Program Key

Conference Topics

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

Program Overview

Room /Time	104-106	107-109	113-115
MoM			
MoA	ALE1-MoA: Plasma and/or Energy-enhanced ALE I ALE2-MoA: Plasma and/or Energy-enhanced ALE I	AF1-MoA: Precursor and Process I AF2-MoA: Mechanism and Surface Science	EM-MoA: Laminate, Multicomponent, and Nitride Materials NS-MoA: 2D Materials
MoP			
TuM	ALE1-TuM: ALE: Gas-phase and/or Thermal ALE ALE2-TuM: Modeling of ALE	AA1-TuM: Memory Applications: RRAM & Neuromorphic, MIM Capacitors AA2-TuM: Photo-Chemical Energy	AS-TuM: Area Selective Deposition I NS-TuM: Nanostructures I
TuA	ALE1-TuA: Applications for ALE ALE2-TuA: Selective ALE NS+ALE-TuA: Nanostructures II + ALE	AM-TuA: ALD for Manufacturing EM-TuA: Organic-Inorganic Hybrid Materials	AA-TuA: Active Matrix Device and Material AS-TuA: Area Selective Deposition II
TuP			
WeM	EM1-WeM: Battery and Energy Storage I EM2-WeM: Battery and Energy Storage II	AA3+AF+EM-WeM: AA+AF+EM NS-WeM: Nanostructures III	AF1-WeM: Plasma ALD I AF2-WeM: Plasma ALD II
WeA	AA2-WeA: Catalytic Application	EM-WeA: MLD & Emerging Materials	AF1-WeA: In-situ Monitoring and Analysis AF2-WeA: Process Development

Program Overview

Room /Time	116-118	Grand Hall A	Premier Ballroom
MoM		PS1-MoM: ALD Plenary Session PS2-MoM: ALE Plenary Session	
MoA	AA1-MoA: Memory Device & Materials I AA2-MoA: Memory Device & Materials II		
MoP			Poster Sessions
TuM	AF1-TuM: Precursor and Process II AF2-TuM: Mechanism and Surface Science		
TuA	AF1-TuA: Characterization AF2-TuA: High Aspect Ratio		
TuP			Poster Sessions
WeM	AA1-WeM: Display Device and Material AA2-WeM: Flexible Application		
WeA	AA1-WeA: Energy: Catalysis and Fuel Cells AA3-WeA: Functional Film Application		

Special Events Monday

Special Events Monday

8:15 AM	Opening Remarks ALD/Grand Hall A
10:00 AM	Break & Exhibits/Premier Ballroom
10:30 AM	Opening Remarks ALE/Grand Hall A
11:30 AM	Lunch Break and Exhibits/Premier Ballroom
3:30 PM	Break & Exhibits/Premier Ballroom

Monday Morning, July 30, 2018

	Room Grand Hall A	
8:15am		**Plenary Session** **Session PS1-MoM** **ALD Plenary Session** **Moderators:** Jin-Seong Park, Hanyang University, Han-Jin Lim, Samsung Electronics, Hyun-Chul Choi, LG Display
8:30am	**INVITED: PS1-MoM-2** Evolution of Memory Technology and Future Scaling Challenges, ***Seung Ho Pyi***, SK Hynix, South Korea	
8:45am	Invited talk continues.	
9:00am	Invited talk continues.	
9:15am	Invited talk continues.	
9:30am	**INVITED: PS1-MoM-6** A Road to Damascus, ALD Technology, ***Jinsung Chun***, Wonik IPS, Republic of Korea	
9:45am	Invited talk continues.	
10:00am	**Break & Exhibits**	
10:15am	**Break & Exhibits**	
10:30am		
10:45am	**INVITED: PS2-MoM-11** Learning from ALE Mechanism Researches and Considerations for Future Demands, ***Masayuki Tomoyasu***, Samsung Electronics Co., Inc.	**Plenary Session** **Session PS2-MoM** **ALE Plenary Session** **Moderators:** Geun Young Yeom, Sungkyunkwan University, Korea, Ankur Agarwal, KLA-Tencor
11:00am	Invited talk continues.	
11:15am	Invited talk continues.	

Monday Afternoon, July 30, 2018

	Room 104-106	
1:30pm	**INVITED: ALE1-MoA-1** Investigation of Atomic Layer Etching Process and UV Damage for AlGaN/GaN HEMT, ***Hiroyuki Fukumizu***, Toshiba Memory Corporation, Japan; *K Kanomaru,* Toshiba Corporation, Japan; *T Kikuchi,* Toshiba Corporation	**Atomic Layer Etching** **Session ALE1-MoA** **Plasma and/or Energy-enhanced ALE I** **Moderators:** Bert Ellingboe, Dublin City University, Satoshi Hamaguchi, Osaka University, Japan
1:45pm	Invited talk continues.	
2:00pm	**INVITED: ALE1-MoA-3** Plasma-assisted Atomic Layer Etching of Si-based Dielectric Films Studied using *in situ* Surface Diagnostics, ***Sumit Agarwal***, *R Gasvoda,* Colorado School of Mines; *S Wang,* Lam Research Corp.; *R Bhowmick,* Colorado School of Mines; *E Hudson,* Lam Research Corp.	
2:15pm	Invited talk continues.	
2:30pm	**ALE1-MoA-5** Silicon Atomic Layer Etching by Two-step Plasma-enhanced Atomic Layer Deposition Consisting of Oxidation and $(NH_4)_2SiF_6$ Formation, *E Song,* Korea Institute of Materials Science, Republic of Korea; ***Ji-Hye Kim***, ISAC Research Inc., Republic of Korea; *J Ahn,* Korea Maritime and Ocean University, Republic of Korea; *J Kwon,* Korea Institute of Materials Science, Republic of Korea	
2:45pm	**ALE1-MoA-6** Factors in Selectively Etching SiO_2 over Si_3N_4 Using C_4F_8/Ar Atomic Layer Etching, ***Chad Huard***, *M Kushner,* University of Michigan	
3:00pm	**ALE1-MoA-7** Bias System for Controlling Ion Energy Distributions, ***Dan Carter***, *V Brouk, H Nguyen,* Advanced Energy Industries, Inc.	
3:15pm	**ALE1-MoA-8** Reactions of Hexafluoroacetylacetone (hfac) and Metal Surfaces under Low-energy Ion Irradiation, ***Tomoko Ito***, *K Karahashi, S Hamaguchi,* Osaka University, Japan	
3:30pm	**Break & Exhibits**	
3:45pm	**Break & Exhibits**	
4:00pm	**INVITED: ALE2-MoA-11** Application of ALE Technology to <10nm Generation Logic Device Fabrication, ***Jongchul Park***, Samsung	**Atomic Layer Etching** **Session ALE2-MoA** **Plasma and/or Energy-enhanced ALE I** **Moderators:** Tetsuya Tatsumi, Sony Semiconductor Solutions Corp., Eric Joseph, IBM T.J. Watson Research Center
4:15pm	Invited talk continues.	
4:30pm	**ALE2-MoA-13** Isotropic Atomic Layer Etching of ZnO on 3D Nanostructures, using Acetylacetone and O_2 Plasma, *A Mameli, M Verheijen, A Mackus, W Kessels,* Eindhoven University of Technology, Netherlands; ***Fred Roozeboom***, Eindhoven University of Technology and TNO, Netherlands	
4:45pm	**ALE2-MoA-14** Etching Reactions of Halogenated Layers Induced by Irradiation of Low-energy Ions and Gas-clusters, ***Kazuhiro Karahashi***, *T Ito, S Hamaguchi,* Osaka University, Japan	
5:00pm	**ALE2-MoA-15** Optimization of Atomic Layer Etch Process for Fabrication of Dual Barrier GaN-based Power Device using *in-situ* Auger Spectrometric Surface Ananlysis, ***Xu Li***, *H Zhou, K Floros, S Cho, D Hemakumara, D Moran, I Thayne,* University of Glasgow, UK	
5:15pm	**INVITED: ALE2-MoA-16** ALE to Enable Memory Scaling, ***Alex Schrinsky***, *C Huffman, M Koltonski, A Wilson,* Micron	
5:30pm	Invited talk continues.	

Monday Afternoon, July 30, 2018

	Room 107-109	
1:30pm	**INVITED: AF1-MoA-1** Forcing Timescale: Can Monolayer Stability Be Built Into a Precursor?, ***Sean Barry***, Carleton University, Canada	**ALD Fundamentals Session AF1-MoA Precursor and Process I** **Moderator:** Taek-Mo Chung, Korea Research Institute of Chemical Technology (KRICT)
1:45pm	Invited talk continues.	
2:00pm	**AF1-MoA-3** Comparative Study on New Heteroleptic Zirconium ALD Precursors, ***Sanni Seppälä***, *K Mizohata,* University of Helsinki, Finland*; W Noh,* Air Liquide Laboratories Korea*; J Räisänen, M Ritala, M Leskelä,* University of Helsinki, Finland	
2:15pm	**AF1-MoA-4** A New Class of ALD Precursors for Aluminum Oxide – Potential Alternative to TMA!, ***Lukas Mai***, *N Boysen, D Zanders,* Ruhr-University Bochum, Germany*; T de los Arcos,* University of Paderborn*; F Mitschker,* Ruhr-University Bochum, Germany*; G Grundmeier,* University of Paderborn*; P Awakowicz, A Devi,* Ruhr-University Bochum, Germany	
2:30pm	**AF1-MoA-5** Atomic Layer Deposition of Aluminum Metal Using a Thermally Stable Aluminum Hydride Reducing Agent, ***Kyle Blakeney***, *C Winter,* Wayne State University	
2:45pm	**AF1-MoA-6** Low Temperature PE-ALD of Copper Films using Copper Aminoalkoxides Precursors with Hydrogen, ***Akihiro Nishida***, *A Sakurai, T Yoshino, M Okabe, M Enzu, A Yamashita,* Adeka Corporation, Japan	
3:00pm	**AF1-MoA-7** Atomic Layer Deposition of Rhenium Selenide Thin Films, *J Hämäläinen, K Mizohata, K Meinander, M Mattinen, J Räisänen, M Leskelä,* ***Mikko Ritala***, University of Helsinki, Finland	
3:15pm	**AF1-MoA-8** Plasma Enhanced Atomic Layer Deposition of Silicon Nitride Films with Inorganic Disilane Precursors, ***Xiaobing Zhou***, *B Hwang, X Wang, B Ketola, J Young, C Lee, M Telgenhoff, B Rekken, Y Ahn, W Chung,* Dow Chemicals*; X Meng, Y Byun, J Kim,* University of Texas at Dallas	
3:30pm	**Break & Exhibits**	
3:45pm	**Break & Exhibits**	
4:00pm	**AF2-MoA-11** Different Growth Mechanism of SiO_2 Layer on Various High-*k* films by PE-ALD using Tris(dimethylamino)silane and Oxygen Plasma, ***Toshihide Nabatame***, *M Inoue,* National Institute for Materials Science, Japan*; M Takahashi, K Ito,* Osaka University, Japan*; N Ikeda, A Ohi,* National Institute for Materials Science, Japan	**ALD Fundamentals Session AF2-MoA Mechanism and Surface Science** **Moderators:** Charles H. Winter, Wayne State University, Sang Woon Lee, Ajou University
4:15pm	**AF2-MoA-12** In-situ Surface Science Studies of Atomic Layer Processes of GaN Surfaces in Preparation for Atomic Layer Epitaxial Growth, ***Samantha Rosenberg***, U.S. Naval Research Laboratory*; D Pennachio,* UCSB*; M Munger,* SUNY College at Brockport*; C Wagenbach,* Boston University*; V Anderson,* Kennesaw State University*; S Johnson, N Nepal, A Kozen, J Woodward,* U.S. Naval Research Laboratory*; Z Robinson,* SUNY College at Brockport*; J Hite,* U.S. Naval Research Laboratory*; K Ludwig,* Boston University*; C Palmstrøm,* UCSB*; C Eddy, Jr.,* U.S. Naval Research Laboratory	
4:30pm	**AF2-MoA-13** Surface Chemistry during Atomic Layer Deposition of Zn(O,S), ***Bonggeun Shong***, Hongik University, Republic of Korea	
4:45pm	**AF2-MoA-14** Surface Reaction Mechanism of Atomic Layer Deposited Metal on Organic Textiles, ***Jong Seo Park***, Yonsei University, Republic of Korea*; H Lee,* Incheon National University, Republic of Korea	
5:00pm	**AF2-MoA-15** Insight in Surface Dependence and Diffusion-mediated Nucleation Mechanism of Ruthenium Atomic Layer Deposition on Dielectrics, ***Job Soethoudt***, KU Leuven, Belgium*; Y Tomczak,* IMEC, Belgium*; F Grillo, R Van Ommen,* Delft University of Technology, Netherlands*; E Altamirano Sanchez,* IMEC, Belgium*; A Delabie,* KU Leuven, Belgium	
5:15pm	**AF2-MoA-16** Surface Oxidation Model in Plasma-enhanced ALD for Silicon Oxide Films Including Various Aminosilane Precursors, ***Kosuke Yamamoto***, *A Suzuki, M Kagaya, M Matsukuma, T Moriya,* Tokyo Electron Technology Solutions Ltd., Japan	
5:30pm	**AF2-MoA-17** Thermal and Plasma Enhanced Atomic Layer Deposition of Al_2O_3 and HfO_2 Films Investigated by using in situ Auger Electron Spectroscopy, ***Haiping Zhou***, *Y Fu, M Mirza, X Li,* University of Glasgow, UK	

Monday Afternoon, July 30, 2018

	Room 113-115	
1:30pm	**NS-MoA-1** Low-temperature Growth of 2-D SnS Thin Films by Atomic Layer Deposition, ***In-Hwan Baek**, J Pyeon,* Korea Institute of Science and Technology, Republic of Korea*; T Chung,* Korea Research Institute of Chemical Technology (KRICT), Republic of Korea*; J Han,* Seoul National University of Science and Technology, Republic of Korea*; C Hwang,* Seoul National University, Republic of Korea*; S Kim,* Korea Institute of Science and Technology, Republic of Korea	**Nanostructure Synthesis and Fabrication** **Session NS-MoA** **2D Materials** **Moderators:** Yo-Sep Min, Konkuk University, John Conley, Jr., Oregon State University
1:45pm	**NS-MoA-2** Atomic Layer Deposition of 2D Semiconductor SnS_2, ***Miika Mattinen**, P King, L Khriachtchev, K Meinander,* University of Helsinki, Finland*; J Gibbon, V Dhanak,* University of Liverpool, UK*; J Räisänen, M Ritala, M Leskelä,* University of Helsinki, Finland	
2:00pm	**NS-MoA-3** Wafer-scale Growth of Single Phase SnS_2 Thin Films by Atomic Layer Deposition, ***Jung Joon Pyeon**, I Baek,* Korea Institute of Science and Technology, Republic of Korea*; T Chung,* Korea Research Institute of Chemical Technology (KRICT), Republic of Korea*; J Han,* Seoul National University of Science and Technology, Republic of Korea*; C Kang, S Kim,* Korea Institute of Science and Technology, Republic of Korea	
2:15pm	**NS-MoA-4** ALD Tin Sulfide Thin Films and Their Device Applications, ***Hyeongsu Choi**, S Shin, J Lee, H Park, N Lee, C Jung, H Cho, H Jeon,* Hanyang University, Republic of Korea	
2:30pm	**NS-MoA-5** Synthesis of 2D MoS_2 and MoS_2-Graphene Heterojunction by Atomic Layer Deposition, ***Youngjun Kim**, D Choi, W Woo, J Lee,* Yonsei University, Republic of Korea*; G Ryu, Z Lee,* Ulsan National Institue of Science and Technology, Republic of Korea*; J Ahn, J Park, H Kim,* Yonsei University, Republic of Korea	
2:45pm	**NS-MoA-6** Atomic Layer Deposition of MoS_2/WS_2 Nanolaminates from bis(tert-butylimido)-bis(dialkylamido) Compounds and 1-Propanethiol, ***Berc Kalanyan**, J Maslar, B Sperling,* National Institute of Standards and Technology*; R Kanjolia,* EMD Performance Materials	
3:00pm	**NS-MoA-7** Wafer-scale MoS_2 Monolayer Grown on SiO_2/Si Substrate by Modified Atomic Layer Deposition, ***Dae Hyun Kim**, D Kim, T Seok, H Jin, T Park,* Hanyang University, Republic of Korea	
3:15pm	**NS-MoA-8** X-ray Absorption Spectroscopy of Amorphous and Layered ALD Molybdenum Sulfide Films Prepared using MoF_6 and H_2S, ***Steven Letourneau**,* Boise State University*; M Young,* Argonne National Laboratory*; N Bedford,* National Institute of Standards and Technology*; Y Ren, A Yanguas-Gil, A Mane, J Elam,* Argonne National Laboratory*; E Graugnard,* Boise State University	
3:30pm	**Break & Exhibits**	
3:45pm	**Break & Exhibits**	
4:00pm	**EM-MoA-11** Comparisons Between TiO_2/Al_2O_3 Nanolaminates Grown by Thermal and Plasma Enhanced Atomic Layer Deposition: Growth Mechanism and Material Properties, *G Testoni,* Universidade do Vale do Paraíba, Brasil*; **Rodrigo Pessoa**, M Fraga,* Universidade Brasil, Brasil*; N Galvão,* Instituto Tecnológico de Aeronáutica*; W Miyakawa,* Instituto de Estudos Avançados*; H Maciel,* Instituto Tecnológico de Aeronáutica	**Emerging Materials** **Session EM-MoA** **Laminate, Multicomponent, and Nitride Materials** **Moderators:** Nicholas Strandwitz, Lehigh University, Ji Hye Kim, ISAC Research Inc.
4:15pm	**EM-MoA-12** Texture Control of ALD $PbTiO_3$ and $PbTi_xZr_{1-x}O_3$ Films by Hot Chuck and Rapid Thermal Annealing, ***Nicholas A. Strnad**,* University of Maryland*; D Potrepka, J Pulskamp,* U.S. Army Research Laboratory*; Y Liu, J Jones,* North Carolina State University*; R Phaneuf,* University of Maryland*; R Polcawich,* U.S. Army Research Laboratory	
4:30pm	**EM-MoA-13** Optical and Electrical Properties of $Ti_xSi_{(1-x)}O_2$ Films Prepared by ALD, ***Lenka Zajickova**, P Ondracka, D Necas,* Masaryk University, Czech Republic*; M Elias,* CEITEC, Brno University of Technology, Czech Republic*; J Vida,* Masaryk University, Czech Republic*; D Holec,* Montanuniversitat Leoben*; A Goullet,* University of Nantes	
4:45pm	**EM-MoA-14** Concerted Coating and Reduction for the Fabrication of Magnetic Fe_3O_4/TiO_2 Core-shell Nanoparticles, ***Sarai Garcia**, A López-Ortega, A Chuvilin, M Knez,* CIC nanoGUNE, Spain	
5:00pm	**EM-MoA-15** Aluminum Nitride – From Amorphous to Highly Oriented Hexagonal Thin Films, *Z Chen, M Bosund, I Tuoriniemi, V Malinen, Z Zhu, **Emma Salmi**, K Härkönen,* Beneq Oy, Finland	
5:15pm	**EM-MoA-16** Purely Thermal Deposition of Polycrystalline Gallium Nitride Films at 400°C, ***Sourish Banerjee**, S Dutta, A Aarnink, J Schmitz, D Gravesteijn, A Kovalgin,* University of Twente, Netherlands	
5:30pm	**EM-MoA-17** ABC-type pulsing for group 13 nitrides, *P Rouf, **Henrik Pedersen**,* Linköping University, Sweden	

