CIC nanoGUNE, Spain	ALD Applications Session AA3-WeA Emerging Applications Moderators: Bong Jin Kuh , Samsung Electronics, Republic of Korea, Han-Bo-Ram Lee , Incheon National University, Republic of Korea
4:15pm	AA3-WeA-12 Surface Modification of Additive Manufacturing Feedstocks, Chris Gump , Brandon Castro, Joeseoph Gauspohl, Forge Nano; Anthony Manerbino , Jeremy Iten , Elementum3D; Guillermo Rojas , Casey Christopher , Markus Groner , Dane Lindblad , Brandon Woo , Arrelaine Dameron , Forge Nano	
4:30pm	AA3-WeA-13 Energy Storage Performance of Field-Induced Ferroelectric Al ₂ O ₃ -Inserted Hf _{0.5} Zr _{0.5} O ₂ Thin Films for Electrostatic Supercapacitors, Jonghoon Shin (Graduate Student) , Dong Hoon Shin, Haengha Seo, Kyung Do Kim, Seungheon Choi, Tae Kyun Kim, Heewon Paik, Haewon Song, Seungyong Byun, In Soo Lee, Cheol Seong Hwang, Seoul National University, South Korea	
4:45pm	AA3-WeA-14 Closing Remarks and Awards	

Wednesday Afternoon, June 25, 2025

Room Tamna Hall BC	
1:30pm	<p>INVITED: AF-WeA-1 ALD of Nitride Semiconductors, <i>Henrik Pedersen</i>, Linköping University, Sweden</p>
2:00pm	<p>AF-WeA-3 Low-Temperature Atomic Layer Deposition of (001)-Oriented Elemental Bismuth, <i>Amin Bahrami</i>, <i>Jorge Luis Vazquez-Arce</i>, <i>Alessio Amoroso</i>, <i>Nicolas Perez</i>, Leibniz Institute for Solid State and Materials Research, Germany; <i>Jaroslav Charvot</i>, University of Pardubice, Czechia; <i>Dominik Naglav-Hansen</i>, Ruhr-University Bochum, Germany; <i>Panpan Zhao</i>, <i>Jun Yang</i>, <i>Sebastian Lehmann</i>, <i>Angelika Wrzesińska-Lashkova</i>, Leibniz Institute for Solid State and Materials Research, Germany; <i>Fabian Pieck</i>, <i>Ralf Tonner-Zech</i>, Leipzig University, Germany; <i>Filip Bureš</i>, University of Pardubice, Czechia; <i>Annalisa Acquesta</i>, University of Napoli Federico II, Italy; <i>Yana Vaynzof</i>, <i>Anjana Devi</i>, <i>Kornelius Nielsch</i>, Leibniz Institute for Solid State and Materials Research, Germany</p>
2:15pm	<p>AF-WeA-4 High-Quality ALD-Ru Process Using Thermally Stable ALD Ru Precursor, <i>Hideaki Nakatsubo</i>, TANAKA PRECIOUS METAL TECHNOLOGIES Co., Ltd. / UNIST, Japan; <i>Jeongha Kim</i>, <i>Soo-Hyun Kim</i>, UNIST, Republic of Korea</p>
2:30pm	<p>AF-WeA-5 The Development of Ultralow-Dielectric Constant Boron Nitride Film by Novel Plasma Atomic Layer Deposition, <i>Kazuki Goto</i>, <i>Yoshihiro Kato</i>, <i>Shuichiro Sakai</i>, <i>Hiroki Murakami</i>, <i>Yamato Tonogawa</i>, Tokyo Electron Technology Solutions Ltd, Japan</p>
2:45pm	<p>AF-WeA-6 Thermal Atomic Layer Deposition of InN using Hot-wire-activated NH₃ and Hydrazine Reactants, <i>Bonwook Gu (Graduate Student)</i>, <i>Kwangyong An</i>, <i>Han-Bo-Ram Lee</i>, Incheon National University, Republic of Korea</p>
3:00pm	<p>AF-WeA-7 Electron-Enhanced ALD and CVD of Titanium-, Silicon- and Tungsten-Containing Films at Low Temperatures Using Metal Precursors with Various Reactive Background Gases, <i>Zachary C. Sobell</i>, <i>Andrew S. Cavanagh</i>, <i>Steven M. George</i>, University of Colorado at Boulder</p>
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4:00pm	<p>AA4-WeA-11 Room-Temperature Atmospheric Pressure ALD for Pharmaceutical Powder Coating: Tailoring Surface Properties and Controlling Drug Release, <i>Viet Phuong Cao</i>, <i>Kim Hue Dinh</i>, <i>Phi Huu Bui</i>, <i>Truong Duc Dinh</i>, <i>Quoc Viet Hoang</i>, <i>Diem Quyen Nguyen</i>, <i>Tuan Hiep Tran</i>, <i>Hao Van Bui</i>, Phenikaa University, Viet Nam</p>
4:15pm	<p>AA4-WeA-12 Atomic Layer Deposition for Medical Applications, <i>J. Ruud van Ommen</i>, <i>Alina Y. Rwei</i>, <i>Antonia G. Denkova</i>, <i>Volkert van Steijn</i>, Delft University of Technology, Netherlands</p>
4:30pm	
4:45pm	<p>AA4-WeA-14 Closing Remarks and Awards in Tamna Hall A</p>

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Session AF-WeA
Material Growth II
Moderators:
Ageeth Bol, University of Michigan, Ann Arbor,
Erwin Kessels, Eindhoven University of Technology,
Netherlands

ALD Applications
Session AA4-WeA
Medical Applications
Moderators:
Junsoo Kim, SK hynix, Republic of Korea,
Se-Hun Kwan, Pusan National University, Republic of
Korea

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