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
HM Hybrid Materials & Infiltration
NS Nanostructure Synthesis and Fabrication
PS Plenary Session
TS Tutorials

Program Overview

Room /Time	Arteveldeforum & Pedro de Gante	Auditorium	Baekeland	Van Eyck	Van Rysselberghe
SuA		TS-SuA: Tutorial I			
SuP	Poster Sessions				
MoM1		PS-MoM1: Plenary Session I			
MoM2		AF1-MoM2: New Precursors and Processes I	ALE-MoM2: Thermal and/or Isotropic ALE I	AF2-MoM2: High Aspect Ratio/High Surface Area/Powder ALD	AA-MoM2: ALD for Solar Energy
MoA		AF1-MoA: New Precursors and Processes II AF2-MoA: Simulation, Modeling, and Theory of	ALE1-MoA: Thermal and/or Isotropic ALE II ALE2-MoA: Plasma and/or Anisotropic ALE I	AF3-MoA: Plasma Enhanced ALD AF4-MoA: Surface Science	AA1-MoA: ALD for Catalysis AA2-MoA: ALD for Energy Storage
MoP	Poster Sessions				
TuM1		PS-TuM1: Plenary Session II			
TuM2		AA1-TuM2: ALD for Medical Applications	ALE-TuM2: Atomic Layer Cleaning (ALC), ALE Integrated with ALD, and Alternative ALE Approaches	AF-TuM2: Simulation, Modeling, and Theory of ALD II	AA2-TuM2: ALD for FEOL
TuA		AM1-TuA: ALD for Manufacturing I AM2-TuA: ALD for Manufacturing II	ALE1-TuA: In situ Studies, Mechanisms and Modeling of ALE ALE2-TuA: Plasma and/or Anisotropic ALE II	AF1-TuA: Characterization I AF2-TuA: Characterization II	AA1-TuA: ALD for Display Applications AA2-TuA: ALD for BEOL
TuP	Poster Sessions				
WeM1		PS-WeM1: Plenary Session III			
WeM2		NS-WeM2: 2D Materials I	AA1-WeM2: ALD for Optical Applications	EM-WeM2: Molecular Layer Deposition	AA2-WeM2: ALD for Memory Applications I
WeA		EM1-WeA: Emerging Materials NS-WeA2: 2D Materials II	AS1-WeA: Area Selective Deposition I AS2-WeA: Area Selective Deposition II	EM2-WeA: Vapor Phase Infiltration EM3-WeA: Hybrid Coatings	AA1-WeA: ALD for Memory Applications II AA2-WeA: Emerging Applications of ALD

Sunday Afternoon, June 26, 2022

Tutorials
Room Auditorium - Session TS-SuA
Tutorial I
Moderators: Christophe Detavernier, Ghent University, Belgium, Erwin Kessels, Eindhoven University of Technology, the Netherlands

1:00pm	**INVITED: TS-SuA-1** How I Learned to Stop Worrying and Love the Surface, ***Seán Barry,*** Carleton University, Canada	
1:15pm		
1:30pm		
1:45pm	**INVITED: TS-SuA-4** Combined Atomic/Molecular Layer Deposition for Designer's Metal-Organic Materials and Inorganic-Organic Multilayers, ***Maarit Karppinen,*** Aalto University, Finland	
2:00pm		
2:15pm		
2:30pm	**INVITED: TS-SuA-7** Plasma Assisted Atomic Layer Processing and Diagnostics, ***Sumit Agarwal,*** Colorado School of Mines	
2:45pm		
3:00pm		
3:15pm	**INVITED: TS-SuA-10** Synthesis and Integration of 2D Materials Using ALD, ***Ageeth Bol,*** University of Michigan, Ann Arbor	
3:30pm		
3:45pm	BREAK	
4:00pm	**INVITED: TS-SuA-13** How Did (and Will) Atomic Scale Processing Change the Logic and Memory Industries?, ***Giuseppe Alessio Verni,*** *A. Illiberi,* ASM, Belgium; *P. Deminskyi,* ASM Microchemistry Ltd., Finland; *M. Givens,* ASM, Belgium	
4:15pm		
4:30pm		
4:45pm	**INVITED: TS-SuA-16** Artificial Interphases for Interface Control in Li-ion Batteries, ***Philippe Vereecken,*** IMEC, Belgium	
5:00pm		
5:15pm		

Atomic Layer Etching
Room Arteveldeforum & Pedro de Gante - Session ALE-SuP
Atomic Layer Etching Poster Session
6:00pm

ALE-SuP-1 Anisotropic Atomic Layer Etching of Sn by Formation of Hydride/Chloride, ***Doo San Kim***, *Y. Jang, H. Gil, G. Yeom,* Sungkyunkwan University, Korea (Republic of)

ALE-SuP-2 Atomic-Scale Control of a Native Oxide Thickness on Si for Direct Wafer Bonding, ***Youngseok Lee***, *Y. You, C. Cho, I. Seong, W. Jeong, J. Lee, S. Kim, S. You,* Chungnam National University, Korea (Republic of)

ALE-SuP-3 Atomic Layer Etching of Al_2O_3 with NF_3 Plasma Fluorination and Trimethylaluminum Ligand Exchange, ***Hyeongwu Lee***, *J. Kim, D. Shim, Y. Kim, H. Chae,* Sungkyunkwan University (SKKU), Korea (Republic of)

ALE-SuP-4 Low-Temperature Plasma Atomic Layer Etching of Titanium Nitride, ***Heeju Ha***, *D. Shim, J. Kim, Y. Kim, H. Chae,* Sungkyunkwan University (SKKU), Korea (Republic of)

ALE-SuP-5 Prediction of Chemical Evolution and Its Impact on PEALE of Silicon Nitride with Hydrofluorocarbons, ***Erik Cheng***, *G. Hwang,* University of Texas at Austin; *P. Ventzek, Z. Chen, S. Sridhar, A. Ranjan,* Tokyo Electron America

ALE-SuP-6 Achieving High Uniformity in Atomic-Scale Etching via a Purgeless Atomic Layer Etching Approach, ***Yebin You***, *Y. Lee, C. Cho, I. Seong, W. Jeong, J. Lee, S. Kim, Y. You, M. Choi, T. Yuk, S. You,* Chungnam National University, Korea (Republic of)

ALE-SuP-7 Thermal Atomic Layer Etching of Tantalum Nitride With Plasma Surface Oxidation and Fluorination, ***Hojin Kang***, *H. Chae, Y. Kim,* SKKU, Korea (Republic of)

ALE-SuP-8 New Oxidants for Cu ALE via In Situ XAS Mechanistic Study, ***Adam Hock***, *P. Panariti,* Illinois Institute of Technology

Monday Morning, June 27, 2022

Plenary Session
Room Auditorium - Session PS-MoM1
Plenary Session I
Moderators: Christophe Detavernier, Ghent University, Belgium, Erwin Kessels, Eindhoven University of Technology, Netherlands

8:45am		
9:00am	**INVITED: PS-MoM1-2** Plenary Lecture: New Process Requirements Driven by More Than Moore and More Moore Device Integration Innovations, ***Steven Steen,*** ASML; *P. Leray,* IMEC, Belgium	
9:15am		
9:30am		
9:45am	**INVITED: PS-MoM1-5** ALD 2020 Innovator Awardee Talk: Innovations in ALD Chemistry Open the Door to Applications, ***Mikko Ritala,*** University of Helsinki, Department of Chemistry, Finland	
10:00am		
10:15am	Break & Exhibits	
10:30am		