Monday Afternoon, July 30, 2018

	Room 116-118	
1:30pm	**INVITED: AA1-MoA-1** Atomic Layer Deposition as a Key Technology for Manufacturing 3D V-NAND Flash Memory, ***Jaeyoung Ahn***, Samsung Electronics, South Korea; *J Jee, P Nam, B Kim, J Yang, D Kim, H Choi,* Samsung Electronics	**ALD Applications Session AA1-MoA Memory Device & Materials I** **Moderators:** Steven M. George, University of Colorado at Boulder, Christophe Vallee, LTM - MINATEC - CEA/LETI, France
1:45pm	Invited talk continues.	
2:00pm	**AA1-MoA-3** Room-temperature Resonant Tunneling by Band-offset Engineering of Nanolaminated High-k Oxides Deposited by Atomic-layer Deposition, ***Hector Uribe-Vargas***, *J Molina-Reyes,* National Institute of Astrophysics, Optics and Electronics	
2:15pm	**AA1-MoA-4** Atomic Layer Deposition of HfO_2 Thin Films using $Hf(BH_4)_4$ and H_2O, ***Devika Choudhury***, *A Mane, R Langesley, M Delferro, J Elam,* Argonne National Laboratory	
2:30pm	**AA1-MoA-5** TaN Based Multi-Vth Devices for 7nm and Beyond Technology, ***Donghun Kang***, *T Abrams, V Chhabra, S Han, H Parvaneh, B Kannan, G Xu, R Lu, M Ozbek, S Krishnamurthy, P Mennell, H Wang, J Liu,* GLOBALFOUNDRIES U.S. Inc.	
2:45pm	**INVITED: AA1-MoA-6** Atomic Layer Deposition: A Few Prospective Applications Aiming Mass-production after Current Si-based Semiconductor Process, ***Tae Joo Park***, Hanyang University, Republic of Korea	
3:00pm	Invited talk continues.	
3:15pm	**AA1-MoA-8** Atomic Layer Deposition of NbO_x Films with Tunable Stoichiometry Using Hydrogen Plasma Reduction, ***Alexander Kozen***, *T Larrabee, M Twigg, H Cho, S Prokes,* U.S. Naval Research Laboratory	
3:30pm	**Break & Exhibits**	
3:45pm	**Break & Exhibits**	
4:00pm	**INVITED: AA2-MoA-11** Effects of Fluorine in ALD W on Dielectric Properties, ***Hyung Chul Kim***, *S Lee, H Cho, S Jin,* SK Hynix, Republic of Korea	**ALD Applications Session AA2-MoA Memory Device & Materials II** **Moderator:** Ji-Hoon Ahn, Korea Maritime and Ocean University
4:15pm	Invited talk continues.	
4:30pm	**AA2-MoA-13** Low Temperature Atomic Layer Deposition of Ru for Copper Metallization, *A Mane,* ***Yan Zhang***, Argonne National Laboratory; *A Kumar, J Allgair,* BRIDG; *J Hryn, J Elam,* Argonne National Laboratory	
4:45pm	**AA2-MoA-14** Conformal Growth of Low-resistivity Ru by Oxygen-free Thermal Atomic Layer Deposition, ***Guo Liu***, *J Woodruff, D Moser,* EMD Performance Materials	
5:00pm	**AA2-MoA-15** Plasma Enhanced Atomic Layer Deposition of Nickel and Nickel-based Alloy Thin Films for High-quality and Thermally Stable Nickel Silicide, *S Kim,* ***Shunichi Nabeya***, Yeungnam University, Republic of Korea	
5:15pm	**AA2-MoA-16** Ternary Thin Film Alloys of Ti-Si-N as Low Resistance Diffusion Barrier for Memory Applications, ***Somilkumar Rathi***, *J Mack, Z Karim, N Mukherjee,* Eugenus, Inc.	
5:30pm	**AA2-MoA-17** Atomic Layer Deposition of Mixed Phase TiN_xC_y using Highly Reactive Substituted Hydrazines and Tetrakis(dimethylamido)Titanium, ***Jaime DuMont***, *M Knez,* CIC nanoGUNE, Spain	

ALD Applications
Room Premier Ballroom - Session AA-MoP
ALD Applications Poster Session
5:45pm

AA-MoP-1 Highly Visible Light Photocatalytical Activity of Ozone-Assisted Atomic Layer Deposited Fe_2O_3 Coated TiO_2 Powders, *X Zhao,* Nanjing Unviersity, China*; **Yan-Qiang Cao**, A Li,* Nanjing University, China

AA-MoP-2 Synaptic Behaviors of Pt/HfO_2/HfO_x/TiN Bilayer-structure Memristors by Atomic Layer Deposition, ***Chang Liu**, Y Cao, A Li,* Nanjing University, China

AA-MoP-3 Wafer-scale Single-domain-like Graphene with Enhanced Electronic Transport Properties by Defect-selective Atomic Layer Deposition of Hexagonal ZnO, *M Sung, **JinWon Jung**,* Hanyang University, Republic of Korea

AA-MoP-4 Atomic Layer Deposition Under in situ Ultraviolet Radiation for Highly Conductive Air Stable ZnO Thin Film Fabrication, ***Hong-rho Yoon**, M Sung,* Hanyang University, Republic of Korea

AA-MoP-5 Annealing Temperature Modulated Interfacial and Electrical Properties of PEALD-derived HfLaO/Si Stack, ***Duo Cao**, F Liu, H Shi, W Shi,* Shanghai Normal University, China*; X Cheng, L Zheng, L Shen, Y Yu,* SIMIT, Chinese Academy of Sciences, China*; J Wang,* University of California Los Angeles

AA-MoP-6 Atomic Layer Deposition of Yttrium Oxide using Heteroleptic Y Precursors, ***Daehyeon Kim**, J Lee,* Air Liquide Laboratories Korea, Republic of Korea

AA-MoP-7 Atomic Layer Deposition Y_2O_3 on GeSn/III-V for Application to MOSFET Common Gate Process, *C Chu, **Guang-Li Luo**, S Chen, W Wu, W Yeh,* National Nano Device Laboratories, Republic of China

AA-MoP-8 Carbon Textile Decorated with Redox-Active Vanadium Hybrid for Flexible Supercapacitors, ***Do Van Lam**, S Lee, J Kim,* Korea Institute of Machinery and Materials

AA-MoP-9 MAPS (Mecaro's Advanced Precursors System)-Ti Series: Atomic Layer Deposition of TiN or TiO_2 Films Using New Titanium Precursors, ***Ho Hoon Kim**, D Lee, S Cheon, Y Yoo, S Ha, J Kim, Y Byun,* MECARO Company, Republic of Korea

AA-MoP-10 MAPS (Mecaro's Advanced Precursors System): Atomic Layer Deposition of TaN and NbN Thin Films using Noble Metal Precursors, ***Woori Bae**, Y Byun, S Cheon, H Kim, M Kim, S Ha, J Kim,* MECARO Company, Republic of Korea

AA-MoP-11 The Impact of O_2/N_2 Ratio in O_3 Based TiO_2-Active Layer in Vacancy-modulated Conductive Oxide, ***Elie Schapmans**,* IMEC, Belgium

AA-MoP-12 Effect of O_2 Plasma Exposture Time on Al_2O_3/Si Interface Properties during Al_2O_3 Formation using PAALD, ***Kwan Hong Min**,* Korea Institude Energy Reseach, Republic of Korea*; J Lee, M Jeong, S Choi,* Korea Institute of Energy Research, Republic of Korea*; M Kang, J Lee, S Park,* Korea Institute Energy Research, Republic of Korea*; D Kim,* Korea University, Republic of Korea*; H Song,* Korea Institute Energy Research, Republic of Korea

AA-MoP-13 Effect of Mechanical Stress on Ferroelectric Properties of Fully-Atomic Layer Deposition Processed TiN/$HfZrO_x$/TiN Stacks, *C Choi, **Myeong Gyoon Chae**,* Hanyang University, Republic of Korea

AA-MoP-14 Atomic Layer Deposition of SnTe for Dopant Application of Phase-change Materials, ***Eui Sang Park**, C Yoo, W Kim, Y Lee,* Seoul National University, Republic of Korea*; J Jung,* Soulbrain, Republic of Korea*; C Hwang,* Seoul National University, Republic of Korea

AA-MoP-15 Atomic-Layer-Deposited LiAlO Protective Layer for Li Metal Anode in Li-ion Secondary Batteries, *H Lee, **Dae Woong Kim**, T Park,* Hanyang University, Republic of Korea

AA-MoP-16 Effect of Growth Temperature on the Structural and Electrical Properties of i-ZnO by Atomic Layer Deposition Method, ***Yeonbae Shin**, V Arepalii, J Kim,* Cheongju University, Republic of Korea

AA-MoP-17 Atomic Layer Deposition of GeSe Films with Discrete Feeding Method for Ovonic Threshold Switch, ***Woo Hyun Kim**, C Hwang,* Seoul National University, Republic of Korea

AA-MoP-18 Low-temperature Atomic Layer Deposition of Hafnium Oxides using NH_3 as the Catalyst., ***Nak-Kwan Chung**, Y Kang, S Kim, J Yun, J Kim,* Korea Research Institute of Standard and Science (KRISS), Republic of Korea

AA-MoP-19 Electrical Properties of Al-doped $SrTiO_3$ Films Grown by Atomic Layer Deposition on Ru Electrodes, ***Sang Hyeon Kim**, C An, D Kwon, S Cho, S Cha, C Hwang,* Seoul National University, Republic of Korea

AA-MoP-20 Temperature Effect on Thermally Grown AlN Films by Atomic Layer Deposition, ***Yong Kim**, M Kim, H Yun, W Jeong, B Choi,* Seoul National University of Science and Technology, Republic of Korea

AA-MoP-21 Ultrathin ALD Ru Film Deposition using Discrete Feeding Method (DFM) and Electric Field Assisted ALD (EA-ALD), ***Hyun Soo Jin**, T Park,* Hanyang University, Republic of Korea

AA-MoP-22 Formation of Antireflection Structures on Silicon Substrates in Near-infrared Region using AlO_x/TiO_x Bilayer Grown by Atomic Layer Deposition, ***Yong Tae Kim**, J Heo,* Chonnam National University, Republic of Korea

AA-MoP-23 Optimization of RuO_2 Thin Films on NiO Nanostructures by Atomic Layer Deposition for Hybrid Capacitor, ***Chang-Min Kim**, S Kwon, S Lee,* Pusan National University, Republic of Korea

AA-MoP-24 Screening of ALD Barrier Materials Towards use in LED Lightning, *R Ritasalo, T Suni, **Tero Pilvi**,* Picosun Oy, Finland*; S Taeger, E Hörner,* OSRAM Opto Semiconductors GmbH, Germany

AA-MoP-25 Investigation of Band Structure on Amorphous Zinc Tin Oxide Thin Films Grown by Atomic Layer Deposition for Cd-free $CuGaSe_2$ Solar Cells, ***Sunyoung Lee**,* Konkuk University, Republic of Korea*; A Jeong, J Jeong,* Korea Institute of Science and Technology, Republic of Korea*; Y Min,* Konkuk University, Republic of Korea

AA-MoP-26 Optical and Electronic Properties of ALD-grown TiO_2 Films on a Thin Glass Substrate for Applications in Photocatalysis, ***Yoon Sang Lee**, O Kwon, Y Kim,* Ajou University, Republic of Korea

AA-MoP-27 Atomic Layer Deposition as a Tool to Influence the Sintering of Ni Nanoparticles Supported in the Mesopores of SBA-15, ***Piyush Ingale**, C Guan, R Naumann d'Alnoncourt, A Thomas,* Technische Universität Berlin, Germany*; F Rosowski,* BASF SE, Germany

AA-MoP-28 Metal-doped HfO_2 for Ferroelectric Tunneling Junction Applications using Atomic Layer Deposition, ***Chi Thang Nguyen**,* Incheon National University, Korea

AA-MoP-29 Atomic Layer Deposition of Al- and Ga-doped HfO_x Films for Resistive Switching Layer, ***Sungyeon Ryu**, S Oh,* Seoul National University of Science and Technology, Republic of Korea*; W Park, S Kim,* SK Hynix, Republic of Korea*; B Choi,* Seoul National University of Science and Technology, Republic of Korea

AA-MoP-30 Synthesis of Well-Defined PO_x/V_2O_5 Powder Catalysts *via* Atomic Layer Deposition, ***Kristian Knemeyer**,* Technische Universität Berlin, Germany*; V Strempel,* BASF SE, Process Research and Chemical Engineering*; C Schulz, J Xie, R Naumann d'Alnoncourt,* Technische Universität Berlin, Germany*; M Driess,* Institut für Chemie, Germany*; F Rosowski,* BASF SE, Germany

AA-MoP-31 Use of New Cyclopentadienyl Tris(dimethylamino) Based Zirconium Precursors for the Leakage Current Reduction of Atomic Layer Deposited ZrO_{2-} Thin Films, ***Baek Su Kim**,* Seoul National University, Republic of Korea*; H Kim, S Hyun, Y Lee, K Kim, T Moon, H Park, Y Lee, J Noh,* Seoul National University and Inter-University Semiconductor Research Center, Republic of Korea*; C Hwang,* Seoul National University, Republic of Korea

AA-MoP-32 Control of Refractive Index by Atomic Layer Deposition on Various Textile Surfaces, ***Woo Hyeok Kwon**, M Khan, H Kim, H Lee,* Incheon National University, Republic of Korea

AA-MoP-33 Zinc Tin Oxide Thin Films Grown by Atomic Layer Deposition for Charge-Trap Flash Memory, ***Jun Shik Kim**, E Hwang, S Lee, Y Jang, S Jeon, C Hwang,* Seoul National University, Republic of Korea

AA-MoP-34 Protective Layer TiO_2/Pt/C Catalyst for Excellent Durability deposited by Fluidizing Bed Reactor Atomic Layer Deposition, ***Woo-Jae Lee**, T Kim, S Kwon,* Pusan National University, Republic of Korea

AA-MoP-35 Atomic Layer Deposition of Si-doped HfO_2 Thin Film by using $HfCl_4$, $SiCl_4$ and H_2O for FeRAM Device Application, ***Se-Won Lee**, M Kim,* Versum Materials Korea, Republic of Korea*; M MacDonald, X Lei,* Versum Materials, Inc.*; Z Zhu, A Yoon,* Lam Research Corp*; H Yoo, D Suh, Y Choi,* SK Hynix Inc

AA-MoP-36 Combining ALD with Pulse Current Electroplating of Gold to Deposit on the Wall of High Aspect Ratio Silicon Grating, ***Tae Eun Song**, H Han,* National NanoFab Center (NNFC), Republic of Korea*; S Jung, S Kim,* Yeungnam University, Republic of Korea*; C Ahn,* National NanoFab Center (NNFC), Republic of Korea

AA-MoP-37 Atomic Layer Deposition of Ru Metal Thin Film with Substrate-Dependent Growth Behavior on Ta_2O_5 Substrate, ***Cheol Hyun An**,* Seoul National University, Republic of Korea*; W Lee,* Northwestern University*; S Kim, D Kwon, S Cha, S Cho, C Hwang,* Seoul National University, Republic of Korea

AA-MoP-38 Forming of Conformal Multilayer on Periodic Microstructures for Solar Selective Absorption, ***Makoto Shimizu***, *H Akutsu, S Tsuda, M Kumano, H Yugami,* Tohoku University, Japan

AA-MoP-39 Ti-doped ZnO Films Grown by Atomic Layer Deposition for Solar Cell Applications, ***Ji Hye Kim***, *C Kim, H Park, Z Urrehman,* ISAC Research Inc., Republic of Korea

AA-MoP-40 Crystal Structure and Electrical Properties Modulation of Al-doped $HfZrO_2$ Thin Films by ALD, ***Seung-Won Lee***, *J Ahn, J Choi, C Hyeon,* Korea Maritime and Ocean University, Republic of Korea*; M Ahn, S Jeon,* Korea University, Republic of Korea

AA-MoP-41 In situ Capping of VO_x using PEALD of V_2O_5 and/or VN, ***Rémy Gassilloud***, *M Fraccaroli, C Charpin,* CEA-Leti, France*; C Vallée,* CNRS-LTM, France

AA-MoP-42 PE-ALD for Deposition of TiN as a Refractory Plasmonic Material, *G Dogan, U Sanli,* Max Planck Institute for Intelligent Systems, Germany*; H Karl,* University of Augsburg, Germany*; G Schütz,* ***Kahraman Keskinbora***, Max Planck Institute for Intelligent Systems, Germany

AA-MoP-43 Physical Characaterization of Transition Metal Dichalcogenide MoS_2Thin Films Synthesized by Atomic Layer Deposition, ***Hongguo Zhang***, *M Zeng, C McCleese, C Kolodziej, P Lin, K Zhang, C Burda, Q Li, H Baumgart,* Old Dominion University

AA-MoP-44 Synthesis of ALD Iridium Thin Films on 3-D Fabricated Monel K-500 Steel Samples, *P Oelslager,* ***Helmut Baumgart***, Old Dominion University

AA-MoP-45 Precursor Dependent Optical Properties of ALD TiO_2, ***Ritwik Bhatia***, Veeco-CNT