	ALD Applications **Room Van Rysselberghe - Session AA-MoM2** **ALD for Solar Energy** **Moderators:** Wei-Min Li, Jiangsu Leadmicro Nano-Equipment Technology Ltd., China, Paul Poodt, Holst Centre / TNO, Netherlands	**ALD Fundamentals** **Room Auditorium - Session AF1-MoM2** **New Precursors and Processes I** **Moderators:** Sean Barry, Carleton University, Canada, Elisabeth Blanquet, SIMaP, CNRS, University Grenoble Alpes, France
10:45am	**INVITED: AA-MoM2-1** Atomic Layer Deposition for Silicon-Perovskite Tandem Cells, ***Bart Macco***, *N. Phung, E. Kessels, M. Creatore,* Eindhoven University of Technology, Netherlands	**AF1-MoM2-1** Atomic Layer Deposition of Ruthenium Dioxide Thin Films Based on Redox Reactions between RuO_4 and Alcohols, ***Matthias Minjauw***, *N. Poonkottil, A. Werbrouck, C. Detavernier, J. Dendooven,* Ghent University, Belgium
11:00am		**AF1-MoM2-2** Low Temperature ALD of Ni from Novel Precursors, ***Anton Vihervaara***, *T. Hatanpää, K. Mizohata, G. Popov, M. Chundak, M. Ritala,* University of Helsinki, Finland
11:15am	**AA-MoM2-3** ALD Al_2O_3/SiO_x Multilayers for c-Si Surface Passivation: Modification of Interface Properties by Voltage Stress and Plasma Treatments, ***Armin Richter***, *H. Patel, C. Reichel, P. Masuch, J. Benick, S. Glunz,* Fraunhofer ISE, Germany	**AF1-MoM2-3** Enhanced Cation Control in ALD of Alkali Metal Containing Films by Avoiding Water-Reservoir Effects, ***Henrik H. Sønsteby***, University of Oslo, Norway
11:30am	**AA-MoM2-4** Atomic Layer Deposition of Aluminium Doped $Zn_{1-x}Mg_xO$ as Transparent Conducting Films for Photovoltaics, ***Poorani Gnanasambandan***, *N. Adjeroud, R. Leturcq,* Luxembourg Institute of Science and Technology (LIST), Luxembourg	**AF1-MoM2-4** Atomic Layer Deposition of Lead Halides: $PbBr_2$ and $PbCl_2$, ***Georgi Popov***, *C. Van Dijck, L. Junkers,* University of Helsinki, Finland; *G. Bačić,* Carleton University, Canada; *A. Weiss, M. Mattinen, A. Vihervaara, P. Jalkanen, K. Mizohata, J. Räisänen, M. Kemell, M. Leskelä,* University of Helsinki, Finland; *S. Barry,* Carleton University, Canada; *M. Ritala,* University of Helsinki, Finland
11:45am	**AA-MoM2-5** An in-Situ Infrared Spectroscopy Study on the Influence of ALD SnO_2 on Formamidinium-Based Metal Halide Perovskite, ***A.E.A. (Andrea) Bracesco***, *J. Jansen, W. Kessels,* Eindhoven University of Technology, Netherlands; *V. Zardetto,* Solliance Solar Research, Netherlands; *M. Creatore,* Eindhoven University of Technology, Netherlands	**AF1-MoM2-5** Carbene Based Precursors for the ALD of Coinage Metals, ***Nils Boysen***, Ruhr University Bochum, Germany; *A. Philip,* Aalto University, Finland; *D. Rogalla,* Ruhr University Bochum, Germany; *M. Karppinen,* Aalto University, Finland; *A. Devi,* Ruhr University Bochum, Germany
12:00pm		**AF1-MoM2-6** Low Temperature ALD of Metals and Nitrides Using Thermally Generated Radical Precursors, ***Goran Bacic***, Carleton University, Canada; *C. Dezelah,* ASM Microchemistry Ltd., Finland; *S. Barry,* Carleton University, Canada

	ALD Fundamentals **Room Van Eyck - Session AF2-MoM2** **High Aspect Ratio/High Surface Area/Powder ALD** **Moderators:** Jolien Dendooven, Ghent University, Belgium, Juhani Taskinen, Picosun Oy, Finland	**Atomic Layer Etching** **Room Baekeland - Session ALE-MoM2** **Thermal and/or Isotropic ALE I** **Moderators:** Steven M. George, University of Colorado at Boulder, Anil Mane, Argonne National Laboratory
10:45am	**AF2-MoM2-1** Influence of the High Aspect Ratio Geometry to ALD Thin Film Growth, ***Oili Ylivaara,*** VTT Technical Research Centre of Finland*; M. Utriainen, P. Hyttinen,* Chipmetrics Oy, Finland*; R. Puurunen,* Aalto University Aalto School of Chemical Engineering, Finland	**INVITED: ALE-MoM2-1** Photon-Activated Metal Ale*, X. Yang, B. Coffey,* ***John Ekerdt,*** University of Texas at Austin
11:00am	**AF2-MoM2-2** Ultra-Low Temperature ALD of Pure Antimony for Grain Boundary Engineering of Thermoelectric Materials*,* ***Amin Bahrami****, S. He, R. He, S. Lehmann, K. Nielsch,* Leibniz-Institut für Festkörper- und Werkstoffforschung Dresden e. V., Germany	
11:15am	**AF2-MoM2-3** Infilling Macroscopic Nanoparticle Networks via ALD*,* ***Benjamin Greenberg****, K. Anderson, A. Jacobs, J. Wollmershauser, B. Feigelson,* U.S. Naval Research Laboratory	**ALE-MoM2-3** Plasma-Assisted Thermal-Cyclic Etching of Silicon Germanium Selective to Germanium*,* ***Kazunori Shinoda****,* Hitachi , Japan*; H. Hamamura,* Hitachi, Japan*; K. Maeda, M. Izawa,* Hitachi High-Tech, Japan*; T. Nguyen, K. Ishikawa, M. Hori,* Nagoya University, Japan
11:30am	**AF2-MoM2-4** Zinc Acetylacetonate on Mesoporous Supports by Atomic Layer Deposition*,* ***Jihong Yim****, E. Haimi,* Aalto University, Finland*; M. Mäntymäki,* University of Helsinki, Finland*; V. Kärkäs,* Aalto University, Finland*; R. Bes,* University of Helsinki, Finland*; A. Arandia, J. Velasco, T. Viinikainen,* Aalto University, Finland*; S. Huotari,* University of Helsinki, Finland*; R. Karinen,* Aalto University, Finland*; M. Putkonen,* University of Helsinki, Finland*; R. Puurunen,* Aalto University, Finland	**ALE-MoM2-4** Thermal Atomic Layer Etching of Cobalt with Chlorine Plasma and Hexafluoroacetylacetone (Hhfac)*,* ***Yongjae Kim****, H. Ha, H. Chae,* Sungkyunkwan University (SKKU), Korea (Republic of)
11:45am	**AF2-MoM2-5** Synthesis of High Surface Area Metal Oxide Catalyst Supports*,* ***Robert Baumgarten****, P. Ingale, K. Knemeyer, R. Naumann d'Alnoncourt, M. Driess,* BasCat – UniCat BASF JointLab, Technische Universität Berlin, Germany*; F. Rosowski* , BASF SE, Process Research and Chemical Engineering, Germany	**INVITED: ALE-MoM2-5** Thermal-Cyclic Atomic Layer Etching of Cobalt by Plasma Oxidation and Organometallization*,* ***Sumiko Fujisaki****,* Hitachi Ltd,. R&D group, Japan*; Y. Yamaguchi,* Hitachi, Ltd., R&D group, Japan*; H. Kobayashi,* Hitachi High-Tech, Japan*; K. Shinoda, M. Yamada, H. Hamamura,* Hitachi, Ltd., R&D group, Japan*; K. Kawamura, M. Izawa,* Hitachi High-Tech, Japan
12:00pm	**AF2-MoM2-6** ALD on Porous Substrates: From General Formulation to Fibrous Substrates and Scaling Laws*,* ***Wojciech Szmyt****, C. Guerra-Nuñez,* Empa, Swiss Federal Laboratories for Materials Science and Technology, Thun, Switzerland*; L. Huber,* Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland*; C. Dransfeld,* TU Delft, Netherlands*; I. Utke,* Empa, Swiss Federal Laboratories for Materials Science and Technology, Thun, Switzerland	