AA-MoP-46 Accurate Modeling of the Gate Leakage Currents in Metal-Insulator-Semiconductor (MIS) Devices using Ultra-thin High-k Oxides, ***Hector Uribe-Vargas***, *J Molina-Reyes,* National Institute of Astrophysics, Optics and Electronics

AA-MoP-47 Optimization of Microwave Generated Surfatron for Wafer-scale Plasma Enhanced ALD System, *J Kim,* ISAC Research Inc., Republic of Korea*; A Poruba,* SVCS Process Innovation s.r.o., Czech Republic*; M Cada,* Institute of Physics of the Czech Academy of Sciences, Czech Republic*;* ***Hyung Sang Park***, ISAC Research Inc., Republic of Korea*; J Dolak,* SVCS Process Innovation s.r.o., Czech Republic

AA-MoP-48 Grow of GaN Thin Films over a Si/Al_2O_3 Stack by Thermal and Plasma Enhanced Atomic Layer Deposition as MOS Structure, ***Joaquin Alvarado***, University of Puebla, Mexico*; M Chavez,* CINVESTAV-IPN, Mexico*; D Cortes,* University of Puebla, Mexico*; S Gallardo,* CINVESTAV-IPN, Mexico*; L Martinez, S Alcantara,* University of Puebla, Mexico

AA-MoP-49 Reduction of Hysteresis in p-Type Atomic Layer Deposited SnO Thin Film Transistors by Adopting Interfacial Layers, ***Younjin Jang***, *J Kim, E Hwang, S Lee, S Jeon,* Seoul National University, Republic of Korea*; J Han,* Seoul National University of Science and Technology, Republic of Korea*; C Hwang,* Seoul National University, Republic of Korea

AA-MoP-50 The Impact of ALD ZrO_2 Gate Insulators on Indium Tin Zinc Oxide (ITZO) Thin Film Transistor Applications, ***Wan-Ho Choi***, *H Jung, J Sheng, J Lee, J Park,* Hanyang University, Republic of Korea

AA-MoP-51 Templated Carbon Nanotube Growth from Reduced NiO Atomic Layer Deposition, ***Erin Cleveland***, *K Perkins, P Campbell, A Friedman,* U.S. Naval Research Laboratory

AA-MoP-53 Atomic Layer Deposition of Titanium Oxide using Heteroleptic Titanium Precursors with a Linked Ligand, ***Seongyoon Kim***, *J Kim, J Gu, H Kim, H Jung,* Sejong University, Republic of Korea*; M Park, J Park,* Hansol Chemical, Republic of Korea*; W Lee,* Sejong University, Republic of Korea

AA-MoP-54 *Ex-Situ* Grown Low-Temperature SiN_x on GaN with Crystalline Interfacial Layer using Hollow Cathode PEALD, ***Xin Meng***, *J Lee, A Ravichandran, Y Byun, J Lee, A Lucero, S Kim,* The University of Texas at Dallas*; M Ha,* Myongji University, Republic of Korea*; C Young,* The University of Texas at Dallas*; B Hwang,* Dow Chemicals*; J Kim,* The University of Texas at Dallas

AA-MoP-55 Composition Adjustment of Zn(O, S) Buffer Layer on CIGS Solar Cell by Atomic Layer Deposition, ***Yu-Hsuan Yu***, *N Koothan,* Instrument Technology Research Center, Republic of China*; W Xu,* National Tsing Hua University, Republic of China*; C Kei, M Shiao,* Instrument Technology Research Center, Republic of China*; C Lai,* National Tsing Hua University, Republic of China

AA-MoP-56 Effect on Low Plasma Damage by ALD Deposition of Silicon Heterojunction Solar Cell, ***Hyeongsik Park***, Sungkyunkwan University (SKKU), Republic of Korea*; H Kim,* Incheon National University, Republic of Korea*; Y Kim,* Sungkyunkwan University (SKKU), Republic of Korea*; K Lim,* JUSUNG Engineering, Republic of Korea*; J Kim,* Incheon National University, Republic of Korea*; J Yi,* Sungkyunkwan University (SKKU), Republic of Korea

AA-MoP-57 A Study on the Mechanical and Electrical Properties of Atomic and Molecular Layer Deposited ZnO – Zincone Alloy Thin Films with change of Molecular Backbone Structures., ***Seung Hak Song***, *S Hwang, B Choi,* Korea University, Republic of Korea

AA-MoP-58 ALD and Nanocellulose Based Sensors for Ultra-low Power, Room Temperature Ozone Gas Monitoring for Respiratory Ailments and Wellness Management, *A Tanneeru, T Flewwellin, A Young, M Daniele, V Misra,* ***Bongmook Lee***, North Carolina State University

AA-MoP-59 Plasma-enhanced Atomic Layer Deposition of Ruthenium Thin Film using (p-cymene)(dimethyl-hexadiene)Ruthenium, *J Choi,* UP Chemical Co., Ltd., Republic of Korea*; S Kim,* Sejong University, Republic of Korea*; B Yoo, W Han,* ***Wonyong Koh***, UP Chemical Co., Ltd., Republic of Korea*; W Lee,* Sejong University, Republic of Korea

AA-MoP-60 Low Temperature Plasma Enhanced Atomic Layer Deposition of SiO_x Films using New Divalent Si Precursor for Thin Film Encapsulation, ***Jung-Hoon Lee***, *J Lee, W Choi,* Hanyang University, Republic of Korea*; J Park,* Hansol Chemical, Republic of Korea*; J Park,* Hanyang University, Republic of Korea

AA-MoP-61 Atomic Layer Deposited Tungsten (W) Thin Films using Fluorine-free W Precursors, *S Kim,* ***Min Young Lee***, *T Kim,* Yeungnam University, Republic of Korea

AA-MoP-62 Low Temperature Atomic Layer Deposited MoN_x as an Efficient Cu-diffusion Barrier, *S Kim,* ***Tae Hyun Kim***, *D Nandi,* Yeungnam University, Republic of Korea

AA-MoP-64 State Key Laboratory of Digital of Manufacturing Equipment and Technology, School of Mechanical Science and Engineering,Huazhong University of Science and Technology, ***Qinyong Xiang***, *B Zhou, K Cao, B Shan, R Chen,* Huazhong University of Science and Technology, China

AA-MoP-66 Research on Properties of Protective Film Deposited on Silver Hat with Large and Complex Morphology at Low Temperature, ***Yang Liang***, *L Lina,* Kaili University, China

AA-MoP-68 Fabrication of Microchannel Plate (MCP) using 3D Printing and ALD Coatings, ***Anil Mane***, *L Xia, J Xie, R Wagner, H Nicholson, M Pellin, J Elam,* Argonne National Laboratory

AA-MoP-69 Zn-doped TiO_2 Hollow Fibers Fabricated by ALD Nanolamination for Photocatalysis, ***Li-Chen Wang***, National Tsing Hua University, Taiwan, Republic of China*; W Liu, C Su, T Perng,* National Tsing Hua University

AA-MoP-70 Co Decorated Ni/Al_2O_3 Catalysts Fabricated via Atomic Layer Deposition with Coking and Sintering Resistance Towards Dry Reforming of Methane, ***Kun Cao***, *M Gong, J Yang, J Cai, B Shan, R Chen,* Huazhong University of Science and Technology, China

AA-MoP-71 Atomic Layer Deposition of $Y:ZrO_2$ on Nanoporous Silver for Thermally Stable Solid Oxide Fuel Cell Metal Cathodes, ***Hyung Jong Choi***, *K Bae,* Korea University, Republic of Korea*; D Jang,* Korea university, Republic of Korea*; G Han, J Koo, J Shim,* Korea University, Republic of Korea

AA-MoP-72 Plasma Enhanced Atomic Layer Deposition of Co-C Thin Film as Hydrogen Evolution Electrocatalysts, ***Qi Peng Fan***, *Z Liu, Q Chen, Z Wang, L Sang,* Beijing Institute of Graphic Communication, China

AA-MoP-73 TiO_2 Layer by Low Temperature Atom Layer Deposition for Perovskite Solar Cells, *Q Chen,* ***Yumeng Wang***, *D Wang,* Beijing Institute Of Graphic Communication, China

AA-MoP-74 Oxides Encapsulation for Surface Passivation of Aluminum Nanoparticles via Atomic Layer Deposition, ***Jiawei Li***, *K Qu, J Zhang, X Liu, R Chen,* Huazhong University of Science and Technology, China

AA-MoP-75 Atomic Layer Deposition of -Titanium Oxide-based Electrocatalysts for Li-O Battery, ***Yongliang Li***, Shenzhen University, China

AA-MoP-76 Fabrication of Pt Nanoparticles on VN@TaC Porous Structure by Forced-Flow ALD for Proton Exchange Membrane Full Cell, ***Li-Chuan Tsai***, *T Chin, T Perng,* National Tsing Hua University

AA-MoP-77 Atomic Layer Deposition of TiO_2 Thin Films on Aluminium Foil: Material Properties and Application as Protective Layer for Food Packaging, *V Dias,* Universidade do Vale do Paraíba, Brasil*;* ***Rodrigo Pessoa***, *A Lobo, F Marciano,* Universidade Brasil, Brasil*; H Maciel,* Instituto Tecnológico de Aeronáutica

AA-MoP-78 Atomic Layer Deposition of Nitrogen-incorporated MoO_x Films: Electrical and Electrochemical Properties, ***Arpan Kumar Dhara***, *D Saha, S Sarkar,* Indian Institute of Technology Bombay, India

AA-MoP-79 Deposition of Multi-Component Amorphous Oxide Semiconductor for the Oxide Thin-Film Transistors, ***Jong Beom Ko**, S Lee, S Park,* Korea Advanced Institute of Science and Technology, Republic of Korea

AA-MoP-80 Identification and Improvement of Reliabilities on Oxide Semiconductor TFTs with Al_2O_3 Gate Insulator Layer Deposited by Various Atomic Layer Deposition Process, ***Kyoungwoo Park**, G Jeon, S Lee, J Ko, S Park,* Korea Advanced Institute of Science and Technology, Republic of Korea

Atomic Layer Etching
Room Premier Ballroom - Session ALE-MoP
Atomic Layer Etching Poster Session
5:45pm

ALE-MoP-1 A Reliable Atomic Layer Etching Approach in Angstrom-level Flatness Control for Uniform CVD Grown TMDs Preparation, ***Chao-An Jong**,* National Nano Device Laboratories, Republic of China; *P Chiu,* NARL, Republic of China; *C Wang, M Lee,* National Taiwan Normal University, Republic of China; *P Chen,* Minghsin University of Science & Technology, Republic of China; *C Lin, C Hsiao,* NARL, Republic of China

ALE-MoP-2 Surface Cleaning of SiO_2 Layers by Atomic Layer Etching with Low Global Warming Potential Gases, ***Yongjae Kim**, T Cha, S Lee, Y Cho, H Chae,* Sungkyunkwan University (SKKU), Republic of Korea

ALE-MoP-3 Electrical and Residual Gas Diagnostics of Pulsed Plasma Atomic Layer Etching in Silicon, *G Kwon, **Hee Tae Kwon**, W Kim, G Shin, H Lee,* Kwangwoon University, Republic of Korea

ALE-MoP-4 Spontaneous Etching Behavior of Oxide and Sulfide Underlayers during Atomic Layer Deposition of $Cu_{2-x}S$ using $Cu(dmamb)_2$ and H_2S, *J Han,* Seoul National University of Science and Technology, Republic of Korea; ***Raphael Agbenyeke**,* University of Science and Technology, Republic of Korea

ALE-MoP-5 The Phenomenon of Reduction on the Austenitic Stainless Steel Affected Hydrogen Species into the Screen Plasma Technology, ***Jongdae Shin**,* Korea Institute of Industrial Technology(KITECH) and Inha University, Republic of Korea; *S Kim,* Korea Institute of Industrial Technology(KITECH), Republic of Korea

ALE-MoP-6 Fabrication of GaSb Mesa Structures by Atomic Layer Etching using Trisdimethylaminoantimony, ***Katsuhiro Uesugi**, H Fukuda,* Muroran Institute of Technology, Japan

ALE-MoP-7 Interaction of Hexafluoroacetylacetone (HFAC) Molecules with Nickel or Nickel Oxide Film Surfaces for Atomic Layer Etching (ALE) Applications, ***Abdulrahman Basher**, M Isobe, T Ito, K Karahashi, S Hamaguchi,* Osaka University, Japan

ALE-MoP-8 Cost Effective Plasma Generation with High Efficiency and Reliability for Remote Plasma Removal Process: Magnetic Induction Plasma Source, ***Tae Seung Cho**, S Park, D Lubomirsky,* Applied Materials

ALE-MoP-9 A Study of InGaAs Nanowire Fabrication by Atomic Layer Etching, ***Doo San Kim**, J Park, W Lee, G Yeom,* Sungkyunkwan University (SKKU), Republic of Korea

ALE-MoP-10 Chrome Atomic Layer Etching, ***Jin Woo Park**, D Kim, W Lee, G Yeom,* Sungkyunkwan University (SKKU), Republic of Korea

ALE-MoP-11 MoS_2 Lateral-Heterojunction Device Using Atomic Layer Etching, ***Ki Seok Kim**, Y Ji, K Kim, G Yeom,* Sungkyunkwan University (SKKU), Republic of Korea

ALE-MoP-12 Study of Atomic Layer Etching (ALE) of SiO_2 Using Inductively Coupled Plasma (ICP) Etch Chambers with Multi-chamber or Multi-step Approach, ***Shuang Meng**, S Ma,* Mattson Technology, Inc.

ALE-MoP-13 Tuning Etching Characteristics of Plasma-Assisted ALE of SiO_2 via Hydrocarbon Precursors, ***Ryan Gasvoda**,* Colorado School of Mines; *S Wang, E Hudson,* Lam Research Corp.; *S Agarwal,* Colorado School of Mines

ALE-MoP-14 Modeling and Simulation of *in-situ* Cleaning Sequence Using NF_3/NH_3 Remote Plasma, ***Romel Hidayat**, T Mayangsari, J Gu, H Kim,* Sejong University, Republic of Korea; *Y Kwon,* Kyung Hee University, Republic of Korea; *J Jung, W Lee,* Sejong University, Republic of Korea

ALE-MoP-15 Biological Characteristics and Antibacterial Performance of Tantalum Oxide and Zinc Oxide Thin Films, ***Yin-Yu Chang**,* National Formosa University, Republic of China; *H Huang,* China Medical University, Republic of China; *M Tsai,* Hungkuang University, Republic of China; *Y Lin,* National Formosa University, Republic of China

ALE-MoP-16 *In situ* Quantitative Analysis of Chlorine Adsorption on Ion-irradiated GaN for Atomic Layer Etching, ***Masaki Hasegawa**, T Tsutsumi, H Kondo, K Ishikawa, M Hori,* Nagoya University, Japan

Special Events Tuesday

10:00 AM	Break & Exhibits/Premier Ballroom
12:00 PM	Lunch Break and Exhibits/Premier Ballroom
3:30 PM	Break & Exhibits/Premier Ballroom

Tuesday Morning, July 31, 2018

	Room 104-106	
8:00am	**ALE1-TuM-1** Fluorocarbon-based Atomic Layer Etching of Silicon Dioxide in Conventional Plasma Tools, ***Stefano Dallorto***, Lawrence Berkeley National Laboratory; *A Goodyear, M Cooke,* Oxford Instruments Plasma Technology, UK; *S Dhuey, A Schwartzberg,* Lawrence Berkeley National Laboratory; *C Ward,* Oxford Instruments Plasma Technology; *I Rangelow,* Ilmenau University of Technology, Germany; *S Cabrini,* Lawrence Berkeley National Laboratory	**Atomic Layer Etching** **Session ALE1-TuM** **ALE: Gas-phase and/or Thermal ALE** **Moderators:** Steven M. George, University of Colorado at Boulder, Venkat Pallem, Air Liquide
8:15am	**INVITED: ALE1-TuM-2** Damaged Layer Control for Atomic Level Processes, ***Masanaga Fukasawa***, *T Tatsumi,* Sony Semiconductor Solutions Corp., Japan	
8:30am	Invited talk continues.	
8:45am	**ALE1-TuM-4** Selective Thermal Cyclic ALE of Lanthanum Oxide via Formation and Desorption of Organo-lanthanum Complex, ***Yoshihide Yamaguchi***, *K Shinoda, S Fujisaki,* Hitachi R&D Group, Japan; *Y Kouzuma, S Sakai, K Kawamura, M Izawa,* Hitachi High-Technologies Corp., Japan	
9:00am	**ALE1-TuM-5** Thermal Atomic Layer Etching of Silicon Using an Oxidation and "Conversion-Etch" Mechanism, ***Aziz Abdulagatov***, *S George,* University of Colorado - Boulder	
9:15am	**ALE1-TuM-6** Rapid Atomic Layer Etching of Al_2O_3 using Sequential Exposures of Hydrogen Fluoride and Trimethylaluminum with No Purging, ***David Zywotko***, University of Colorado - Boulder; *J Faguet,* TEL Technology Center, America, LLC; *S George,* University of Colorado - Boulder	
9:30am	**ALE1-TuM-7** Self-limiting Thermal Atomic Layer Etching of Tungsten Metal Using O_2 Oxidation and WCl_6 or WF_6: Role of Halogen Species in Temperature Dependence of ALE Reaction Rate, ***Wenyi Xie***, *P Lemaire, G Parsons,* North Carolina State University	
9:45am	**ALE1-TuM-8** Modifying Thermal HF-based ALE Methods via Secondary Interactions with Alkali Compounds, ***John Hennessy***, *A Jewell, S Nikzad,* Jet Propulsion Laboratory, California Institute of Technology	
10:00am	**Break & Exhibits**	
10:15am	**Break & Exhibits**	
10:30am	**Break & Exhibits**	
10:45am	**INVITED: ALE2-TuM-12** The Role of Modelling in Understanding and Designing Processes for Thermal Atomic Layer Etch, ***Simon D. Elliott***, Schrödinger, Inc., Ireland; *S Natarajan,* Tyndall National Institute, Ireland	**Atomic Layer Etching** **Session ALE2-TuM** **Modeling of ALE** **Moderators:** Alok Ranjan, TEL Technology Center, America, LLC, Craig Huffman, Micron
11:00am	Invited talk continues.	
11:15am	**ALE2-TuM-14** Physical Damage Analysis of Atomic Layer Etching of Silicon using Molecular Dynamic Simulations, ***Ryoko Sugano***, *M Kurihara,* Hitachi R&D Group, Japan; *K Kuwahara,* Hitachi High-Technologies Corp., Japan; *S Hamaguchi,* Osaka University, Japan	
11:30am	**ALE2-TuM-15** Dimer Products from Ligand-Exchange Reactions During Thermal Atomic Layer Etching, ***Andrew Cavanagh***, *J Clancey, S Sharma, S George,* University of Colorado - Boulder	
11:45am	**ALE2-TuM-16** Molecular Dynamics Simulation of SiO_2 Atomic-layer Etching (ALE) by Fluorocarbon and Argon Plasmas, *Y Okada, M Isobe, T Ito, K Karahashi,* ***Satoshi Hamaguchi***, Osaka University, Japan	

Tuesday Morning, July 31, 2018

	Room 107-109	
8:00am	**INVITED: AA1-TuM-1** Using ALD to Engineer Metal/Insulator/Metal Devices, ***John Conley, Jr.***, Oregon State University	**ALD Applications** **Session AA1-TuM** **Memory Applications: RRAM & Neuromorphic, MIM Capacitors** **Moderators:** Shi-Jin Ding, Fudan University, Jaeyoung Ahn, Samsung Electronics
8:15am	Invited talk continues.	
8:30am	**AA1-TuM-3** Impact of Metal Nanocrystal Size and Distribution on Resistive Switching Parameters of Oxide-based Resistive Random Access Memories by Atomic Layer Deposition, ***Chang Liu**, Y Cao, A Li,* Nanjing University, China	
8:45am	**AA1-TuM-4** Epitaxial Electronic Materials by Atomic Layer Deposition, ***Peter J. King**, M Vehkamäki, M Ritala, M Leskelä,* University of Helsinki, Finland	
9:00am	**AA1-TuM-5** Scaling Ferroelectric $Hf_{0.5}Zr_{0.5}O_2$ for Back -end of Line Integration, ***Jaidah Mohan**, S Kim,* The University of Texas at Dallas; *S Summerfelt,* Texas Instruments, USA; *J Kim,* The University of Texas at Dallas	
9:15am	**INVITED: AA1-TuM-6** Atomic Layer Deposition Processes for Logic Device Applications, ***Bong Jin Kuh***, Samsung Electronics	
9:30am	Invited talk continues.	
9:45am	**AA1-TuM-8** Effect of ZrO_2 Capping-layer on Ferroelectricity of $Hf_xZr_{1-x}O_2$ Thin Films by ALD using Hf/Zr Cocktail Precursor, ***Takashi Onaya***, Meiji University, Japan; *T Nabatame,* National Institute for Materials Science, Japan; *N Sawamoto,* Meiji University, Japan; *A Ohi, N Ikeda, T Chikyow,* National Institute for Materials Science, Japan; *A Ogura,* Meiji University, Japan	
10:00am	**Break & Exhibits**	
10:15am	**Break & Exhibits**	
10:30am	**Break & Exhibits**	
10:45am	**AA2-TuM-12** Efficient Photoelectrochemical H_2 Generation using Molybdenum Disulfide Film on Black Si Photocathode *via* Wafer-scale Atomic Layer Deposition, ***Dae Woong Kim**, D Kim, T Park,* Hanyang University, Republic of Korea	**ALD Applications** **Session AA2-TuM** **Photo-Chemical Energy** **Moderators:** Jae Young Hur, Cheonnam National University, Xueliang (Andy) Sun, University of Western Ontario
11:00am	**AA2-TuM-13** Junction Interface Passivation by ALD in CIGS Solar Cells, ***Wei-Lun Xu***, National Tsing Hua University, Republic of China; *N Koothan,* Instrument Technology Research Center, Republic of China; *J Huang,* Institute of NanoEngineering and MicroSystems; *Y Yu,* Instrument Technology Research Center, Republic of China; *C Ke,* Instrument Technology Research Center; *C Lai,* National Tsing Hua University, Republic of China	
11:15am	**AA2-TuM-14** Spatial Atomic Layer Deposition: Up-scalable Route of Metal Oxide Functional Layers for High Efficient and Stable Perovskite Solar Cells and Modules, ***Valerio Zardetto***, TNO/Holst Center, Netherlands; *M Najafi, D Zhang,* ECN, Netherlands; *F Di Giacomo,* TNO/Holst Center; *I Dogan,* TNO/Holst Center, Netherlands; *W Verhees,* ECN, Netherlands; *A Senes, H Lifka, H Fledderus, F van de Bruele,* TNO/Holst Center, Netherlands; *S Veenstra,* ECN, Netherlands; *R Andriessen,* TNO/Holst Center, Netherlands; *P Poodt,* Holst Centre - TNO, Netherlands	
11:30am	**AA2-TuM-15** Applications of Atomic Layer Deposition in Solar Energy Conversion, ***Xianglin Li**, Z Wang, H Fan, A Tok,* Nanyang Technological University, Singapore	
11:45am	**AA2-TuM-16** Inorganic Charge Transport Layers Grown via Atomic Layer Deposition for Highly Stable and Efficient Perovskite Solar Cell, ***Seongrok Seo**, S Jeong, C Bae, N Park, H Shin,* Sungkyunkwan University, Republic of Korea	

Tuesday Morning, July 31, 2018

	Room 113-115	
8:00am	**AS-TuM-1** Selective Area Deposition of BN using Electron Enhanced ALD, ***Jaclyn Sprenger***, *A Cavanagh, H Sun,* University of Colorado - Boulder; *A Roshko, P Blanchard,* National Institute of Standards and Technology; *S George,* University of Colorado - Boulder	**Area Selective ALD** **Session AS-TuM** **Area Selective Deposition I** **Moderators:** Rong Chen, Huazhong University of Science and Technology, Woo-Hee Kim, Chonbuk National University
8:15am	**AS-TuM-2** Reactive Monolayers for use in Area Selective Atomic Layer Deposition, ***Rudy Wojtecki***, IBM Research - Almaden; *E De Silva,* IBM Research - Albany; *N Frederick Fine Nathel,* IBM Research - Almaden; *H Shobha,* IBM Research - Albany; *N Arellano, A Friz, G Wallraff,* IBM Research - Almaden	
8:30am	**AS-TuM-3** Area-selective Atomic Layer Deposition using Si Precursor Inhibitors, ***Mohammad Rizwan Khan***, Incheon National University, Korea, Republic of Korea	
8:45am	**AS-TuM-4** *In situ* and *ex situ* Monitoring and Metrology for the Development of a Selective Deposition Process, ***Christophe Vallee***, LTM-UGA, France; *R Gassilloud,* CEA-Leti, France; *B Pelissier, R Vallat, V Pesce, O Salicio,* Univ. Grenoble Alpes, LTM, France; *T Grehl, P Brüner,* ION-TOF GmbH, Germany; *N Posseme,* CEA-Leti, France; *P Gonon, A Bsiesy,* Univ. Grenoble Alpes, LTM, France	
9:00am	**AS-TuM-5** Area-Selective Atomic Layer Deposition of TiN, TiO_2, and HfO_2 on Si_3N_4 in Sub-50 Nanometer Si_3N_4/Amorphous Carbon Structures, ***Eric Stevens***, IMEC; *Y Tomczak, B Chan, E Altamirano Sanchez,* IMEC, Belgium; *G Parsons,* North Carolina State University; *A Delabie,* IMEC, Belgium	
9:15am	**AS-TuM-6** Toward Area Selective ALD on Metal/Dielectric Patterns: Comparison of Cu, Co, W and Ru, ***Dara Bobb-Semple***, *S Bent,* Stanford University	
9:30am	**INVITED: AS-TuM-7** Advanced Cycles for Area-selective Atomic Layer Deposition, ***Adrie Mackus***, Eindhoven University of Technology, Netherlands	
9:45am	Invited talk continues.	
10:00am	**Break & Exhibits**	
10:15am	**Break & Exhibits**	
10:30am	**Break & Exhibits**	
10:45am	**INVITED: NS-TuM-12** The Precise Tailoring of Catalyst Interface by Atomic Layer Deposition, ***Yong Qin***, Institute of Coal Chemistry, Chinese Academy of Sciences, China	**Nanostructure Synthesis and Fabrication** **Session NS-TuM** **Nanostructures I** **Moderators:** Seong Keun Kim, Korea Institute of Science and Technology (KIST), Mato Knez, CIC nanoGUNE
11:00am	Invited talk continues.	
11:15am	**NS-TuM-14** Improving the Anti-sintering Ability of Au/TiO_2 Catalysts by Constructing Semi-embedded Structure via Selective Atomic Layer Deposition, ***Yuanting Tang***, *X Liu, B Shan, R Chen,* Huazhong University of Science and Technology, China	
11:30am	**NS-TuM-15** Tuning of Boron Nitride Nanotubes, Nanopores and Nanoporous Membranes by ALD, ***Matthieu Weber***, *B Koonkaew, S Balme,* Institut Européen des Membranes, France; *I Utke,* EMPA, Swiss Federal Laboratories for Materials Science and Technology, Switzerland; *F Picaud,* Université Bourgogne Franche-Comté, France; *I Iatsunskyi, E Coy,* Adam Mickiewicz University in Poznan, Poland; *D Cornu, P Miele, M Bechelany,* Institut Européen des Membranes, France	

Tuesday Morning, July 31, 2018

	Room 116-118	
8:00am	**AF1-TuM-1** Atomic Layer Deposition of Yttrium Oxide from Bis(Methylcyclopentadienyl) (MethylPentyl Pyrazolato) Yttrium (III), ***Jun Feng**, G Liu, M Fang, C Dezelah, J Woodruff, R Kanjolia,* EMD Performance Materials	**ALD Fundamentals** **Session AF1-TuM** **Precursor and Process II** **Moderators:** Mikko Ritala, University of Helsinki, Wonyong Koh, UP Chemical Co., Ltd.
8:15am	**AF1-TuM-2** Low-temperature Thermal ALD of SiO_2 – Increasing the Possibilities, *M Mäntymäki, J Kalliomäki, T Sarnet,* Picosun Oy; *T Pilvi,* Picosun Oy, Finland; *Q Demarly,* Air Liquide Electronics; *N Blasco,* Air Liquide Advanced Materials; ***Juhana Kostamo**,* Picosun Oy, Finland	
8:30am	**AF1-TuM-3** Non-pyrophoric Aluminum Precursor for Thermal Atomic Layer Deposition of Al_2O_3 Thin Films, ***Jungwun Hwang**, K Mun, J Seok, J Park,* Hansol Chemical, Republic of Korea	
8:45am	**AF1-TuM-4** Study on ALD Carbide Chemistry Approach for Rhenium, ***Jani Hämäläinen**, K Mizohata, K Meinander, P King, M Heikkilä, L Khriachtchev, J Räisänen, M Ritala, M Leskelä,* University of Helsinki, Finland	
9:00am	**AF1-TuM-5** Development of Advanced Precursors for Deposition of Cobalt Films, *A Cooper, **Sergei Ivanov**,* Versum Materials; *S Lee, M Kim,* Versum Materials Korea, Republic of Korea; *A Derecskei-Kovacs,* Versum Materials	
9:15am	**AF1-TuM-6** Diamine Adduct of Cobalt(II) Chloride for ALD of Stoichiometric Cobalt(II) Oxide and Reduction Thereof to Cobalt Metal Thin Films, ***Katja Väyrynen**, T Hatanpää, M Mattinen, M Heikkilä, K Mizohata, K Meinander, J Räisänen, M Ritala, M Leskelä,* University of Helsinki, Finland	
9:30am	**INVITED: AF1-TuM-7** Development New Metal Precursors for Atomic Layer Deposition at KRICT, *G Lee, S Han, E Jung, C Kim, B Park,* Korea Research Institute of Chemical Technology (KRICT), Republic of Korea; *J Han,* Seoul National University of Science and Technology, Republic of Korea; ***Taek-Mo Chung**,* Korea Research Institute of Chemical Technology (KRICT), Republic of Korea	
9:45am	Invited talk continues.	
10:00am	**Break & Exhibits**	
10:15am	**Break & Exhibits**	
10:30am	**Break & Exhibits**	
10:45am	**AF2-TuM-12** Surface Chemistry during Atomic Layer Deposition of Nickel Sulfide, ***Ran Zhao**,* Peking University, China	**ALD Fundamentals** **Session AF2-TuM** **Mechanism and Surface Science** **Moderators:** Simon D. Elliott, Schrödinger, Won Seok Yoo, Samsung Electronics
11:00am	**AF2-TuM-13** Exchange Reactions during Atomic Layer Deposition: ZnO Conversion to Al_2O_3 by Trimethylaluminum, *T Myers, A Cano, J Clancey, D Lancaster, **Steven M. George**,* University of Colorado - Boulder	
11:15am	**AF2-TuM-14** Elucidation of the Mechanisms of Nickel (II) and Iron (III) Oxide Films Grown with Ozone by Atomic Layer Deposition, ***Joel Schneider**, J Baker, C MacIsaac, S Bent,* Stanford University	
11:30am	**AF2-TuM-15** Reaction Mechanisms of the Atomic Layer Deposition of Indium Oxide Thin Films Using Ethylcyclopentadienyl Indium, ***Fumikazu Mizutani**, S Higashi,* Kojundo Chemical Laboratory Co.,Ltd., Japan; *M Inoue, T Nabatame,* National Institute for Materials Science, Japan	
11:45am	**AF2-TuM-16** Reaction Mechanisms of Halogenated Silanes on N-rich Surfaces during Atomic Layer Deposition of Silicon Nitride, ***Gregory Hartmann**,* University of Texas at Austin; *P Ventzek,* Tokyo Electron America; *T Iwao, K Ishibashi,* Tokyo Electron Technology Solutions Ltd.; *G Hwang,* University of Texas at Austin	

Tuesday Afternoon, July 31, 2018

	Room 104-106	
1:30pm	**ALE1-TuA-1** Mechanism of HF Pulse in the Thermal Atomic Layer Etch of Al_2O_3, ***Suresh Kondati Natarajan***, Tyndall National Institute, Ireland; *S Elliott,* Schrödinger, Inc., Ireland	**Atomic Layer Etching** **Session ALE1-TuA** **Applications for ALE** **Moderators:** Fred Roozeboom, TNO-Holst Centre & Eindhoven University of Technology, The Netherlands, Harm Knoops, Eindhoven University of Technology
1:45pm	**ALE1-TuA-2** Low-K Dielectric Etch Challenges at the 7nm Logic Node and Beyond: Continuous-wave vs. Quasi-atomic Layer Plasma Etching Performance Review, ***Yen-Tien Lu,*** Tokyo Electron	
2:00pm	**INVITED: ALE1-TuA-3** Precise Etching Profile Control by Atomic-scale Process, ***Yoshihide Kihara***, *T Katsunuma, M Tabata, T Hisamatsu, M Honda,* Tokyo Electron Miyagi Ltd., Japan	
2:15pm	Invited talk continues.	
2:30pm	**ALE2-TuA-5** Thermal Selective Etching on Metal Oxide and Nitride Film, ***Jinhyung Park***, Air Liquide Laboratories Korea, Republic of Korea	**Atomic Layer Etching** **Session ALE2-TuA** **Selective ALE** **Moderators:** Fred Roozeboom, TNO-Holst Centre & Eindhoven University of Technology, The Netherlands, Harm Knoops, Eindhoven University of Technology
2:45pm	**ALE2-TuA-6** Benefits of Atomic Layer Etching for Material Selectivity, ***Thorsten Lill***, *K Kanarik, S Tan, I Berry, V Vahedi, R Gottscho,* Lam Research Corp.	
3:00pm	**INVITED: ALE2-TuA-7** Approaching Atomic Scale Precision for Etch Technology Needs in the Semiconductor Industry, ***Robert Bruce***, *J Papalia, M Sagianis, D Montalvan, H Miyazoe, N Marchack, S Engelmann,* IBM TJ Watson Research Center	
3:15pm	Invited talk continues.	
3:30pm	**Break & Exhibits**	
3:45pm	**Break & Exhibits**	
4:00pm	**NS+ALE-TuA-11** Atomic Layer Etching and Chemical Vapor Etching of 2D Materials and Metal Oxide Films using MoF_6-H_2O, ***Anil Mane***, *D Choudhury, S Letourneau, J Elam,* Argonne National Laboratory	**Nanostructure Synthesis and Fabrication** **Session NS+ALE-TuA** **Nanostructures II + ALE** **Moderators:** Robert Clark, TEL Technology Center, America, LLC, Yong Qin, Institute of Coal Chemistry, Chinese Academy of Sciences
4:15pm	**INVITED: NS+ALE-TuA-12** Membranes by Atomic Layer Deposition: Design and Applications, ***Mikhael Bechelany***, Institut Européen des Membranes, France	
4:30pm	Invited talk continues.	
4:45pm	**NS+ALE-TuA-14** Field-effect Transistor using Two-dimensional Electron Gas in ALD Al_2O_3/TiO_2 Ultrathin (<10 nm) Film Heterostructure Interface, ***Tae Jun Seok***, *Y Liu,* Hanyang University, Republic of Korea; *H Jung, S Kim,* Ajou University, Republic of Korea; *D Kim,* Hanyang University, Republic of Korea; *S Kim, J Jang,* Korea Basic Science Institute, Republic of Korea; *D Cho,* Chonbuk National University, Republic of Korea; *S Lee,* Ajou University, Republic of Korea; *T Park,* Hanyang University, Republic of Korea	
5:00pm	**NS+ALE-TuA-15** Increased WS_2 Crystal Grain Size by Controlling the Nucleation Behavior during Plasma Enhanced Atomic Layer Deposition, ***Benjamin Groven***, *A Nalin Mehta,* KU Leuven, Belgium; *H Bender, J Meersschaut, T Nuytten, T Conard, A Franquet, W Vandervorst, M Heyns, M Caymax, I Radu, A Delabie,* IMEC, Belgium	
5:15pm	**NS+ALE-TuA-16** Controlling Material Properties of Nanostructured WS_2 during Plasma ALD for Improved Electrochemical Performance, ***Shashank Balasubramanyam***, *L Wu, V Vandalon, M Verheijen, E Kessels, J Hofmann, A Bol,* Eindhoven University of Technology, Netherlands	