Monday Afternoon, June 27, 2022

	Room Auditorium	
1:30pm	**AF1-MoA-1** Atomic Layer Deposition of CsI and $CsPbI_3$, ***Alexander Weiß,*** *G. Popov, E. Atosuo, P. Jalkanen, A. Vihervaara, M. Vehkamäki,* University of Helsinki, Finland*; H. Sipilä, A. Niemela,* Fenno-Aurum Oy Ltd, Finland*; M. Ritala, M. Kemell,* University of Helsinki, Finland	**ALD Fundamentals** **Session AF1-MoA** **New Precursors and Processes II** **Moderators:** Romain Gaillac, Air Liquide, Mikko Ritala, University of Helsinki, Finland
1:45pm	**AF1-MoA-2** Co(II) Amide, Pyrrolate, and Aminopyridinate Complexes: Assessment of Structure and Thermal Properties as ALD Precursors, ***Jorit Obenlüneschloß,*** *D. Zanders,* Ruhr University Bochum, Germany*; M. Land, S. Barry,* Carleton University, Canada*; A. Devi,* Ruhr University Bochum, Germany	
2:00pm	**AF1-MoA-3** SnO Thin Films *via* Water Based ALD using a Sn(II) Precursor: Precursor Evaluation and ALD Process Development, ***Niklas Huster,*** Ruhr University Bochum, Germany*; R. Ghiyasi,* Aalto University, Finland*; D. Zanders,* Ruhr University Bochum, Germany*; D. Rogalla,* RUBION, Ruhr University Bochum, Germany*; M. Karppinen,* Aalto University, Finland*; A. Devi,* Ruhr University Bochum, Germany	
2:15pm	**AF1-MoA-4** Tuning the Texture of ZnO Thin Films Through the Addition of a Volatile Shape-Directing Agent in the AP-SALD System, *C. Crivello, M. Weber,* LMGP Grenoble-INP / CNRS, France*; T. Jalabert, G. Ardila Rodriguez,* IMEP-LaHC UGA/CNRS/Grenoble INP, France*; M. Dibenedetto,* ***David Muñoz-Rojas,*** LMGP Grenoble-INP / CNRS, France	
2:30pm	**AF1-MoA-5** Recent Advances in Rare Earth Precursors for ALD, ***Jean-Pierre Glauber,*** *M. Schmickler, P. Kaur, S. Beer, N. Boysen,* Ruhr University Bochum, Germany*; A. Devi,* Ruhr Universität Bochum, Germany	
2:45pm	**AF1-MoA-6** Novel Growth Inhibitor in Atomic Layer Deposition for Conformal Coverage on High Aspect Ratio Trenches, ***Kok Chew Tan,*** *J. Jung, C. Yeon, S. Lee, J. Kim, J. Nam, T. Park, Y. Park,* Soulbrain, Korea (Republic of)	
3:00pm	**AF1-MoA-7** Solution ALD: A Versatility Process for the Growth of Sulfides and Selenides, ***Maissa Barr,*** *B. Zhao, P. Von Grundherr,* Friedrich-Alexander-University Erlangen-Nürnberg (FAU), Germany*; V. Koch,* Friedrich-Alexander-University Erlangen-Nürnberg (FAU), Germany*; J. Charvot ,* University of Pardubice: Pardubice, CZ, Czechia*; M. Halik,* Friedrich-Alexander-University Erlangen-Nürnberg (FAU), Germany*; F. Bureš,* University of Pardubice, Czechia*; J. Bachmann,* Friedrich-Alexander-University Erlangen-Nürnberg (FAU), Germany	
3:15pm	**AF1-MoA-8** Flash-Lamp Enabled Atomic Layer Deposition, ***Martin Knaut,*** *Y. Cui, R. Deltschew, M. Albert, T. Mikolajick,* TU Dresden, Germany	
3:30pm	Break & Exhibits	
3:45pm		
4:00pm	**INVITED: AF2-MoA-11** A User Experience Feedback on Numerical Simulation for CVD/ALD Precursor Design & Development, ***Romain Gaillac,*** Air Liquide	**ALD Fundamentals** **Session AF2-MoA** **Simulation, Modeling, and Theory of ALD I** **Moderators:** Hannah Margavio, North Carolina State University, Bonggeun Shong, Hongik University, Korea (Republic of)
4:15pm		
4:30pm	**AF2-MoA-13** From Monolayers to Crystalline Materials in ALD: Simulation and Comparison With Experiments, ***Angel Yanguas-Gil,*** *J. Elam,* Argonne National Laboratory	
4:45pm	**AF2-MoA-14** What Is the Reactivity of a Precursor in ALD? - Simulation of Growth and Etch Rates, ***Simon D. Elliott,*** *A. Chew, Y. An,* Schrödinger, Inc.	
5:00pm	**AF2-MoA-15** Random Sequential Adsorption and the Consequences for the Growth-Per-Cycle of Atomic Layer Deposition Processes, ***Ilker Tezsevin,*** *S. Deijkers, M. Merkx, E. Kessels, A. Mackus,* Eindhoven University of Technology, The Netherlands	
5:15pm	**AF2-MoA-16** Machine Learning Based Atomistic Modeling of ALD Processes, *J. Schneider,* ***Suresh Kondati Natarajan,*** *V. Arcisauskaite, U. Martinez,* Synopsys Denmark*; A. Blom,* Synopsys Inc.	
5:30pm	**AF2-MoA-17** Modelling Ruthenium Deposition in Atomic Layer Deposition of Ru-doped TaN, ***Rita Mullins,*** *M. Nolan,* Tyndall National Institute, Ireland	