	Room 107-109	
1:30pm	**EM-TuA-1** Simultaneous Enhancement of Toughness and Elimination of the UV Sensitivity of Kevlar with a Combined ALD/MPI Process, ***Itxasne Azpitarte**, M Knez,* CIC nanoGUNE, Spain	**Emerging Materials** **Session EM-TuA** **Organic-Inorganic Hybrid Materials** **Moderator:** Virginia Wheeler, U.S. Naval Research Laboratory
1:45pm	**EM-TuA-2** Mutual Synergistic Doping in Conductive Hybrid Materials Obtained after Vapor Phase Infiltration, *W Wang, I Azpitarte, **Mato Knez**,* CIC nanoGUNE, Spain	
2:00pm	**EM-TuA-3** Infiltration Synthesis of ZnO in a Non-reactive Polymer Facilitated by Residual Solvent Molecules, *X Ye, J Kestell, K Kisslinger, M Liu,* Brookhaven National Laboratory*; R Grubbs,* Stony Brook University*; J Boscoboinik, **Chang-Yong Nam**,* Brookhaven National Laboratory	
2:15pm	**EM-TuA-4** Thermal Conductivity in Layer-engineered Inorganic-Organic Thin Films, ***Fabian Krahl**,* Aalto University, Finland*; A Giri, J Tomko,* University of Virginia*; T Tynell,* Aalto University, Finland*; P Hopkins,* University of Virginia*; M Karppinen,* Aalto University, Finland	
2:30pm	**EM-TuA-5** Reversible Trans-cis Photoisomerization of ALD/MLD-fabricated Azobenzene-based Inorganic-Organic Thin Films, ***Aida Khayyami**, M Karppinen,* Aalto University, Finland	
2:45pm	**EM-TuA-6** Organic/Inorganic Nanocomposite Synthesis through Sequential Infiltration of 3D Printed Polymer Parts: A Microstructural Study, ***David J. Mandia**,* Argonne National Laboratory*; R Waldman,* University of Chicago*; P Kozak,* Argonne National Laboratory*; S Letourneau,* Boise State University*; G Sterbinsky, D Gosztola, L Ocola, A Yanguas-Gil, J Elam,* Argonne National Laboratory	
3:00pm	**EM-TuA-7** Reactivity of Common ALD Precursors with OH/H_2O-containing Metal Organic Framework Materials, ***Kui Tan**,* University of Texas at Dallas*; S Jensen,* Wake Forest University*; L Feng,* Texas A&M University*; H Wang,* Rutgers University*; J Klesko, R Rahman, J Cure, K Wei,* University of Texas at Dallas*; H Zhou,* Texas A&M University*; J Li,* Rutgers University*; T Thonhauser,* Wake Forest University*; Y Chabal,* University of Texas at Dallas	
3:15pm	**EM-TuA-8** Atomic/Molecular Layer Deposition of Inorganic-Organic Carboxylate Network Thin Films for Possible Sensing Applications, ***Jenna Penttinen**, M Nisula, M Karppinen,* Aalto University, Finland	
3:30pm	**Break & Exhibits**	
3:45pm	**Break & Exhibits**	
4:00pm	**INVITED: AM-TuA-11** Open Air Processing of Innovative Transparent Conductive Materials with Spatial ALD, ***David Muñoz-Rojas**,* Grenoble INP/CNRS, France	**ALD for Manufacturing** **Session AM-TuA** **ALD for Manufacturing** **Moderator:** Se-Hun Kwon, Pusan National University
4:15pm	Invited talk continues.	
4:30pm	**AM-TuA-13** Conformality of SiO_2 and Al_2O_3 Coatings Produced using High Speed Spatial ALD with a DC Plasma, ***Eric Dickey**, B Danforth, W Barrow,* Lotus Applied Technology	
4:45pm	**AM-TuA-14** Characterizing Precursor Delivery from Vapor Draw Ampoules, ***James Maslar**, B Sperling, W Kimes,* National Institute of Standards and Technology*; W Kimmerle, K Kimmerle,* NSI	
5:00pm	**AM-TuA-15** Monitoring Conformality in ALD Manufacturing: Comparing Lateral and Vertical High Aspect Ratio Test Structures, ***Mikko Utriainen**,* VTT Technical Research Centre of Finland, Finland*; S Riedel, A Kia,* Fraunhofer IPMS, Germany*; F Gao,* VTT Technical Research Centre of Finland, Finland*; R Puurunen,* Aalto University, Finland	
5:15pm	**AM-TuA-16** A Remote Plasma Spectroscopy Based Method for Monitoring of Atomic Layer Deposition Processes, ***Joseph Brindley**, B Daniel, V Bellido-Gonzalez,* Gencoa Ltd, UK*; O Zabeida, L Martinu,* Polytechnique Montreal, Canada*; R Potter, B Peek,* University of Liverpool, UK	

Tuesday Afternoon, July 31, 2018

	Room 113-115	
1:30pm	**AS-TuA-1** Integrated Isothermal Atomic Layer Deposition and Thermal Atomic Layer Etching: "Atomic-Level Processing" for Area-Selective Patterning of TiO_2, ***Seung Keun Song***, North Carolina State University; *P Lemaire,* Lam Research Corp.; *G Parsons,* North Carolina State University	**Area Selective ALD** **Session AS-TuA** **Area Selective Deposition II** **Moderators:** Adrie Mackus, Eindhoven University, Netherlands, Bonggeun Shong, Hongik University
1:45pm	**AS-TuA-2** Inherent Substrate Selectivity and Nucleation Enhancement during Ru ALD using the RuO_4-Precursor and H_2-gas., ***Matthias Minjauw***, Ghent university, Belgium; *H Rijckaert, I Van Driessche, C Detavernier, J Dendooven,* Ghent University, Belgium	
2:00pm	**AS-TuA-3** Surface Preparation and High Nucleation for Selective Deposition using Anhydrous Hydrogen Peroxide, *D Alvarez*, ***Jeffrey Spiegelman***, *K Andachi,* RASIRC	
2:15pm	**AS-TuA-4** An Inherently Selective Atomic Layer Deposition of $MoSi_x$ -on Si (001) in Preference to Silicon Nitride and Silicon Oxide, ***Jong Youn Choi***, *C Ahles,* University of California San Diego; *R Hung, N Kim,* Applied Materials; *A Kummel,* University of California San Diego	
2:30pm	**AS-TuA-5** Investigating the Difference in Nucleation during Si-based ALD on Different Surfaces (Si, SiC, SiO_2 and SiN_x) for Future Area-Selective Deposition (AS-ALD), ***Ekaterina A. Filatova***, Tyndall National Institute, University College Cork, Ireland; *A Mameli, A Mackus,* Eindhoven University of Technology, Netherlands; *F Roozeboom,* Eindhoven University of Technology and TNO, Netherlands; *W Kessels,* Eindhoven University of Technology, Netherlands; *D Hausmann,* Lam Research Corp.; *S Elliott,* Schrödinger, Inc., Ireland	
2:45pm	**INVITED: AS-TuA-6** Strategies for Area Selective Atomic Layer Deposition and Applications in Catalysis, ***Rong Chen***, *K Cao, X Liu, J Cai, B Shan, J Zhang,* Huazhong University of Science and Technology, China	
3:00pm	Invited talk continues.	
3:15pm		
3:30pm	**Break & Exhibits**	
3:45pm	**Break & Exhibits**	
4:00pm	**INVITED: AA-TuA-11** Amorphous In-Ga-Zn-O Thin-Film Transistor-Based Nonvolatile Memory Devices, ***Shi-Jin Ding***, Fudan University, China	**ALD Applications** **Session AA-TuA** **Active Matrix Device and Material** **Moderators:** Soo-Hyun Kim, Yeungnam University, Ganesh Sundaram, Ultratech
4:15pm	Invited talk continues.	
4:30pm	**AA-TuA-13** Atomic Layer Deposition of Elemental Tellurium for Composition Tuning Of Ovonic Threshold Switching Materials, ***Stephen Weeks***, *G Nowling, V Adinolfi, V Narasimhan, K Littau,* Intermolecular, Inc.	
4:45pm	**AA-TuA-14** Plasma Enhanced Atomic Layer Deposition of Low Temperature Silicon Nitride for Encapsulation Layer using Novel Silicon Precursor, ***SungGi Kim***, *S Jang, J Park,* DNF Co. Ltd, Republic of Korea; *H Jeong,* DNF Co. Ltd; *J Park, G Park, S Lee, M Kim,* DNF Co. Ltd, Republic of Korea	
5:00pm	**AA-TuA-15** Atomic Layer Delta Doping and Deposition of Ultrathin Metallic TiN-based Channel for Room-temperature Field Effect Transistor, ***Yu-Tung Yin***, *P Cheng, C Wang, T Chang, T Shen, Y Cai, M Chen,* National Taiwan University, Republic of China	
5:15pm	**AA-TuA-16** Influences of Annealing Conditions on Characteristics of Sn-doped Zinc Oxide Thin Film Transistors Fabricated by Atomic Layer Deposition, ***Tao Wang***, *H Lu, J Yang, W Liu, S Ding, D Zhang,* Fudan University, China	

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	Room 116-118	
1:30pm	**INVITED: AF1-TuA-1** Studying Metal ALD Processes through X-ray Based in situ Characterization, *J Dendooven,* Ghent University, Belgium*; E Solano,* ALBA Synchrotron Light Source, Spain*; R Ramachandran, M Minjauw,* Ghent University, Belgium*; G Portale,* University of Groningen, Netherlands*; D Hermida-Merino,* ESRF, France*; A Coati,* SOLEIL, France*; **Christophe Detavernier**,* Ghent University, Belgium	**ALD Fundamentals** **Session AF1-TuA** **Characterization** **Moderators:** Sean Barry, Carleton University, Canada, HyeongTag Jeon, Hanyang University, Korea
1:45pm	Invited talk continues.	
2:00pm	**AF1-TuA-3** Stresses in ALD Films: Aiming for Zero Stress Thin Films*, R Ritasalo,* Picosun Oy, Finland*; O Ylivaara,* VTT Technical Research Centre of Finland, Finland*; **Tero Pilvi**, T Suni,* Picosun Oy, Finland	
2:15pm	**AF1-TuA-4** High-throughput Screening of Atomic Arrangements of Surface and Interfacial Structures of ALD-deposited Thin Films*, **Orlando Trejo**, N Dasgupta,* University of Michigan	
2:30pm	**AF1-TuA-5** Application of Low Energy Ion Scattering for Characterization of Modern ALD Films of Industrial Relevance*, **Philipp Brüner**, T Grehl,* ION-TOF GmbH, Germany*; G Saheli, Y Uritsky, Y Xu, Y Lei, Y Yang, W Tang,* Applied Materials	
2:45pm	**AF1-TuA-6** Characteristic Evaluation of ZrO_2 Thin Films by PEALD to Semiconductor and Display using Cp-Zr Precursor*, **Sang-Yong Jeon**, G Park, S Lee, W Chae, S Yim, J Park, S Lee, M Kim,* DNF Co. Ltd, Republic of Korea	
3:00pm	**AF1-TuA-7** Hybrid Electronically Tailorable Dielectric Thin Films and Substrate Effects on Electrical and Chemical Properties of ALD Al_2O_3*, **Jessica Kopatz**,* Pennsylvania State University*; J Daubert, W Xie,* North Carolina State University*; A Meddeb, Z Ounaies, M Lanagan,* Pennsylvania State University*; G Parsons,* North Carolina State University	
3:15pm	**AF1-TuA-8** Atomic Layer Deposition of Pyrite FeS_2, CoS_2, and NiS_2*, **Xinwei Wang**,* Peking University, China	
3:30pm	**Break & Exhibits**	
3:45pm	**Break & Exhibits**	
4:00pm	**AF2-TuA-11** Modeling the Infiltration Kinetics of Porous, High Surface Area Materials in ALD: Effective Diffusivities, Saturation Times, and Densification*, **Angel Yanguas-Gil**, J Elam,* Argonne National Laboratory	**ALD Fundamentals** **Session AF2-TuA** **High Aspect Ratio** **Moderators:** Scott Clendenning, Intel Corporation, Han-Bo-Ram Lee, Incheon National University
4:15pm	**AF2-TuA-12** Thin Film Conformality Analysis, Reliability and Modeling using All-silicon Lateral High Aspect Ratio Structures*, **Oili Ylivaara**, M Ylilammi, V Korpelainen,* VTT Technical Research Centre of Finland, Finland*; R Puurunen,* Aalto University, Finland	
4:30pm	**AF2-TuA-13** High Step Coverage Properties of New Zr Precursors with High Thermal Stability for High-k*, **Haeng-Don Lim**, S Jeon, J Cho, W Chae, J Park, S Yim, S Lee, M Kim,* DNF Co. Ltd, Republic of Korea	
4:45pm	**AF2-TuA-14** Atomic Layer Deposition: Tailoring High Aspect Ratio TiO_2 Nanostructures*, **Raul Zazpe**, H Sopha, J Prikryl, M Krbal, J Macak,* University of Pardubice, Czech Republic	
5:00pm	**AF2-TuA-15** Mechanisms Limiting Conformality in Thermal and Plasma-assisted ALD Investigated by Lateral High Aspect Ratio Structures*, **Karsten Arts**, V Vandalon,* Eindhoven University of Technology, Netherlands*; F Gao, M Utriainen,* VTT Technical Research Centre of Finland, Finland*; R Puurunen,* Aalto University, Finland*; E Kessels, H Knoops,* Eindhoven University of Technology, Netherlands	
5:15pm	**AF2-TuA-16** Multilayers on Reinforcement Fiber Fabrics with ALD*, **Pauline Dill**, F Pachel, M Scharf, W Goedel,* Chemnitz University of Technology, Germany	

ALD Fundamentals
Room Premier Ballroom - Session AF-TuP
ALD Fundamentals Poster Session
5:30pm

AF-TuP-1 Kinetic Study on Atomic Layer Deposition of Zinc Oxide from Diethylzinc and Water, ***Sungjoon Kim***, *Y Min,* Konkuk University, Republic of Korea

AF-TuP-2 Effects of Organic Doped on the Performance and Stability of ALD Grown ZnO Thin Film Transistor, ***Hongbum Kim***, *S Yu, M Sung,* Hanyang University, Republic of Korea

AF-TuP-3 Investigation of Annealing Effects on Structural and Compositional Properties of AlN Films Deposited by Atomic Layer Deposition, ***Jun Chen***, *F Zhang, X Liu, G Yan, Z Shen, Z Wen, L Wang, W Zhao, G Sun, Y Zeng,* Institute of Semiconductors, Chinese Academy of Sciences, China

AF-TuP-4 PE-ALD Growth of GaN on Various Substrates and their Device Applications, ***Xinhe Zheng***, *Y He, M Li, S Liu, Y Song, H Wei, M Peng, P Qiu, Y An,* University of Science and Technology Beijing, China

AF-TuP-5 Novel Tin Precursors for Atomic Layer Deposition of Tin Oxide Thin Films, ***Seong Ho Han***, *T Chung,* Korea Research Institute of Chemical Technology (KRICT), Republic of Korea; *S Son,* Sungkyunkwan University (SKKU), Republic of Korea; *B Park, C Kim,* Korea Research Institute of Chemical Technology (KRICT), Republic of Korea

AF-TuP-6 Preparation of Transition Metal Molybdenum Precursors and MoS_2 Thin Films Growth by Atomic Layer Deposition (ALD), ***Sunyoung Shin***, *J Kim, B Park, C Kim, T Chung,* Korea Research Institute of Chemical Technology (KRICT), Republic of Korea

AF-TuP-7 Synthesis and Characterization of Molybdenum Precursors Containing Aminoalkoxide and Aminothiolate Ligands for MoS_2 Thin Films by Atomic Layer Deposition, ***Jahee Kim***, *S Shin, B Park, C Kim, T Chung,* Korea Research Institute of Chemical Technology (KRICT), Republic of Korea

AF-TuP-8 Synthesis of Manganese Nitride Precursors, ***Sunju Lee***, *B Park, T Jung, C Kim,* Korea Research Institute of Chemical Technology (KRICT), Republic of Korea

AF-TuP-9 Atomic Layer Deposition of HfO_2 Thin Film using a Novel Linked Cyclopentadienyl-amido Hf Precursor, *J Park,* ***Min Hyuk Nim***, *M Park, K Moon, J Park, K Lim, J Seok,* Hansol Chemical, Republic of Korea

AF-TuP-10 Al_2O_3 Thin Film Fabrication by UV-assisted Atomic Layer Deposition, ***Gyu Sang Yi***, *M Sung,* Hanyang University, Republic of Korea

AF-TuP-11 Fabrication and Characterization of Organic-Inorganic Hybrid Thin Films, ***Thu Huong Chu***, *M Sung,* Hanyang University, Republic of Korea

AF-TuP-12 Low Temperature Atomic Layer Deposition of Yttrium Oxide using Plasma Excited Humidified Argon, ***Kentaro Saito***, *K Tokoro, K Kanomata, M Miura, B Ahmmad, S Kubota, F Hirose,* Yamagata University, Japan

AF-TuP-13 Fabrication of Zeolite Thin Films by Room-temperature Atomic Layer Deposition, ***Yoshiharu Mori***, *Y Noguchi, K Kanomata, M Miura, B Ahmmad, S Kubota, F Hirose,* Yamagata University, Japan

AF-TuP-14 Atomic Layer Deposition of Cuprous Oxide Thin Films using bis(1-dimethylamino-2-methyl-2-butoxy)Copper Precursor, ***Seungmin Yeo***, Korea Research Institute of Chemical Technology(KRICT), Republic of Korea; *J Han,* Seoul National University of Science and Technology, Republic of Korea; *B Park, C Kim, T Chung,* Korea Research Institute of Chemical Technology (KRICT), Republic of Korea

AF-TuP-15 Recent Development of Group 4 Transition Metal Precursors for ALD, ***Ga Yeon Lee***, *C Kim, B Park, T Chung,* Korea Research Institute of Chemical Technology (KRICT), Republic of Korea

AF-TuP-16 SAOLs-Al_2O_3 Nanolaminated Thin Films with Ultrahigh Gas Barrier Performance using Molecular Layer Deposition and Atomic Layer Deposition, ***Jinseon Park***, *M Sung,* Hanyang University, Republic of Korea

AF-TuP-17 Remote Plasma Enhanced-atomic Layer Deposition of SiON Thin Films with a High Growth Rate (> 0.25 nm/cycle) using Novel Si Precursor, ***Dae Hyun Kim***, *H Lee, H Jin,* Hanyang University, Republic of Korea; *H Lee, J Kim, M Yoo, T Kim, J Kim, M Lee, K Cho, J Lee, J Kim,* Dongjin Semichem, Republic of Korea; *T Park,* Hanyang University, Republic of Korea