	Room Baekeland	
1:30pm 1:45pm	**INVITED: ALE1-MoA-1** Chlorination and Ligand Addition for Thermal ALE of Metals, ***Jessica Murdzek,*** University of Colorado Boulder*; A. Lii-Rosales,* Lam Research Corp*; S. George,* University of Colorado Boulder	**Atomic Layer Etching** **Session ALE1-MoA** **Thermal and/or Isotropic ALE II** **Moderators:** Satoshi Hamaguchi, Osaka University, Japan, Adrie Mackus, Eindhoven University, Netherlands
2:00pm	**ALE1-MoA-3** Thermal ALE of Molybdenum via Low Temperature Oxidation in Ozone and Wet Chemical Oxide Dissolution, ***Antoine Pacco,*** IMEC, Belgium*; N. Teppei, S. Iwahata, A. Iwasaki,* SCREEN, Japan*; E. Altamirano Sanchzez,* IMEC, Belgium	
2:15pm	**ALE1-MoA-4** Selective Thermal Atomic Layer Etching of CoFeB Over MgO by Sequential Exposure to Chlorine and Diketone*, M. Konh,* ***Andrew V. Teplyakov,*** University of Delaware	
2:30pm	**ALE1-MoA-5** Ligand-Exchange and Etching Reactions between Metal Fluorides and Silane Precursors Containing Different Ligands*, A. Lii-Rosales, V. Johnson, A. Cavanagh,* University of Colorado Boulder*; A. Fischer, T. Lill,* Lam Research Corporation*; S. Sharma,* ***Steven George,*** University of Colorado Boulder	
2:45pm	**ALE1-MoA-6** Thermal Atomic Layer Etching of Zinc Sulfide (ZnS) Using Sequential $Al(CH_3)_3$ and HF Exposures, ***Taewook Nam****, J. Partridge, J. Murdzek, S. George,* University of Colorado Boulder	
3:00pm	**ALE1-MoA-7** Requirements Beyond Etch Per Cycle for Thermal ALE in Semiconductor Manufacturing, ***Martin McBriarty,*** EMD Electronics	
3:15pm		
3:30pm 3:45pm	Break & Exhibits	**Atomic Layer Etching** **Session ALE2-MoA** **Plasma and/or Anisotropic ALE I** **Moderators:** Rémi Dussart, GREMI CNRS/Université d'Orléans, France, Geun Young Yeom, Sungkyunkwan University, Korea (Republic of)
4:00pm 4:15pm	**INVITED: ALE2-MoA-11** From Barrel to ALE: A Lifetime in Etch/A Material and System Design Perspective, ***Mike Cooke,*** Oxford Instruments , UK	
4:30pm	**ALE2-MoA-13** Understanding the Self-limiting Behavior in Atomic Layer Etched HfO_2, ***Souvik Kundu****, T. Schram, F. Lazzarino, J. de Marneffe, P. Bezard, S. Decoster, I. Asselberghs,* IMEC, Belgium	
4:45pm	**ALE2-MoA-14** Area-Selective Atomic Layer Etching of SiO_2 Using Silane Coupling Agent*, A. Osonio,* ***Takayoshi Tsutsumi,*** Nagoya University, Japan*; B. Mukherjee, R. Borude,* ASM International, Netherlands*; N. Kobayashi, M. Hori,* Nagoya University, Japan	
5:00pm	**ALE2-MoA-15** Improving SiO_2 toSiN_x ALE Selectivity with Surface Pre-functionalization for SiO_2/SiN_x Stacks, ***Xue Wang,*** Colorado School of MInes*; R. Gasvoda, P. Kumar, E. Hudson,* Lam Research Corporation*; S. Agarwal,* Colorado School of Mines	
5:15pm	**ALE2-MoA-16** Plasma-Assisted Atomic Layer Etching of Silicon Nitride with Unfragmented Fluorocarbons, ***Chon Hei Lam****, M. Carruth,* University of Texas at Austin*; Z. Chen, J. Blakeney, P. Ventzek, S. Sridhar, A. Ranjan,* Tokyo Electron America Inc.*,; J. Ekerdt,* University of Texas at Austin	
5:30pm	**ALE2-MoA-17** Silicon Atomic Layer Etching with Surface Chlorination and Removal with Ar or He Plasma, ***Namgun Kim,*** Sungkyunkwan University, Korea (Republic of)*; D. Shin, J. Kim, C. Lee, K. Yoon,* Samsung Electronics, Korea (Republic of)*; Y. Kim, H. Chae,* Sungkyunkwan University, Korea (Republic of)	

Monday Afternoon, June 27, 2022

	Room Van Eyck	
1:30pm	**INVITED: AF3-MoA-1** Revisited Thermal and Plasma Enhanced Atomic Layer Deposition Processes of Metal Nitrides, ***Elisabeth Blanquet,*** SIMaP, CNRS , University Grenoble Alpes, France; *A. Mantoux,* SIMaP, University Grenoble Alpes, France; *F. Mercier,* SIMaP, CNRS, University Grenoble Alpes, France; *R. Boichot,* SIMAP, Grenoble-INP, University Grenoble Alpes, France; *I. Nuta,* SIMAP, CNRS, University Grenoble Alpes, France; *C. Jimenez,* LMGP, CNRS, University Grenoble Alpes, France	**ALD Fundamentals** **Session AF3-MoA** **Plasma Enhanced ALD** **Moderators:** Sumit Agarwal, Colorado School of Mines, Andreas Werbrouck, Ghent University, Belgium
1:45pm		
2:00pm	**AF3-MoA-3** Plasma-Enhanced Low-Temperature ALD Process for Molybdenum Oxide Thin Films and Its Evaluation as Hydrogen Gas Sensors, ***Jan-Lucas Wree,*** *J. Klimars,* Ruhr University Bochum, Germany; *N. Saliha,* Heinrich-Heine University Düsseldorf, Germany; *D. Rogalla,* Ruhr University Bochum, Germany; *K. Schierbaum,* Heinrich-Heine University Düsseldorf, Germany; *A. Devi,* Ruhr University Bochum, Germany	
2:15pm	**AF3-MoA-4** Low-Temperature Plasma-Enhanced Atomic Layer Deposition of Crystalline Tin Disulfide Thin Films, ***Femi Mathew,*** *N. Poonkottil, R. Karuparambil Ramachandran, B. Zhao, Z. Hens, C. Detavernier, J. Dendooven,* Ghent University, Belgium	
2:30pm	**AF3-MoA-5** Leveraging Non-Saturated Oxidation Conditions in Plasma-Enhanced Atomic Layer Deposition for Tuning Functional Properties of CoO_x Catalyst Layers, ***Matthias Kuhl,*** *A. Henning, L. Haller, L. Wagner, C. Jiang, V. Streibel, I. Sharp, J. Eichhorn,* Technical University Munich, Germany	
2:45pm	**AF3-MoA-6** Low-temperature HfO_2/SiO_2 Gate Stacked Film Grown by Neutral Beam Enhanced Atomic Layer Deposition, ***Daisuke Ohori,*** Tohoku University, Japan; *B. Ge,* Tohoku University, China; *Y. Chen,* National Yang Ming Chiao Tung University, Taiwan; *T. Ozaki,* Tohoku University, Japan; *K. Endo,* National Institute of Advanced Industrial Science and Technology, Japan; *Y. Li, J. Tarng,* National Yang Ming Chiao Tung University, Taiwan; *S. Samukawa,* Tohoku University, Japan	
3:00pm	**AF3-MoA-7** Effect of O_2 Plasma Exposure Time During Atomic Layer Deposition of Amorphous Gallium Oxide, ***Florian Maudet,*** Helmholtz Zentrum Berlin, Germany; *H. Kröncke, S. Banerjee, K. Nair, C. Van Dijck,* Helmholtz-Zentrum Berlin, Germany; *S. Wiesner, J. Albert, V. Deshpande,* Helmholtz Zentrum Berlin, Germany; *C. Dubourdieu,* Helmholtz-Zentrum Berlin, Germany	
3:15pm		
3:30pm	Break & Exhibits	
3:45pm		
4:00pm		
4:15pm	**AF4-MoA-12** Thickness Matters: Sintering Inhibition of Pt Nanoparticle Catalysts via Sequential Control of MgO Overcoats, ***Zhiwei Zhang,*** *M. Filez, M. Minjauw, J. Li, C. Detavernier, J. Dendooven,* Ghent University, Belgium	**ALD Fundamentals** **Session AF4-MoA** **Surface Science** **Moderators:** Annelies Delabie, IMEC, Belgium, Virginia Wheeler, U.S. Naval Research Laboratory
4:30pm	**AF4-MoA-13** Route to Low Temperature Area-Selective Atomic Layer Deposition of Ni, ***Himamshu Nallan,*** *X. Yang, J. Ekerdt,* The University of Texas at Austin	
4:45pm	**AF4-MoA-14** Hydrogen Plasma-Assisted Atomic Layer Deposition of sub-Nanometer AlO_x for Low-Impedance Contacts to GaN, ***Maximilian Christis,*** *A. Henning,* Walter Schottky Institute and Physics Department, Technical University of Munich, Germany; *J. Bartl,* Walter Schottky Institute, Physics Department, and WACKER-Chair for Macromolecular Chemistry, Department of Chemistry, Technical University of Munich, Germany; *A. Zeidler,* Walter Schottky Institute and Physics Department, Technical University of Munich, Germany; *B. Rieger,* Department of Chemistry, WACKER-Chair for Macromolecular Chemistry, Technical University of Munich, Germany; *M. Stutzmann, I. Sharp,* Walter Schottky Institute and Physics Department, Technical University of Munich, Germany	
5:00pm	**AF4-MoA-15** Tunable Ti^{3+}-Mediated Charge Carrier Dynamics of Atomic Layer Deposition Grown Amorphous TiO_2, ***Jesse Saari,*** *H. Ali-Löytty,* Surface Science Group, Tampere University, Finland; *M. Kauppinen,* Competence Centre for Catalysis and Department of Physics, Chalmers University of Technology, Sweden; *M. Hannula,* Surface Science Group, Tampere University, Finland; *R. Khan,* Photonic Compounds and Nanomaterials group, Tampere University, Finland; *K. Lahtonen,* Faculty of Engineering and Natural Sciences, Tampere University, Finland; *L. Palmolahti,* Surface Science Group, Tampere University, Finland; *A. Tukiainen,* Faculty of Engineering and Natural Sciences, Tampere University, Finland; *H. Grönbeck,* Competence Centre for Catalysis and Department of Physics, Chalmers University of Technology, Sweden; *N. Tkachenko,* Photonic Compounds and Nanomaterials group, Tampere University, Finland; *M. Valden,* Surface Science Group, Tampere University, Finland	
5:15pm	**AF4-MoA-16** Temperature-Time-Thickness (Ttt) Topography Maps: A Parameter Space Visualization Approach for ALD Processes, ***Parag Banerjee,*** *N. Berriel, U. Kumar, C. Feit,* University of Central Florida; *A. Arunachalam,* University of Texas at Dallas; *K. Basu,* University of Texas at Dallas, USA; *S. Seal,* University of Central Florida	
5:30pm	**AF4-MoA-17** *in situ* TEM Study to Unravel Dynamic Processes during the Synthesis of Ultrathin Crystalline ALD Nanotubes, ***Lilian Vogl,*** *P. Schweizer, L. Pethö, A. Sharma,* Empa, Swiss Federal Laboratories for Materials Science and Technology, Thun, Switzerland; *E. Spiecker,* Friedrich-Alexander-University Erlangen-Nürnberg (FAU), Germany; *J. Michler, I. Utke,* Empa, Swiss Federal Laboratories for Materials Science and Technology, Thun, Switzerland	