AF-TuP-18 Automation of Reactivity Modelling in Thin Film Process Chemistry, *T Mustard,* ***H. Shaun Kwak***, *L Jacobson, A Bochevarov,* Schrödinger, Inc.; *S Elliott,* Schrödinger, Inc., Ireland

AF-TuP-19 Development of High Speed Flow Metering on Pulsed Delivery Systems for ALD and ALE Applications., ***Patrick Lowery***, *T Hoke,* HORIBA; *H Nishizato,* HORIBA, Japan

AF-TuP-20 Combined XPS-UPS Study of Conduction and Valence Band Offsets for Al_2O_3/HfO_2 High-*k* Dielectric Nanolaminates Grown on Single-crystal GaN and Ga_2O_3 by Atomic Layer Deposition, ***David J. Mandia***, *B Kucukgok,* Argonne National Laboratory; *J Liu,* Northwestern University; *J Libera,* Argonne National Laboratory; *J Leach,* Kyma Technologies, Inc.; *A Yanguas-Gil, J Elam,* Argonne National Laboratory

AF-TuP-21 Low Temperature Thermal ALD of Pt Films with Novel Precursor, ***Jacqueline Wrench***, *Y Yang, W Tang, N Yoshida, P Ma,* Applied Materials; *T Enomoto, R Harada,* Tanaka, Japan

AF-TuP-22 By-product HCl Influence on SiN ALD Process using Chlorine-containing Silicon Precursor, ***Hayato Murata***, Taiyo Nippon Sanso Corporation, Japan; *N Tajima,* National Institute for Materials Science, Japan; *K Suzuki,* Taiyo Nippon Sanso Corporation, Japan

AF-TuP-23 Conformality Measurement Needs and Challenges: Survey among ALD professionals, ***Mikko Utriainen***, *R Puurunen,* VTT Technical Research Centre of Finland, Finland

AF-TuP-24 AlN Films Prepared by PEALD using Different Plasma Sources, *M Kot,* BTU Cottbus-Senftenberg, Germany; *F Naumann,* SENTECH Instruments GmbH, Germany; *S Garain, E Pożarowska, Z Rouissi,* BTU Cottbus-Senftenberg, Germany; ***Hassan Gargouri***, SENTECH Instruments GmbH, Germany; *K Henkel, D Schmeißer,* BTU Cottbus-Senftenberg, Germany

AF-TuP-25 Feature-Scale Simulation of ALD: Steric Hindrance and Under-Exposure Effects, ***Paul Moroz***, TEL Technology Center, America, LLC

AF-TuP-26 Novel Tungsten ALD Precursors Supported By Chelating Nitrogen-Based Ligand Frameworks, ***Keith Huynh***, *C Brown, J Dube,* Digital Specialty Chemicals, Canada; *T Knisley, J Anthis, M Saly,* Applied Materials

AF-TuP-27 Growth of Titanium Nitride by PE-ALD: Effects of Intermittent Argon Plasma Exposure, *K Keskinbora,* ***Gül Dogan***, *U Sanli,* Max Planck Institute for Intelligent Systems, Germany; *H Karl,* University of Augsburg, Germany; *G Schütz,* Max Planck Institute for Intelligent Systems, Germany

AF-TuP-28 Plasma-assisted Atomic Layer Deposition of Phosphorus Oxide, ***Bodo Kalkofen***, *B Ahmed, M Silinskas,* Otto von Guericke University, Germany; *S Beljakowa,* Friedrich-Alexander-Universität, Germany; *B Garke,* Otto-von-Guericke University, Germany; *M Lisker,* IHP, Germany; *E Burte,* Otto von Guericke University, Germany

AF-TuP-29 Isotopic Tracing of Hydrogen and Oxygen Exchange Reactions in Al_2O_3 Thin Films, ***Sami Kinnunen***, *K Arstila, T Sajavaara,* University of Jyväskylä, Finland

AF-TuP-30 Plasma Source Diagnostics for Plasma Assisted Atomic Layer Deposition, ***David Boris***, *V Wheeler,* U.S. Naval Research Laboratory; *V Anderson,* Kennesaw State University; *N Nepal,* U.S. Naval Research Laboratory; *S Rosenberg,* American Association of Engineering Education; *A Kozen,* The American Society for Engineering Education; *J Hite, S Walton, C Eddy, Jr.,* U.S. Naval Research Laboratory

AF-TuP-31 How ALD has Changed: Analyzing Topic Evolution through Text Mining, ***Elsa Alvaro***, Northwestern University; *A Yanguas-Gil,* Argonne National Laboratory

AF-TuP-32 Ruthenium Atomic Layer Deposition on Platinum using the ToRuS Precursor, ***Daniel Potrepka***, U.S. Army Research Laboratory; *N Strnad,* University of Maryland; *G Rayner,* Kurt J. Lesker Company

AF-TuP-33 Plasma-Enhanced Atomic Layer Deposition of Ruthenium Using $Ru(EtCp)_2$ & O_2-Plasma on Platinum, ***G. Bruce Rayner, Jr.***, The Kurt J. Lesker Company; *B Johs,* Film Sense; *B Liu,* The Pennsylvania State University; *N O'Toole,* The Kurt J. Lesker Company; *D Potrepka,* U.S. Army Research Laboratory

AF-TuP-34 Atomic Layer Deposition of Ru Thin Films Using 'Rudense' as a Ru Precursor and Oxygen Gas as a Reactant, ***Dae Seon Kwon***, *C An, S Kim,* Seoul National University, Republic of Korea; *H Song,* Seoul National University, Repubic of Korea; *S Cho, S Cha,* Seoul National University, Republic of Korea; *T Furukawa, T Hayakawa,* TOSOH Corporation, Republic of Korea; *K Kawano,* TOSOH Corporation, Repubic of Korea; *C Hwang,* Seoul National University, Republic of Korea

AF-TuP-35 *In-situ* Half-Cycle Analysis of Atomic Layer Deposited Zinc Oxide as Channel Layer in Thin Film Transistor, ***Harrison Kim***, *A Lucero, S Kim, J Kim,* The University of Texas at Dallas

AF-TuP-36 Investigation of Low Temperature Silicon Nitride Deposition using Hexachlorodisilane and Ultra-High Purity Hydrazine, ***Antonio Lucero***, The University of Texas at Dallas; *A Kondusamy,* University of Texas at Dallas; *S Hwang, X Meng, H Kim,* The University of Texas at Dallas; *D Alvarez, J Spiegelman,* RASIRC; *J Kim,* The University of Texas at Dallas

AF-TuP-37 Remote Plasma-Enhanced Atomic Layer Deposition of Metallic TiN Films with Low Work Function and High Uniformity, *Y Zhu, F Li, Y Shen, J Zhang,* ***Xiao Chen***, Suzhou Institute of Nano-Tech and Nano-Bionics, Chinese Academy of Sciences, China

AF-TuP-38 In Situ Surface Reaction Mechanism Studies on ZrO_2 Atomic Layer Deposition from Tetrakis(ethylmethylamino)zirconium, *W Xu,* Colorado School of Mines; *K Sharma, D Hausmann,* Lam Research Corp.; ***Sumit Agarwal***, Colorado School of Mines

AF-TuP-39 Wafer-scale Characterization of Atomic Layer Deposited Zinc Oxide Thin Films using a Temperature Gradient Combinatorial Approach, *H Kim, A Lucero, S Kim,* ***Jiyoung Kim***, The University of Texas at Dallas

AF-TuP-40 Study of Hollow Cathode Plasma Enhanced Atomic Layer Deposited Silicon Nitride: Relationship between Film Properties and Wet Etch Rate, ***Harrison Kim***, *X Meng, A Lucero, L Cheng, S Kim, Y Byun, S Hwang,* The University of Texas at Dallas; *M Telgenhoff, B Hwang,* Dow Chemicals; *J Kim,* The University of Texas at Dallas

AF-TuP-41 Investigation of Stability of Boron Oxide and Phosphorus Oxide Thin Films Grown by PALD, ***Bodo Kalkofen***, *K Huang, M Silinskas,* Otto von Guericke University, Germany; *S Beljakowa,* Friedrich-Alexander-Universität, Germany; *B Garke,* Otto-von-Guericke University, Germany; *M Lisker,* IHP, Germany; *E Burte,* Otto von Guericke University, Germany

AF-TuP-42 Effects of Substrate Temperature and Oxygen Deficiency on the Electronic Properties and Optical Dispersion of MgO Thin Films, ***Yus Rama Denny***, *T Firmansyah,* University of Sultan Ageng Tirtayasa, Indonesia; *S Lee,* Chungbuk National University; *H Kang,* Chungbuk National University, Republic of Korea

AF-TuP-43 Design of Hierarchical Metal Oxide Nanowires with Tunable Orientation by Atomic Layer Deposition, ***Susanta Bera***, *S Kwon,* Pusan National University, Republic of Korea

AF-TuP-44 Development of High Performance ALD_TiN Process System, ***Jinho Jeon***, *J Kang, C Shin, Y Park, S Kim,* Wonik IPS, Republic of Korea

AF-TuP-45 Deposition of Thin (0.5 – 42 nm) Alumina Films by ALD to Determine their Optical Constants from 190 – 1688 nm, ***Dhruv Shah***, *D Patel, D Jacobsen, J Erickson, M Linford,* Brigham Young University

AF-TuP-46 Investigation of the Si doping effect on the Ga_2O_3 Films Prepared by Atomic Layer Deposition, ***Hong-Ping Ma***, *H Lu, T Wang, H Chen, X Li, J Chen,* Fudan University, China; *J Zhu,* Tongji University, China; *D Zhang,* Fudan University, China

AF-TuP-47 Magnetoelectric Properties of Atomic Layer Deposited ZrO_2-HfO_2 Thin Films, ***Kristjan Kalam***, *H Seemen, P Ritslaid, A Tamm, K Kukli, M Mikkor,* University of Tartu, Estonia; *R Stern,* National Institute of Chemical Physics and Biophysics; *S Dueñas, H Castán,* University of Valladolid

AF-TuP-48 Selective Film Stripping Techniques for In-FilmTrace Metal Analysis Using Inductively Coupled Plasma Mass Spectrometry (ICP-MS), ***Jaya Chowdhury***, *J Huang,* ChemTrace; *K Fu,* Chemtrace; *P Sun, L Shi,* ChemTrace

AF-TuP-49 Study on Silicon-nitride ALD Process at Low Temperature by a High Density Multiple-ICP Source, ***Ho-Hyun Song***, *H Chang,* KAIST, Republic of Korea

AF-TuP-50 Self-Organized Growth of TiO_2 Anatase Nanorods on Graphene Nanoplatelets by Atomic Layer Deposition, ***Damiano La Zara***, *F Grillo, M Kreutzer, J van Ommen,* Delft University of Technology, Netherlands

AF-TuP-51 Surface Reaction Routes of HCDS on SiO_2 using Density Functional Theory, ***Ki-Yung Kim***, *D Shin, Y Kim,* Korea University of Technology and Education, Republic of Korea

AF-TuP-52 Quadrupole Mass Spectrometer for ALD Process Monitoring - Challenges and Solutions, ***Uwe Meissner***, ALD, Germany

AF-TuP-53 Develop Inhibitor-Utilizing Atomic Layer Deposition for Synthesizing Few-layer Molybdenum Disulfide Thin Films, ***Woojin Jeon***, Dankook University, Republic of Korea; *Y Cho, S Jo,* Samsung Advanced Institute of Technology; *J Ahn,* Korea Maritime and Ocean University, Republic of Korea; *S Jeong,* Soongsil University, Korea

ALD for Manufacturing
Room Premier Ballroom - Session AM-TuP
ALD for Manufacturing Poster Session
5:30pm

AM-TuP-1 Methods of Precursor Delivery for ALD Process and Studies on Possible By-product Issues Occurred in the Exhaust System and its Solutions, ***Ellis Lee***, *C Lee, S Lee,* CSK, Republic of Korea

AM-TuP-2 High Purity Hydrazine Delivery System for Low Temperature Thermal ALD of Silicon Nitride, *J Spiegelman,* ***Daniel Alvarez***, *K Andachi,* RASIRC; *A Lucero, A Kondusamy, S Hwang, X Meng, H Kim, J Kim,* University of Texas at Dallas

AM-TuP-3 Spatial ALD for Semiconductor Manufacturing - Expanding the Process Space, ***David Chu***, Applied Materials

AM-TuP-4 RT Atomic Layer Deposition System with a 1 m Size Reactor, ***Fumihiko Hirose***, Yamagata University, Japan

AM-TuP-5 High Conductance Precursor Delivery and Control Valves, ***Masroor Malik***, *Y Jiang,* Swagelok

AM-TuP-6 Computational Fluid Dynamic Study of Spatial ALD: Mapping the Transition Between Transport, Diffusion, and Reaction Limited Regimes, ***Angel Yanguas-Gil***, *J Elam,* Argonne National Laboratory

AM-TuP-7 Simulation and Measurement of Mass Evaporation Rate of Precursors inside Canister during ALD Process, ***Seung-Ho Seo***, *Y Lee, D Kim, H Shin,* GO Element Co.,Ltd, Republic of Korea; *J Kim, W Lee,* Sejong University, Republic of Korea

Area Selective ALD
Room Premier Ballroom - Session AS-TuP
Area Selective ALD Poster Session
5:30pm

AS-TuP-1 Use of Low Energy Ion Scattering for the Analysis of Area Selective ALD Processes, ***Thomas Grehl***, *P Brüner,* ION-TOF GmbH, Germany; *C Vallee,* LTM-UGA, France; *R Gassilloud,* U Grenoble Alpes, CNRS, LTM; *V Pesce, A Bsiesy, B Pelissier,* Univ. Grenoble Alpes, LTM, France

AS-TuP-2 Area-Selective Atomic Layer Deposition of Zinc Sulfide Based on Inherent Selectivity, ***Chao Zhang***, *Z Han, M Vehkamaki, M Leskelä, M Ritala,* University of Helsinki, Finland

AS-TuP-3 Selective Etching of Native Silicon Oxide in Preference to Silicon and Silicon Oxide, *C Ahles,* ***Jong Youn Choi***, *A Kummel,* University of California San Diego

Emerging Materials
Room Premier Ballroom - Session EM-TuP
Emerging Materials Poster Session
5:30pm

EM-TuP-1 Structural and Optical Properties of Luminescent Copper (I) Chloride Thin Films Deposited by ALD, ***Tomáš Homola***, *R Krumpolec, D Cameron, O Caha, J Humlíček,* Masaryk University, Czech Republic; *R Zazpe, J Přikryl, J Macák,* University of Pardubice, Czech Republic

EM-TuP-2 Wafer-scale Fabrication and Optoelectrical Application of Organic-inorganic Perovskite Single Crystal Arrays, ***Lynn Lee***, *M Sung,* Hanyang University, Republic of Korea

EM-TuP-3 Organic-inorganic Hybrid Optoelectronic Device by Atomic Layer Infiltration, ***Yeongeun Bak***, *M Sung,* Hanyang University, Republic of Korea

EM-TuP-4 A Common Source/Drain Metallization Scheme for (In)GaAs and Ge Channel Materials Featuring Low Contact Resistances, ***Szu-Hung Chen***, National Nano Device Laboratories (NDL), NARL, Republic of China; *K Chen, Y Chen,* College of Photonics, National Chiao-Tung University, Republic of China; *C Chu, G Luo,* National Nano Device Laboratories (NDL), NARL, Republic of China; *C Lin,* College of Photonics, National Chiao-Tung University, Republic of China

EM-TuP-5 Ruthenium Precursors - Properties and ALD Application, ***Andreas Wilk***, *O Briel, D Zeng, A Frey, A Rivas Nass, W Schorn,* Umicore AG & Co. KG, Germany

EM-TuP-6 Magnetic and Electrical Performance of Atomic Layer Deposited Nanostructures, ***Aile Tamm***, *K Kalam, M Mikkor, H Seemen, A Šutka, U Joost, M Rähn, K Kukli,* University of Tartu, Estonia; *J Link, R Stern,* National Institute of Chemical Physics and Biophysics; *H Castán, S Dueñas,* University of Valladolid

EM-TuP-7 HfZrO$_2$ Deposited by ALD using TEMAH and ZrCMMM Precursors, ***Ronald Grundbacher***, IBM Research – Zurich, Switzerland; *Y Ju*, ETH Zurich, Switzerland; *F Eltes*, IBM Research – Zurich, Switzerland; *X Chen*, ETH Zurich, Switzerland

EM-TuP-8 Non-destructive And Precise Control Of Electronic Properties via N-Doping Method with Atomic Layer Deposition., ***Jong Chan Kim***, Hanyang University, Repubic of Korea; *M Sung*, Hanyang University, Republic of Korea

EM-TuP-9 Curvature-Dependent Surface Potentials of Zincone Films Grown by Molecular Layer Deposition, *J Lee*, ***Yun Yeong Lee***, Sookmyung Women's University, Republic of Korea

EM-TuP-10 Photo-switchable Behavior of Azobenzene-containing Polyamide Films Grown by Molecular Layer Deposition, *J Lee*, ***Hyemi Lee***, Sookmyung Women's University, Republic of Korea

EM-TuP-11 Phase Selective, Low Temperature Growth of TiO$_2$ by Atomic Layer Epitaxy, ***Virginia Wheeler***, *D Boris, S Qadri, J Freitas, S Walton, C Eddy, Jr.*, U.S. Naval Research Laboratory

EM-TuP-12 ALD Deposited Thin Films as Model Electrodes: A Case Study of the Synergistic Effect in Fe$_2$O$_3$-SnO$_2$, *J Kint, F Mattelaer*, ***Christophe Detavernier***, Ghent University, Belgium

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Nanostructure Synthesis and Fabrication
Room Premier Ballroom - Session NS-TuP
Nanostructures Synthesis and Fabrication Poster Session
5:30pm

NS-TuP-1 High Sensitive Strain Sensor with Organic Single-crystal Nanowires by Direct Printing, ***Yoon Kyoung Park***, *M Sung*, Hanyang University, Republic of Korea

NS-TuP-2 Charge-transfer Complex Thin Films with Visible-light Absorption by using Molecular Layer Deposition, ***Nguyen Van Long***, Hanyang University, Republic of Korea