	Room Van Rysselberghe	
1:30pm	**AA1-MoA-1** ALD Preparation of TiO_2-MnO_x/SiO_2 Catalyst for Selective Catalytic Reduction of Nitrogen Oxides, ***Saeed Saedy,*** Delft University of Technology, Netherlands; *D. Kazimierz ,* Paul Scherrer Institut, Switzerland; *D. Urbanas,* Vilnius Gediminas Technical University, Lithuania; *D. Ferri,* Paul Scherrer Institut, Switzerland; *J. van Ommen,* Delft University of Technology, Netherlands	**ALD Applications** **Session AA1-MoA** **ALD for Catalysis** **Moderator:** Ashley R. Bielinski, Argonne National Laboratory
1:45pm	**AA1-MoA-2** Unravelling the Mechanism of Electrochemical Activation of ALD Cobalt Phosphate by Digital Control Over Its Chemical Composition, *G. van Straaten, R. Zhang, E. Kessels,* Eindhoven University of Technology, The Netherlands; *R. van de Sanden, M. Tsampas,* Dutch Institute for Fundamental Energy Research, Netherlands; ***Mariadriana Creatore,*** Eindhoven University of Technology, The Netherlands	
2:00pm	**AA1-MoA-3** Increasing ALD Complexity: How to Transform Ternary Oxide Films Into Tunable Bimetallic Thin Films and Nanoparticles, *J. Feng,* ***Matthias Filez,*** *M. Minjauw, E. Solano, C. Detavernier, J. Dendooven,* Ghent University, Belgium	
2:15pm	**AA1-MoA-4** Tunable TiO_2-BN-Pd Nanofibers by Combining Electrospinning and Atomic Layer Deposition to Enhance Photodegradation of Acetaminophen, ***Syreina Alsayegh,*** Institut Européen des Memabranes, France; *M. Bechelany,* Institut Européen des Membranes, France; *F. TANOS,* Institut Européen des membranes, France; *A. NADA, G. LESAGE, F. Zaviska,* Institut Européen des Membranes, France; *M. Weber,* Laboratoire des Matériaux et du Génie Physique LMGP , France	
2:30pm	**AA1-MoA-5** Ultra-Low Dimensional Ir-Ru Thin-Film by Atomic Layer Deposition on Porous Titanium Felt Substrate for Electrochemical Water Splitting Application, ***Rahul Ramesh,*** *N. Park, T. Cheon,* School of Materials Science and Engineering, Yeungnam University, Korea (Republic of); *M. Byeon, T. Hong,* Busan Center, Korea Basic Science Institute, Korea (Republic of); *S. Kim,* School of Materials Science and Engineering, Yeungnam University, Korea (Republic of)	
2:45pm	**AA1-MoA-6** Influence of Co/Ni Ratio on OER-catalytic Performance of Atomic Layer Deposited Nickel Cobalt Oxide, ***Renee van Limpt,*** Eindhoven University of Technology, Netherlands; *M. Lavorenti, M. Tsampas,* Dutch Institute for Fundamental Energy Research, Netherlands; *A. Creatore,* Eindhoven University of Technology, Netherlands	
3:00pm	**AA1-MoA-7** Fundamental Studies of s-ALD Grown Iridium Thin Films on Planar Substrates for Acidic Water Splitting, *J. Shen ,* TNO-Holst Centre, Netherlands; *P. Shirvanian,* TNO-STIP, Netherlands; *E. Balder,* TNO-Holst Centre, Netherlands; *B. van Dijk,* TNO-STIP, Netherlands; *N. Huijssen, A. Bronneberg, P. Poodt,* ***Mahmoud Ameen,*** TNO-Holst Centre, Netherlands	
3:15pm	**AA1-MoA-8** Functionalization of MoS_2 With Noble Metal by Atomic Layer Deposition for Hydrogen Evolution Reaction, ***JungYub Lee,*** *J. Kim, I. Sohn, S. Chung, H. Kim,* School of Electrical and Electronic Engineering, Yonsei University, Korea (Republic of)	
3:30pm	Break & Exhibits	
3:45pm		
4:00pm	**AA2-MoA-11** Conversion Reactions and Redox Changes on the Surface of Lithium-Ion Battery Cathode Materials during Chemical Vapor Treatment for ALD, *P. Darapaneni, A. Mane, Z. Hood,* ***Jeffrey Elam,*** Argonne National Laboratory	**ALD Applications** **Session AA2-MoA** **ALD for Energy Storage** **Moderators:** Ageeth Bol, University of Michigan, Ann Arbor, Philippe Vereecken, IMEC, Belgium
4:15pm	**AA2-MoA-12** Titanium Carboxylate MLD Hybrid Films as Protective Coatings for Lithium-Ion Batteries, ***Sofie S. T. Vandenbroucke,*** *L. Henderick,* Ghent University, Belgium; *L. De Taeye,* IMEC, Belgium; *J. Li,* Ghent University, Belgium; *K. Jans, P. Vereecken,* IMEC, Belgium; *J. Dendooven, C. Detavernier,* Ghent University, Belgium	
4:30pm	**AA2-MoA-13** Surface Coating and Grain Boundary Engineering of NMC811 Materials for Next-Generation Li-Ion Batteries, ***Zahra Ahaliabadeh,*** *V. Miikkulainen,* Aalto University, Finland; *M. Mäntymäki,* University of Helsinki, Finland; *T. Kallio,* Aalto University, Finland	
4:45pm	**AA2-MoA-14** Hybrid Inorganic/Organic Polycarbonate Track-Etched Membranes With Tunable Pore Size and Surface Functionality for Redox Flow Batteries, ***Rajesh Pathak,*** Applied Materials Division, Argonne National Laboratory; *X. Fang,* Indiana University–Purdue University Indianapolis; *R. Shevate, V. Rozyyev, A. Mane,* Applied Materials Division, Argonne National Laboratory; *X. Wei,* Indiana University–Purdue University Indianapolis; *Z. Xia,* Argonne Center for Molecular Engineering, Argonne National Laboratory; *L. Zhang,* Chemical Science and Engineering Division, Argonne National Laboratory; *S. Babinec,* Argonne Collaborative Center for Energy Storage Science (ACCESS), Argonne National Laboratory; *S. Darling,* Argonne Center for Molecular Engineering, Argonne National Laboratory; *J. Elam,* Applied Materials Division, Argonne National Laboratory	
5:00pm	**AA2-MoA-15** TiO_2 ALD Thin Films Characterization for SiC Capacitor, *R. César,* ***José Diniz,*** University of Campinas - UNICAMP, Brazil	
5:15pm	**AA2-MoA-16** ALD Can Enable Competitive, U.S.-Sourced Graphite Production, ***Arrelaine Dameron,*** *D. Higgs, B. Hughes,* Forge Nano	
5:30pm	**AA2-MoA-17** Plasma-Enhanced Atomic Layer Deposition of Nickel and Cobalt Phosphate for Lithium Ion Batteries, ***Lowie Henderick,*** *R. Blomme, J. Keukelier, M. Minjauw,* Ghent University, Belgium; *J. Meersschaut,* IMEC, Belgium; *J. Dendooven,* Ghent University, Belgium; *P. Vereecken,* IMEC, Belgium; *C. Detavernier,* Ghent University, Belgium	

ALD Fundamentals
Room Arteveldeforum & Pedro de Gante - Session AF-MoP
ALD Fundamentals Poster Session
5:45pm

AF-MoP-1 Unearthing Ruthenium Diazadienyls as Precursors for the ALD of Ru Thin Films: Precursor Assessment and ALD Process Development, ***David Zanders***, *J. Obenlüneschloss,* Ruhr University Bochum, Germany; *M. Gock,* Heraeus , Germany; *A. Devi,* Ruhr University Bochum, Germany

AF-MoP-2 Towards Greener ALD Processes: The Precursor Chemistry Is Key, ***Matthieu Weber***, LMGP - Grenoble INP , France; *O. Graniel, D. Muñoz-Rojas,* LMGP - Grenoble INP, France; *N. Boysen, A. Devi,* Ruhr Universität Bochum, Germany

AF-MoP-3 An IR Spectroscopy Study of the Degradation of Surface Bound Azido-Groups in High Vacuum, ***Sofie S. T. Vandenbroucke***, *M. Nisula, R. Petit,* Ghent University, Belgium; *R. Vos, K. Jans, P. Vereecken,* IMEC, Belgium; *J. Dendooven, C. Detavernier,* Ghent University, Belgium

AF-MoP-4 Nucleation of AlOx on ZrOx and ZrOx on AlOx studied by Low Energy Ion Scattering, ***Jan Tröger***, Tascon GmbH, Germany; *M. Näsi, T. Blomberg,* Picosun Oy, Finland; *R. ter Veen,* Tascon GmbH, Germany

AF-MoP-5 Characteristics Evaluation of SiO_2 Thin Film Deposited by Organic vs Inorganic Precursor in ALD, ***Jihyeok An***, *I. Yang, S. Yoon,* DUKSAN Techopia Co., Ltd, Korea (Republic of); *I. Park,* Hanyang University, Korea

AF-MoP-6 Microstructure and Electrical Properties of Conductive Nitride Films Grown by Plasma Enhanced Atomic Layer Deposition with Considerable Ion Bombardment, *I. Krylov,* Tower Semiconductor Ltd., Israel; ***Valentina Korchnoy***, *X. Xu, K. Weinfeld, E. Yalon, D. Ritter, M. Eizenberg,* Technion - Israel Institute of Technology, Israel

AF-MoP-7 Room-Temperature Atomic Layer Deposition of Iron Oxide and Its Surface Reaction; Explained by *in-Situ* Observation, *K. Yoshida, I. Nagata, K. Saito, M. Miura, K. Kanomata,* ***Fumihiko Hirose***, Yamagata University, Japan

AF-MoP-8 Simulation of Conformality of ALD Growth Inside Lateral Channels: Comparison between a Diffusion-Reaction Model and a Ballistic Model, *J. Velasco, J. Järvilehto, J. Yim, E. Verkama,* ***Riikka Puurunen***, Aalto University, Finland

AF-MoP-9 Chemisorption of Aminosilane Precursors on OH-terminated SiO_2 Surfaces during ALD of SiO_2, ***Heeju Son***, *k. Khumaini, H. Roh, H. Kim, W. Lee,* Sejong University, Korea (Republic of)

AF-MoP-10 Volatile Adducts of Cobalt and Nickel Halides, ***Timo Hatanpää***, *A. Vihervaara, M. Ritala,* University of Helsinki, Finland

AF-MoP-11 Fabrication of Aluminum Nitride with 160 °C Atomic Layer Deposition using Plasma Excited Ammonia, ***Kentaro Saito***, *K. Yoshida, M. Miura, K. Kanomata, B. Ahmmad, S. Kubota, F. Hirose,* Yamagata University, Japan

AF-MoP-12 On the Underestimation of the Low-Temperature Limit for ALD of MoO_x from $Mo(CO)_6$ Precursor, ***Kees van der Zouw***, *T. Aarnink, A. Kovalgin,* University of Twente, Netherlands

AF-MoP-13 $ZnO_{1-x}S_x$ Layer Growth and Composition by Thermal and Plasma ALD, ***Stefanie Spiering***, *D. Bagrowski, T. Magorian Friedlmeier, W. Hempel, T. Wohnhaas, J. Becker,* Zentrum für Sonnenenergie- und Wasserstoff-Forschung Baden-Württemberg (ZSW), Germany

AF-MoP-14 Effect of Precursors on Properties of Atomic Layer Deposited Cr-Ti-O Thin Films, ***Mahtab Salari Mehr***, University of Tartu, Institute of Physics, Estonia; *L. Aarik,* University of Tartu, Istitute of Physics, Estonia; *T. Jõgiaas, A. Tarre, H. Mändar,* University of Tartu, Institute of Physics, Estonia

AF-MoP-15 Ligand Exchange with a Novel Cyclic Alkyl Amido Plumbylene and Transition Metal Complexes, ***Kieran Lawford***, *G. Bačić,* Carleton University, Canada; *J. Masuda,* St. Mary's University, Canada; *S. Barry,* Carleton University, Canada

AF-MoP-16 Diaminosilane Precursors for the Atomic Layer Deposition of Iron Metal, ***Molly Alderman***, *S. Barry,* Carleton University, Canada

AF-MoP-17 Low-temperature Epitaxy of β-Ga_2O_3 Films via Hollow-cathode Plasma-assisted ALD, ***Saidjafarzoda Ilhom***, *A. Mohammad, D. Shukla, B. Willis,* University of Connecticut; *A. Okyay,* Stanford University; *N. Biyikli,* University of Connecticut

AF-MoP-18 Higher Effective Dielectric Constant of Hafnium Oxide When Grown with Hydrogen Peroxide Compared to Water Vapor, ***Jeffrey Spiegelman***, RASIRC; *H. Kashyap, A. Kummel,* University of California at San Diego

AF-MoP-19 Atomic Layer Deposition of Low-resistivity Molybdenum Nitride Using F-free Mo Precursors and NH_3 Plasma, ***Wangu Kang***, *J. Ahn, J. Han,* Seoul National University of Science and Technology, Korea (Republic of)

AF-MoP-20 Atomic Layer Deposition of Molybdenum Carbides for Advanced Metallization: The Influences of Mo Precursor and Post-Deposition Annealing, ***Ji Sang Ahn***, *W. Kang, J. Han,* Seoul National University of Science and Technology, Korea (Republic of)

AF-MoP-21 ALD of Niobium Oxide (Nb_2O_5) and Niobium-Doped Titanium Oxide (Nb:TiO_2) for Solar Cell Applications, ***Thomas Vincent***, *D. Coutancier, P. Dally,* IPVF (Institut Photovoltaïque d'Île-de-France), France; *M. Bouttemy, M. Frégnaux,* ILV (Institut Lavoisier de Versailles) - IPVF (Institut Photovoltaïque d'Île-de-France), France; *N. Schneider,* CNRS-IPVF, France

AF-MoP-22 Understanding the Grown Mechanism of Al_2O_3 Thin Films Using Plasma-Activated Deionized Water as Oxygen Source on Thermal ALD, ***William Chiappim***, Aeronautical Institute of Technology, Brazil; *J. Chaves,* Aeronautical Institute of Technology , Brazil; *B. Botan Neto, L. Gonçalves de Lima, M. Shiotani Marcondes, N. Galvão, A. da Silva Sobrinho, R. Sávio Pessoa,* Aeronautical Institute of Technology, Brazil

AF-MoP-23 Atomic Layer Deposition of Titanium Phosphate onto Reinforcing Fibers Using Titanium Chloride, Water, and Tris-(Trimethylsilyl)-Phosphate as Precursor, ***Pauline Dill***, *X. Ren, H. Hintersatz,* University of Technology Chemnitz, Germany; *M. Franz,* Fraunhofer Institute of Electronic Nano Systems ENAS, Germany; *D. Dentel, C. Tegenkamp, S. Ebert,* University of Technology Chemnitz, Germany

AF-MoP-24 Amorphous Carbon(a-C) Atomic Layer Deposition using CBr_4 Precursor, ***Tae Hyun Kim***, *M. Kim, S. Park, S. Chung, H. Kim,* Yonsei University, Korea

AF-MoP-25 Al_2O_3 Nanowire Growth on WSe_2 Flake by Using Low-temperature ALD, ***Chi-Chung Kei***, *C. Su, B. Liu,* Taiwan Instrument Technology Institute, National Applied Research Laboratories, Taiwan; *Y. Su,* Department of Electrophysics, National Yang Ming Chiao Tung University, Taiwan; *T. Lee, C. Cheng, H. Wang, I. Radu,* Corporate Research, TSMC, Taiwan; *W. Chang,* Department of Electrophysics, National Yang Ming Chiao Tung University, Taiwan

AF-MoP-26 Comparison of Atomic Layer Deposited ZrO2 Thin Film using Cp-based Zr Precursor and Newly Synthesized Cp-based Zr Precursor, ***Hyemi Han***, *S. Park, S. Na, S. Chung, H. Kim,* Yonsei University, Korea (Republic of)

AF-MoP-27 Thermal Atomic Layer Deposition of in_2O_3 Thin Films Using a Homoleptic Indium Triazenide Precursor and Water, ***Pamburayi Mpofu***, Linköping University, Sweden

AF-MoP-28 Nanoindentation of Amorphous Aluminium and Tantalum Oxide Nanolaminates, ***Helle-Mai Piirsoo***, *T. Jõgiaas, P. Ritslaid, K. Kukli, A. Tamm,* University of Tartu, Institute of Physics, Estonia

AF-MoP-29 Experimental and ReaxFF MD Studies for Boron Nitride ALD Growth from BCl_3 and NH_3 Precursors, ***Naoya Uene***, *T. Mabuchi,* Tohoku University, Japan; *M. Zaitsu,* Japan Advanced Chemicals Ltd., Japan; *Y. Jin,* Japan Advanced Chemicals Ltd., Japan, China; *S. Yasuhara,* Japan Advanced Chemicals Ltd., Japan; *A. van Duin,* Pennsylvania State University, USA; *T. Tokumasu,* Tohoku University, Japan