NS-TuP-3 Pretreatment Effect of SnO$_2$ Layer Coated on Carbon Nanofiber by Atomic Layer Deposition, *D Kim, S Shin*, ***Seok Choi***, *J Han, B Choi*, Seoul National University of Science and Technology, Republic of Korea

NS-TuP-4 Plasma-enhanced Atomic Layer Deposition of Molybdenum Compounds Thin Films Using Mo(CO)$_6$ with Various Plasma Gases, ***Jeong-Hun Choi***, *S Lee, C Hyun, J Ahn*, Korea Maritime and Ocean University, Republic of Korea

NS-TuP-5 Fabrication and Characterization of Titanium Disulfide Thin Films by Atomic Layer Deposition, ***Gyuhyeon Park***, *N Kornelius, A Thomas*, IFW-Dresden, Germany

NS-TuP-6 Single-Crystal Poly(3-hexylthiophene) (P3HT) Organic Field Effect Transistor which was used to Fabricate Ammonia Gas Sensor, ***Jihee Hwang***, *M Sung*, Hanyang University, Republic of Korea

NS-TuP-7 Synthesis of Layered TiTe Thin Films by Atomic Layer Deposition, ***Chan Young Yoo***, *C Hwang*, Seoul National University, Republic of Korea

NS-TuP-8 Effects of Vacancies on Electronic and Optical Properties of BiOCl Nanosheets, ***Yoon Myung***, Sejong University, Republic of Korea; *W Song*, Washington University, St. Louis; *L Mehdi, N Browning*, Pacific Northwest National Laboratory; *A Krayev*, AIST-NT Inc.; *J Park*, Korea University, Republic of Korea; *L Yang, P Banerjee*, Washington University, St. Louis

NS-TuP-9 Novel ZnO Nanorod Ethanol Sensor using ALD Delta Doping with Al$_2$O$_3$ for Nested AZO Wrap-around Coatings, *P Lin, X Chen, K Zhang*, ***Helmut Baumgart***, Old Dominion University

NS-TuP-10 Crystallization of Nanoparticle Shells Grown by Rotary ALD, ***Benjamin Greenberg***, *J Wollmershauser, B Feigelson*, U.S. Naval Research Laboratory

NS-TuP-11 Multi-walled Carbon Nanotubes Coated by Atomic Layer Deposition of TiO$_2$, ***Lenka Zajickova***, Masaryk University, Czech Republic; *M Elias*, CEITEC, Brno University of Technology, Czech Republic; *P Kaushik*, Masaryk University, Czech Republic; *J Michalicka*, CEITEC, Brno University of Technology, Czech Republic; *L Michal, M Michlicek*, Masaryk University, Czech Republic; *D Hegemann*, EMPA, Swiss Federal Laboratories for Materials Science and Technology

NS-TuP-12 ALD on DNA Nanostructures: Application in the Synthesis of Programmably Shaped Carbon Nanostructures, ***Haitao Liu***, University of Pittsburgh

NS-TuP-13 Multifunctional Ultrathin Coating Layers on Nanoparticles via Atomic Layer Deposition, ***Eunyong Jang***, *T Park*, Hanyang University, Republic of Korea

NS-TuP-14 Fabrication of Hierarchically Ordered Optically Active Nanocrystal Solids by Surface Passivation using Atomic Layer Deposition of Metal Oxides, ***Riya Bose***, University of Texas at Dallas

Special Events Wednesday

Special Events Wednesday

10:00 AM	Break & Exhibits/Premier Ballroom
12:00 PM	Lunch Break and Exhibits/Premier Ballroom
3:30 PM	Break/Premier Ballroom
4:45 PM	Closing Remarks/116-118

Wednesday Morning, August 1, 2018

	Room 104-106	
8:00am	**EM1-WeM-1** Enhanced Thermal Stability of LTO Electrode by Atomic-Layer-Deposited Al_2O_3, *J Yoon, **Seunghoon Nam**,* Korea Institute of Machinery and Materials, Republic of Korea*; K Park, T Yoon,* ISAC Research Inc.*; H Park,* ISAC Research Inc., Republic of Korea*; S Hyun,* Korea Institute of Machinery and Materials, Republic of Korea	**Emerging Materials** **Session EM1-WeM** **Battery and Energy Storage I** **Moderators:** Seungmin Hyun, Korea Institute of Machinery and Materials, Dongping Lu, Pacific Northwest National Laboratory
8:15am	**EM1-WeM-2** Electrochemical Performance of Atomic Layer Deposited Zinc Oxysulfide Thin Film in Li-ion Battery*, **Soumyadeep Sinha**, J Heo,* Chonnam National University, Republic of Korea	
8:30am	**INVITED: EM1-WeM-3** Interfacial and Surface Design of Electrode by ALD and MLD for Next-generation Batteries*, **Xueliang (Andy) Sun**,* University of Western Ontario, Canada	
8:45am	Invited talk continues.	
9:00am	**EM1-WeM-5** Biodegradable ALD Materials for the Packaging of Thin Film Batteries for Implantable Medical Devices*, **Messaoud Bedjaoui**, S Poulet,* Univ. Grenoble Alpes, CEA, LETI,, France	
9:15am	**EM1-WeM-6** Enhanced Conductivity in Thin-Film Solid-Composite Electrolytes for Lithium-Ion Batteries by Combining Molecular and Atomic Layer Deposition*, **Simon Hollevoet**, K Gandrud,* IMEC, Belgium*; A Patil,* KU Leuven, Belgium*; B Put, P Vereecken,* IMEC, Belgium	
9:30am	**EM1-WeM-7** Resolving the Mutual Contradiction between Porosity and Toughness of Carbon Textile for Flexible Supercapacitors*, **Do Van Lam**, J Kim, S Lee,* Korea Institute of Machinery and Materials	
9:45am		
10:00am	**Break & Exhibits**	
10:15am	**Break & Exhibits**	
10:30am	**Break & Exhibits**	
10:45am	**INVITED: EM2-WeM-12** Atomically-Precise Interfacial Engineering of Energy Conversion and Storage Materials by ALD*, **Neil P. Dasgupta**,* University of Michigan	**Emerging Materials** **Session EM2-WeM** **Battery and Energy Storage II** **Moderators:** Parag Banerjee, Washington University, St. Louis, Neil P. Dasgupta, University of Michigan
11:00am	Invited talk continues.	
11:15am	**EM2-WeM-14** Minimizing Polysulfide Shuttle Effect in Lithium-Ion Sulfur Batteries by Anode Surface Passivation via Atomic Layer Deposition*, **Jian Liu**,* The University of British Columbia, Canada*; D Lu, J Zheng, P Yang,* Pacific Northwest National Laboratory*; B Wang, X Sun,* University of Western Ontario, Canada*; Y Shao, C Wang, J Zhang, J Liu,* Pacific Northwest National Laboratory	
11:30am	**EM2-WeM-15** A Facial Way to Prepare Large Areal 3D Porous Carbon via Molecular Layer Deposition and its Application for Lithium Sulfur Batteries*, **Yan-Qiang Cao**, W Zhang, A Li,* Nanjing University, China	
11:45am	**EM2-WeM-16** Enhanced Metal-support Interaction of Ceria Supported Platinum Single Atoms and Subnanoclusters for Room Temperature CO Oxidation*, **Xiao Liu**, Y Tang, B Shan, R Chen,* Huazhong University of Science and Technology, China	

Wednesday Morning, August 1, 2018

Room 107-109

ALD Applications
Session AA3+AF+EM-WeM
AA+AF+EM
Moderator: Iian Buchanan, Versum Materials, UK

Time	Presentation
8:00am	**AA3+AF+EM-WeM-1** Fabrication of TiO_2 Interconnected Nanotubes by ALD and Synthesis of g-C_3N_4/Au/TiO_2 Heterostructure for Photocatalytic Water Splitting, ***Li-Chen Wang****, L Tsai, C Liu, T Perng,* National Tsing Hua University, Republic of China
8:15am	**AA3+AF+EM-WeM-2** Nano-energetic Materials Fabricated by Atomic/Molecular Layer Deposition, ***Hao Feng***, Xi'an Modern Chemsitry Research Institute, China
8:30am	**AA3+AF+EM-WeM-3** Atomic Layer Deposition of Alumina on Lactose Particles for Modified Release: Effect of Co-reactants and Substrate Crystallinity, ***Damiano La Zara***, Delft University of Technology, Netherlands; *D Zhang, M Quayle, G Petersson, S Folestad,* AstraZeneca, Sweden; *J van Ommen,* Delft University of Technology, Netherlands
8:45am	**AA3+AF+EM-WeM-4** A High Vacuum Plasma Enhanced Atomic Layer Deposition System for Depositing Very Reactive Metals, ***Feng Niu***, SVT Associates, Inc.
9:00am	**AA3+AF+EM-WeM-5** Plasma Properties of High Pressure ALD, *C Qu,* University of Michigan; ***Pulkit Agarwal****, Y Sakiyama, A LaVoie,* Lam Research Corp.; *M Kushner,* University of Michigan
9:15am	**AA3+AF+EM-WeM-6** Remote Plasma Atomic Layer Deposition of Gallium Oxide Thin Films using Trimethylgallium and Oxygen Plasma, *H Hao, Y Shen, J Zhang,* ***Xiao Chen***, Suzhou Institute of Nano-Tech and Nano-Bionics, Chinese Academy of Sciences, China
9:30am	**AA3+AF+EM-WeM-7** Impact of Substrate Biasing during Plasma-enhanced Atomic Layer Deposition on Dielectric Breakdown of Al_2O_3 Thin Film, ***Hyun Soo Han****, M Winterkorn, Y Kim, K Lee, T Yong, K Bae, W Park, P Schindler, F Prinz,* Stanford University
9:45am	**AA3+AF+EM-WeM-8** Growth Mechanism of High-k Y_2O_3 on GaAs(001)-4×6 using *in-situ* Cycle-by-Cycle ALD and Synchrotron Radiation Photoelectron Spectroscopy, *C Cheng,* National Chia-Yi University, Republic of China; ***Wan-Sin Chen****, Y Cheng, L Young, H Wan,* National Taiwan University, Republic of China; *C Yang,* National Tsing Hua University, Republic of China; *K Lin,* National Taiwan University, Republic of China; *T Pi,* National Synchrotron Radiation Research Center, Republic of China; *J Kwo,* National Tsing Hua University, Republic of China; *M Hong,* National Taiwan University, Republic of China
10:00am	**Break & Exhibits**
10:15am	**Break & Exhibits**
10:30am	**Break & Exhibits**

Nanostructure Synthesis and Fabrication
Session NS-WeM
Nanostructures III
Moderator: Mike McSwiney, Intel, USA

Time	Presentation
10:45am	**NS-WeM-12** DBD Plasma Assisted Atomic Layer Deposition Alumina Barrier Layer and its Applications, *H Wei,* Beijing Institute of Graphic Communication, China; *H Guo,* Qilu University of Technology, China; *L Yang, Z Liu,* ***Qiang Chen***, Beijing Institute of Graphic Communication, China
11:00am	**NS-WeM-13** Sequential Infiltration Synthesis for sub 20 nm Thermal Scanning Probe Lithography Patterns, ***Tero Kulmala****, M Spieser,* SwissLitho AG, Switzerland; *B Chan, J de Marneffe,* Imec Vzw, Belgium; *A Knoll,* IBM Research-Zurich, Switzerland
11:15am	**NS-WeM-14** Fabrication of BN Coated Carbon Nanostructures using ALD Based on Polymer Derived Ceramics Route, ***Catherine Marichy***, Univ Lyon, France; *W Hao,* LMI - UMR CNRS/Univ Lyon 5615, France; *C Journet, A Brioude,* LMI - UMR CNRS/Univ Lyon 5615
11:30am	**NS-WeM-15** Atomic Layer Deposition of Lead(II) Iodide, ***Georgi Popov****, M Mattinen, T Hatanpää, M Vehkamäki, M Kemell, M Ritala, M Leskelä,* University of Helsinki, Finland
11:45am	**NS-WeM-16** Crystalline High-k Dielectric Films on Atmospheric Plasma Treated Graphene by Atomic Layer Deposition, ***Jeong Woo Shin***, Seoul National University of Science and Technology, Republic of Korea; *M Kang,* Kwangwoon University, Republic of Korea; *S Oh, B Yang, K Seong, H Ahn,* Seoul National University of Science and Technology, Republic of Korea; *T Lee,* Kwangwoon University; *J An,* Seoul National University of Science and Technology, Republic of Korea

Wednesday Morning, August 1, 2018

	Room 113-115	
8:00am	**AF1-WeM-1** Role of Low and Medium Energy Ions in PEALD Processes, ***Marceline Bonvalot**, C Vallée, S Belahcen, V Pesce, A Chaket,* LTM-UGA, France*; R Gassilloud,* CEA-Leti, France*; P Gonon, A Bsiesy,* LTM-UGA, France	**ALD Fundamentals** **Session AF1-WeM** **Plasma ALD I** **Moderators:** Dennis Hausmann, Lam Research, Jonas Sundqvist, Fraunhofer Institute for Ceramic Technologies and Systems IKTS
8:15am	**AF1-WeM-2** Energetic Ions during Plasma ALD and their Role in Tailoring Material Properties, ***Tahsin Faraz**, K Arts,* Eindhoven University of Technology, Netherlands*; H Knoops,* Oxford Instruments Plasma Technology, UK*; S Karwal, E Kessels,* Eindhoven University of Technology, Netherlands	
8:30am	**AF1-WeM-3** Role of Plasma Chemistry on Structure and Properties of Low Resistivity PEALD TiN Films, ***Igor Krylov**, D Ritter, M Eizenberg,* Technion - Israel Institute of Technology, Israel	
8:45am	**AF1-WeM-4** Effect of Oxygen Plasma and Growth Temperature on the Densification of Plasma-Enhanced Atomic Layer Deposited Silicon Dioxide Film, ***Donghyuk Shin**, H Song, H Park, D Ko,* Yonsei University, Republic of Korea	
9:00am	**AF1-WeM-5** On the Co-reactant for Atomic Layer Deposition of Metals: Hydrogen/Nitrogen-based Plasmas for Cobalt ALD, ***Martijn Vos**, E Kessels, A Mackus,* Eindhoven University of Technology, Netherlands	
9:15am	**AF1-WeM-6** Plasma-enhanced Atomic Layer Deposition of Tungsten Films using Tungsten Chloride Precursor, *H Kim, **Seunggi Seo**, Y Lee, I Oh,* Yonsei University, Republic of Korea*; B Shong,* Hongik University, Korea, Republic of Korea	
9:30am	**AF1-WeM-7** Tailoring Molybdenum Carbide Properties by Plasma and Ion Energy Control during Plasma Enhanced ALD, *A Bol, **Eldad Grady**, M Verheijen, T Faraz, S Karwal, W Kessels,* Eindhoven University of Technology, Netherlands	
9:45am	**AF1-WeM-8** Atmospheric-Pressure Plasma-Enhanced Spatial ALD of In_2O_3:H, ***Yves Creyghton**, A Varanasi, F Roozeboom, P Bolt, P Poodt,* Holst Centre - TNO, Netherlands	
10:00am	**Break & Exhibits**	
10:15am	**Break & Exhibits**	
10:30am	**Break & Exhibits**	
10:45am	**AF2-WeM-12** Low-Temperature Plasma-Enhanced ALD of Highly Conductive Niobium Nitride Thin Films with RF Substrate Biasing, ***Yi Shu**, A O'Mahony,* Oxford Instruments Plasma Technology*; H Knoops,* Oxford Instruments Plasma Technology, UK*; A Kurek,* Oxford Instruments Plasma Technology*; T Miller,* Oxford Instruments Plasma Technology, UK*; O Thomas, C Hodson,* Oxford Instruments Plasma Technology	**ALD Fundamentals** **Session AF2-WeM** **Plasma ALD II** **Moderators:** Markku Leskela, University of Helsinki, Finland, Jihwan Ahn, Seoul National University of Science and Technology
11:00am	**AF2-WeM-13** Low-temperature Plasma Assisted Atomic Layer Deposition of Cadmium Telluride, ***James Pattison**,* University of Maryland*; B VanMil, A Hewitt,* U.S. Army Research Laboratory*; N Strnad,* University of Maryland*; Y Chen, P Wijewarnasuriya,* U.S. Army Research Laboratory	
11:15am	**AF2-WeM-14** Improved Deposition Rate of Low T PEALD Silicon Nitride Using Amines, ***Sungsil Cho**, S Chang, J Park,* Entegris Inc., Republic of Korea*; B Hendrix, T Baum, J Giolitto,* Entegris Inc.	
11:30am	**AF2-WeM-15** Improved Adhesion and Electrical Properties of Plasma-Enhanced ALD Platinum through Cycle-by-Cycle Hydrogen Plasma Treatment, ***Martin Winterkorn**, J Provine, H Kim, P Schindler, T Kenny, F Prinz,* Stanford University	
11:45am	**AF2-WeM-16** Low Temperature SiNx Film Deposition by Plasma Enhanced Atomic Layer Deposition with Trisilylamine, ***Sun Jung Kim**, S Yong, Y Choi, H Hwangbo, H Chae,* Sungkyunkwan University (SKKU), Republic of Korea	

Wednesday Morning, August 1, 2018

	Room 116-118	
8:00am	**AA1-WeM-1** Growth Of Indium Oxide Thin Films Based On A Plasma Enhanced Atomic Layer Deposition Technique, ***Joaquin Alvarado***, *L Martinez,* University of Puebla, Mexico*; M Chavez,* CINVESTAV-IPN, Mexico*; S Alcantara, D Cortes,* University of Puebla, Mexico*; S Gallardo,* CINVESTAV-IPN, Mexico	**ALD Applications** **Session AA1-WeM** **Display Device and Material** **Moderators:** Kwang Soo Lim, LG Display, Chang-Yong Nam, Brookhaven National Laboratory
8:15am	**INVITED: AA1-WeM-2** Large-Area Atmospheric Pressure Spatial ALD for Display Applications*, C Frijters, F van den Bruele, A Illiberi,* ***Paul Poodt****,* Holst Centre - TNO, Netherlands	
8:30am	Invited talk continues.	
8:45am	**AA1-WeM-4** Amorphous Indium Zinc Tin Oxide (IZTO) Semiconductor Materials and the Associated Thin Film Transistor Properties Deposited by Atomic Layer Deposition*,* ***Jiazhen Sheng****, T Hong,* Hanyang University, Republic of Korea*; J Lim,* Samsung, Republic of Korea*; J Park,* Hanyang University, Republic of Korea	
9:00am	**AA1-WeM-5** Evaluation of Si precursor for SiO_2 OLED Encapsulation by PEALD*,* ***GunJoo Park****, J Park, B Yang, S Kim, J Park, S Jang, S Lee, M Kim,* DNF Co. Ltd, Republic of Korea	
9:15am	**AA1-WeM-6** Hydrogen Barrier Properties of ALD Al_2O_3 with Different Oxidants*, H Kim,* ***Yujin Lee****, T Nam, S Seo, C Lee,* Yonsei University, Republic of Korea*; J Yang, D Choi, C Yoo, H Kim,* LG Display	
9:30am	**AA1-WeM-7** Flexible Al_2O_3/Organic Multilayer Moisture Barrier Films Deposited by Spatially Resolved ALD Processes in a Single Chamber*,* ***Sang Heon Yong****, S Kim, Y Choi, H Hwangbo, H Chae,* Sungkyunkwan University (SKKU), Republic of Korea	
9:45am	**AA1-WeM-8** Optimization of Film Structure by Stress Engineering for Flexible Thin Film Encapsulation*,* ***Ju-Hwan Han****, D Choi, J Lee, K Han, J Park,* Hanyang University, Republic of Korea	
10:00am	**Break & Exhibits**	
10:15am	**Break & Exhibits**	
10:30am	**Break & Exhibits**	
10:45am	**AA2-WeM-12** A Condense Polymer-inorganic Hybrid Nanolayer with Extremely Low Gas Transmission Rate Behavior and Ultra-flexible Nature*,* ***Myung Mo Sung****,* Hanyang University, Republic of Korea	**ALD Applications** **Session AA2-WeM** **Flexible Application** **Moderator:** Jin-Seong Park, Hanyang University
11:00am	**AA2-WeM-13** SiN-Al_2O_3 Nano-laminates Fabricated with Combination of CVD-ALD Method for Encapsulation of Highly Stable Flexible OLED Electronics*,* ***Huizhi Yang****, Y Li, Y Liu, K Cao,* Huazhong University of Science and Technology, China*; H Hsu, J Huang,* Wuhan China Star Optoelectronics Technology Co., Ltd (CSOT), China*; R Chen,* Huazhong University of Science and Technology, China	
11:15am	**AA2-WeM-14** Thermoelectric Device Based on ALD/MLD-grown ZnO and ZnO:benzene Thin Films on Flexible and Textile Substrates*,* ***Giovanni Marin****, M Karppinen,* Aalto University, Finland	
11:30am	**AA2-WeM-15** Transparent Graphene Heater Improved by Defect Healing of Metal Atomic Layer Deposition*,* ***Hyun Gu Kim****, W Kwon, T Im, M Khan,* Incheon National University, Republic of Korea*; H Choi,* Yonsei University, Republic of Korea*; W Kim,* Chonbuk National University, Republic of Korea*; J Chung,* Soongsil University, Republic of Korea*; H Lee,* Incheon National University, Republic of Korea	
11:45am	**AA2-WeM-16** Surface Modification Studies and Stabilization of Perovskite Quantum Dots with Atomic Layer Deposition*,* ***Binze Zhou****, Q Xiang, K Cao, R Chen,* Huazhong University of Science and Technology, China	

Wednesday Afternoon, August 1, 2018

	ALD Applications **Room 104-106 - Session AA2-WeA** **Catalytic Application** **Moderators:** Yongbeom Kim, Hanyang University, Min Hwan Lee, University of California Merced	**Emerging Materials** **Room 107-109 - Session EM-WeA** **MLD & Emerging Materials** **Moderators:** Jiyoung Kim, University of Texas at Dallas, Charles Dezelah, EMD Performance Materials
1:30pm	**INVITED: AA2-WeA-1** Surface Treatment of Solid Oxide Fuel Cell Cathodes by Atomic Layer Deposition, ***Min Hwan Lee***, University of California Merced	**EM-WeA-1** Physical, Chemical, and Electrical Properties of Molecular Layer Deposited Alucone Thin Films using Trimethyl-aluminum and Hydroquinone, ***Seung-Hwan Lee***, *G Beak, J Lee, J Park,* Hanyang University, Republic of Korea
1:45pm	Invited talk continues.	**EM-WeA-2** Molecular Layer Deposition of Boron Carbide Thin Films, ***Suhaib Malik***, *R Thapa, L Dorsett, S Wagner, A Caruso,* University of Missouri-Kansas City; *D Merrill, J Bielefeld, S King,* Intel Corp.; *M Paquette,* University of Missouri-Kansas City
2:00pm	**AA2-WeA-3** Bottom-Up ALD Engineering of FexCo1-xSy for Electrocatalytic Hydrogen Evolution, ***Wei Xiong***, Peking University, China	**EM-WeA-3** Achieving Room Temperature and Below Phase Transitions in ALD Doped VO_2 Films, ***Virginia Wheeler***, U.S. Naval Research Laboratory; *A Kozen,* The American Society for Engineering Education; *M Currie, B Downey, D Meyer, C Eddy, Jr.,* U.S. Naval Research Laboratory
2:15pm	**AA2-WeA-4** Plasma Enhanced Atomic Layer Deposition of Iron Carbide for Electrocatalytic Hydrogen Evolution, *Z Liu,* ***Yulian Hu***, *Q Chen,* Beijing Institute of Graphic Communication, China	**EM-WeA-4** Ozone Based High Temperature Atomic Layer Deposition of SiO_2 Thin Films, ***Su Min Hwang***, *X Meng, A Lucero, H Kim, S Kim,* The University of Texas at Dallas; *B Hwang,* Dow Chemicals; *J Kim,* The University of Texas at Dallas
2:30pm	**AA2-WeA-5** Gadolinia-doped Ceria Thin Film Fabricated by Atomic Layer Deposition for Enhancing ORR Kinetics of LT-SOFC, ***Hwichul Yang***, *S Kim, Y Lim, Y Kim,* Hanyang University, Republic of Korea	**EM-WeA-5** Atomic Layer Deposition of High-T_c Magnesium Diboride (MgB_2) Film for Superconducting Radio-Frequency Particle Beam Accelerators, ***Alireza Nassiri***, *D Mandia, A Yanguas-Gil, A Mane, J Elam,* Argonne National Laboratory
2:45pm	**AA2-WeA-6** Atomic Layer Deposition of Palladium Nanoparticles on Nickel for Direct Methanol Solid Oxide Fuel Cell Catalysts, ***Junmo Koo***, *D Jang, H Choi, J Kim,* Korea University, Republic of Korea; *H Jeong,* University of Illinois at Urbana-Champaign; *J Shim,* Korea University, Republic of Korea	**EM-WeA-6** Commerical Production of ALD-Coated Powders and Polymers, ***Daniel Higgs***, ALD NanoSolutions, Inc.
3:00pm	**AA2-WeA-7** Diffusion-Limited Atomic Layer Deposition: Realizing the Encapsulation of Homogeneous Catalysts, ***Bin Zhang***, *S Zhang, H Liang, Y Qin,* Institute of Coal Chemistry, Chinese Academy of Sciences, China	**EM-WeA-7** Ruthenium: Advanced Nodes and Supply Chain Implications, ***Oliver Briel***, *D Zeng, A Wilk,* Umicore AG & Co. KG, Germany
3:15pm	**AA2-WeA-8** Ultrathin ALD Yttria-Stabilized Zirconia Overcoating on Metal Electrodes for Low Temperature Solid Oxide Fuel Cell, ***Byung Chan Yang***, *D Go, S Oh, J Shin, J An,* Seoul National University of Science and Technology, Republic of Korea	**EM-WeA-8** An Alternative Precursor for Safe Deposition of Aluminum Oxide Thin Films, ***Liao Cao***, Ghent University, Belgium; *F Minaye Hashemi,* Delft University of Technology, Netherlands; *F Mattelaer,* Ghent University, Belgium; *J van Ommen,* Delft University of Technology, Netherlands; *C Detavernier,* Ghent University, Belgium
3:30pm	**Break**	**Break**
3:45pm	**Break**	**Break**
4:00pm		**EM-WeA-11** Application of PEALD Technique to the Fabrication of Vertical TFT for the Ultra High-Resolution Display, ***Kwang-Heum Lee***, *S Lee, H Yeom, J Ko,* Korea Advanced Institute of Science and Technology, Republic of Korea; *C Hwang,* Electronics and Telecommunications Research Institute; *S Park,* Korea Advanced Institute of Science and Technology, Republic of Korea
4:15pm		**EM-WeA-12** Effect of Substrate on MoS_2 Deposited by Plasma-enhanced Atomic Layer Deposition, ***Asad Mughal***, *T Walter, K Cooley,* The Pennsylvania State University; *A Bertuch,* Veeco-CNT; *S Mohney,* The Pennsylvania State University
4:30pm		**EM-WeA-13** Single-crystal Ternary Perovskite $YAlO_3$ Epitaxial Growth on GaAs and GaN via Y_2O_3 Template Overcoming a Large Film/Substrate Lattice Mismatch, ***L. Bo-Yu Young***, *C Cheng, K Lin, Y Lin, H Wan,* National Taiwan University, Republic of China; *R Cai, S Lo,* Industrial Technology Research Institute, Republic of China; *M Li,* National Applied Research Laboratories, Republic of China; *C Hsu,* National Synchrotron Radiation Research Center, Republic of China; *J Kwo,* National Tsing Hua University, Republic of China; *M Hong,* National Taiwan University, Republic of China

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	Room 113-115	
1:30pm	**AF1-WeA-1** In Situ IR Spectroscopic Investigation of Thermal and Plasma-Enhanced ALD of Pt: Temperature Dependency of the Growth Rate, ***Michiel Van Daele***, *C Detavernier, J Dendooven,* Ghent University, Belgium	**ALD Fundamentals** **Session AF1-WeA** **In-situ Monitoring and Analysis** **Moderators:** Christophe Detavernier, Ghent University, Belgium, Christian Dussarrat, Air Liquide
1:45pm	**AF1-WeA-2** Growth Mechanisms and Diffusion Behavior of Molecular Layer Deposition Films Deposited by Cyclic Azasilanes, Maleic Anhydride, and Water, ***Ling Ju***, *N Strandwitz,* Lehigh University	
2:00pm	**AF1-WeA-3** *In-situ* RAIRS Investigation of the Oxidation and Reduction of Cu using UV/O_3 and Ethanol, ***Luis Fabián Peña***, The University of Texas at Dallas; *M Todd,* Versum Material, Inc; *Y Chabal,* The University of Texas at Dallas	
2:15pm	**AF1-WeA-4** Real Time GISAXS Study of the Effects of Plasma Gas Chemistry on Growth of InN Films by Atomic Layer Epitaxy, ***Neeraj Nepal***, U.S. Naval Research Laboratory; *V Anderson,* The American Society for Engineering Education; *S Johnson,* U.S. Naval Research Laboratory; *S Rosenberg, J Woodward, A Kozen,* The American Society for Engineering Education; *C Wagenbach,* Boston University; *D Meyer, B Downey, J Hite, V Wheeler,* U.S. Naval Research Laboratory; *Z Robinson,* SUNY College at Brockport; *D Boris, S Walton,* U.S. Naval Research Laboratory; *K Ludwig,* Boston University; *C Eddy, Jr.,* U.S. Naval Research Laboratory	
2:30pm	**AF1-WeA-5** Low-Temperature Plasma-Enhanced Atomic Layer Deposition of Cobalt Thin Films using Cyclopentadienylcobalt-dicarbonyl and N_2-H_2 Plasma, ***Pouyan Motamedi***, *K Bosnick,* National Research Council Canada, Canada; *K Cadien, J Hogan,* University of Alberta, Canada	
2:45pm	**AF1-WeA-6** A Surface Science Toolbox for Understanding Atomic Layer Epitaxy, ***Charles R. Eddy, Jr.***, *S Rosenberg, J Woodward,* U.S. Naval Research Laboratory; *D Pennachio, C Palmstrøm,* University of California, Santa Barbara; *N Nepal,* U.S. Naval Research Laboratory; *V Anderson,* Kennesaw State University; *S Johnson,* U.S. Naval Research Laboratory; *C Wagenbach, K Ludwig,* Boston University; *A Kozen, S Walton, D Boris, V Wheeler,* U.S. Naval Research Laboratory	
3:00pm	**AF1-WeA-7** Investigation of the Temperature Dependence of Plasma-assisted Atomic Layer Epitaxy Growth of InN on GaN using *in situ* Grazing Incidence Small-angle X-ray Scattering, ***Jeffrey M. Woodward***, *S Rosenberg,* The American Society for Engineering Education; *N Nepal, S Johnson,* U.S. Naval Research Laboratory; *C Wagenbach,* Boston University; *A Kozen,* The American Society for Engineering Education; *Z Robinson,* SUNY College at Brockport; *K Ludwig,* Boston University; *C Eddy, Jr.,* U.S. Naval Research Laboratory	
3:15pm	**AF1-WeA-8** In situ Investigations on the Crystal Structure Dependent ALD Film Growth of TiO_2, ***Martin Knaut***, *M Albert, J Bartha,* Technische Universität Dresden, Germany	
3:30pm	**Break**	
3:45pm	**Break**	
4:00pm	**AF2-WeA-11** Water Assisted ALD Process for Y_2O_3 Thin Films and Evaluation of the Y_2O_3 Containing Metal-insulator-capacitor Structures, ***Nils Boysen***, *L Mai, E Subasi, C Bock, A Devi,* Ruhr-University Bochum, Germany	**ALD Fundamentals** **Session AF2-WeA** **Process Development** **Moderators:** Woojin Jeon, Dankook University, Harm Knoops, Eindhoven University of Technology
4:15pm	**AF2-WeA-12** New Plasma-enhanced Atomic Layer Deposition Process for SnO_2: Process Development and Evaluation of SnO_2 for TFT Applications, ***David Zanders***, *L Mai, E Subasi, C Bock, A Devi,* Ruhr-University Bochum, Germany	
4:30pm	**AF2-WeA-13** Hollow Cathode Plasma-Enhanced Atomic Layer Deposition of Silicon Nitride using Pentachlorodisilane (PCDS) and Hexachlorodisilane (HCDS), ***Xin Meng***, *H Kim, A Lucero, S Hwang, J Lee, Y Byun, J Kim,* The University of Texas at Dallas; *B Hwang, X Zhou, J Young, M Telgenhoff,* Dow Chemicals	

Wednesday Afternoon, August 1, 2018

	Room 116-118	
1:30pm	**AA1-WeA-1** Oleo Sponge: Reusable Sorbent for Oil Spill Cleanup Fabricated using Sequential Infiltration Synthesis, ***Jeffrey W. Elam**, A Mane, E Barry, S Darling, J Avila, J Libera,* Argonne National Laboratory	**ALD Applications** **Session AA1-WeA** **Energy: Catalysis and Fuel Cells** **Moderators:** Myung Mo Sung, Hanyang University, Yongfeng Mei, Fudan University, China
1:45pm	**AA1-WeA-2** Evaluation of Zinc Oxide Fabricated by Atomic Layer Deposition as an Antibacterial Coating under UV Light, ***Gwon Deok Han**, K Park, M Kim, H Choi, J Koo, H Park, J Shim,* Korea University, Republic of Korea	
2:00pm	**AA1-WeA-3** ALD Enabled Non-linear Optical Properties at Substrate-film Interfaces, *Z Gao,* Washington University, St. Louis*; M Hussain,* University of Dayton*; D Ceglia,* Aegis Technology Group Inc.*; M Vincenti,* University of Brescia, Italy*; A Sarangan, I Agha,* University of Dayton*; M Scalora,* US Army AMRDEC*; J Haus,* University of Dayton*;* ***Parag Banerjee,*** Washington University, St. Louis	
2:15pm	**AA1-WeA-4** Bottom-up Fabrication of X-ray Optics using ALD, ***Umut Tunca Sanli,*** Max Planck Institute for Intelligent Systems, Germany*; C Jiao,* Thermo Fisher Scientific, Netherlands*; M Baluktsian, G Schütz, K Keskinbora,* Max Planck Institute for Intelligent Systems, Germany	
2:30pm	**AA1-WeA-5** Thickness Optimization of Aluminum Oxide for High Secondary Electron Emission Deposited via Atomic Layer Deposition, ***Baojun Yan,*** Institute of High Energy Physics, Chinese Academy of Sciences, China	
2:45pm	**AA1-WeA-6** Effect of Deposition and Annealing Condition on Atomic Layer Deposited SnO_2 for Environmental Ozone Monitoring, *S Mills, V Misra,* ***Bongmook Lee,*** North Carolina State University	
3:00pm	**AA1-WeA-7** Etch Behavior of Ti-based Oxide Grown by Atomic Layer Deposition for Spacer Application, *H Kim,* ***Sanghun Lee,*** Yonsei University, Republic of Korea*; W Lee,* Pusan National University, Republic of Korea*; W Noh, S Gatineau,* Air Liquide Laboratories Korea*; S Kwon,* Pusan National University, Republic of Korea	
3:15pm	**AA1-WeA-8** Scaling Atomic Layer Deposition to Astronomical Sizes: Low-temperature Aluminum Oxide Deposited in a Meter-sized Chamber, ***David Fryauf,*** University of California Santa Cruz*; A Phillips,* University of California Observatories*; G Tompa,* Structured Materials Industries Inc.*; N Kobayashi,* University of California Santa Cruz	
3:30pm	**Break**	
3:45pm	**Break**	
4:00pm	**AA3-WeA-11** Catalyst Synthesis and Modification via Atomic Layer Deposition: From Supported Metal Catalysts to Complex Systems, ***Mar Piernavieja Hermida,*** *R Naumann d'Alnoncourt, K Knemeyer,* Technische Universität Berlin, Germany*; V Strempel,* BASF SE, Process Research and Chemical Engineering*; A Trunschke, R Schlögl,* Fritz Haber Institute of the Max Planck Society, Germany*; M Driess,* Technische Universität Berlin, Germany*; F Rosowski,* BASF SE, Germany	**ALD Applications** **Session AA3-WeA** **Functional Film Application** **Moderator:** Han-Bo-Ram Lee, Incheon National University
4:15pm	**AA3-WeA-12** Atomically Controllable Ru@Pt Core Shell Nanoparticles Towards PROX's Reactions Modulated by Pt Shell Thickness, ***Yun Lang,*** *K Cao, J Zhang, B Shan, R Chen,* Huazhong University of Science and Technology, China	

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