AF-MoP-30 Enhancement of Graphene-Related and Substrate-Related Raman Modes Through Dielectric Layer Deposition, ***Karolina Pietak***, Warsaw University of Technology Faculty of Chemistry, Poland; *J. Jagiełło, A. Dobrowolski,* University of Warsaw Faculty of Physics, Poland; *R. Budzich,* Warsaw University of Technology Faculty of Chemistry, Poland; *A. Wysmołek,* University of Warsaw Faculty of Physics, Poland; *T. Ciuk,* Łukasiewicz Research Network - Institute of Microelectronics and Photonics, Poland

AF-MoP-31 Interface Modification of Thermoelectric Materials with Oxide Compounds by Atomic Layer Deposition, ***Shiyang He***, *A. Bahrami, K. Nielsch,* Leibniz-Institut für Festkörper- und Werkstoffforschung Dresden e.V., Germany

AF-MoP-32 Comparative Study of the Growth Characteristics and Electrical Properties for Atomic Layer Deposited HfO_2 Films Using Cp-Based Hf Precursors, ***Seunggyu Na***, *S. Park, H. Yoon,* Yonsei University, Korea; *Y. Lee,* Stanford University; *S. Chung, H. Kim,* Yonsei University, Korea

AF-MoP-33 Role of Ligand Coordination Sphere on the Physico-Chemical Properties of New Mn Precursors: Structural, Thermal and DFT Investigations, ***Martin Wilken***, Ruhr-Universität Bochum, Germany; *A. Muriqi, M. Nolan,* Tyndall National Institute, University College Cork, Ireland; *A. Devi,* Ruhr Universität Bochum, Germany

AF-MoP-34 Surface Reactions During Nitrogen-Based Plasma Irradiation in Plasma-Enhanced Atomic Layer Deposition (PE-ALD) of Silicon Nitride, ***Abdullah Y. Jaber,*** Center for Atomic and Molecular Technologies - Osaka University, Japan; *M. Isobe, T. Ito, K. Karahashi, S. Hamaguchi,* Center for Atomic and Molecular Technologies, Osaka University, Japan

AF-MoP-35 Effects of Oxidant and Substrate on Film Properties and Interlayer Formation of Atomic Layer Deposited ZrO_2 Films, ***Seonyeong Park,*** *S. Na,* Yonsei University, Korea; *Y. Lee,* Stanford University; *S. Chung, H. Kim,* Yonsei University, Korea

AF-MoP-36 Zinc Precursor Development for Future ALD Film Applications, ***Atsushi Sakurai,*** *M. Hatase, M. Enzu, A. Yamashita, Y. Ooe, K. Takeda, R. Fukushima,* ADEKA CORPORATION, Japan

AF-MoP-37 Conformal Deposition of B_xC Thin Films from Triethylboron, ***Arun Haridas Choolakkal,*** *H. Högberg, J. Birch, H. Pedersen,* Linköping University, Sweden

AF-MoP-38 Effect of Insulator-to-Metal Transition (Imt) in Vo_2 Deposited by ALD, ***Aline Jolivet,*** *J. Cardin, C. Frilay,* CIMAP Normandie Université, ENSICAEN, UNICAEN, CEA, CNRS, France; *O. Debieu,* CIRIMAT-INPT, France; *P. Marie, S. Duprey, F. Lemarie, X. Portier, B. Horcholles,* CIMAP Normandie Université, ENSICAEN, UNICAEN, CEA, CNRS, France; *P. Bazin,* LCS Normandie Université, ENSICAEN, France; *J. More-Chevalier,* Institute of Physics, Czech Academy of Sciences, Czechia; *P. Fitl,* Institute of Physics, Czech Academy of Sciences, , Czechia; *S. Cichoň, J. Lančok,* Institute of Physics, Czech Academy of Sciences, Czechia; *W. Jadwisienczak,* School of Electrical Engineering and Computer Science, Ohio University; *D. Ingram,* Department of Physics and Astronomy, Ohio University; *C. Labbé,* CIMAP Normandie Université, ENSICAEN, UNICAEN, CEA, CNRS, France

AF-MoP-39 New ALD Processes for Y_2O_3 Using Molecularly Engineered Yttrium Formamidinates, ***Sebastian Beer,*** *N. Boysen,* Ruhr University Bochum, Germany; *A. Muriqi,* Tyndall National Institute, University College Cork, Ireland; *D. Zanders,* Ruhr University Bochum, Germany; *M. Nolan,* Tyndall National Institute, University College Cork, Ireland; *A. Devi,* Ruhr University Bochum, Germany

AF-MoP-40 Nb/V-Doped Transparent Conductive TiO_2 Films Synthesized by ALD: Effect of Dopant Content and Growing Conditions, ***Getaneh Diress Gesesse,*** CIMAP ENSICAEN, France; *O. Debieu,* CIRIMAT, Université de Toulouse, CNRS, Université Toulouse, France; *A. Jolivet, C. Frilay, S. Duprey, X. Portier, C. Dufour, P. Marie, C. Labbé,* CIMAP Normandie Université, ENSICAEN, UNICAEN, CEA, CNRS, France; *M. El-Roz,* Laboratoire Catalyse et Spectrochimie, CNRS, ENSICAEN, Université de Caen, France; *J. Cardin,* CIMAP Normandie Université, ENSICAEN, UNICAEN, CEA, CNRS, France

AF-MoP-42 Atomic Layer Deposition of Tin Oxide Thin Films Using a New Liquid Precursor Bis(methylcyclopentadienyl) Tin, ***Makoto Mizui,*** *N. Takahashi, F. Mizutani,* Kojundo Chemical Laboratory Co., Ltd., Japan; *M. Inoue, T. Nabatame,* National Institute for Materials Science, Japan

AF-MoP-43 Growth Rate of Atomic Layer Deposition of Zinc Oxide Thin Films Using Bis(*n*-propyltetramethylcyclopentadienyl)zinc, ***Fumikazu Mizutani,*** *M. Mizui, N. Takahashi,* Kojundo Chemical Laboratory Co., Ltd., Japan; *M. Inoue, T. Nabatame,* National Institute for Materials Science, Japan

AF-MoP-44 Monte Carlo Simulation in a Laptop for Understanding Physical Interaction of Atomic Layer Deposition Precursors, ***Bonwook Gu,*** Incheon National University, Korea (Republic of); *N. Le, C. Nguyen,* Incheon National University, Viet Nam; *S. Yasmeen,* Incheon National University, Pakistan; *K. Youngho,* Incheon National University, Korea (Republic of); *H. Lee,* incheon National University, Korea (Republic of)

AF-MoP-45 Atomic Layer Deposition of Tin Monosulfide Films Using a Novel Cyclic Amide Divalent Metalorganic Precursor and H_2S, ***Mohd Zahid Ansari,*** School of Materials Science and Engineering, Yeungnam University, Korea (Republic of); *P. Janicek,* 2Institute of Applied Physics and Mathematics, Faculty of Chemical Technology, University of Pardubice, Czechia; *D. Nandi,* School of Materials Science and Engineering, Yeungnam University, Korea (Republic of); *B. Shong,* Department of Chemical Engineering, Hongik University, Korea (Republic of); *S. Kim,* School of Materials Science and Engineering, Yeungnam University, Korea (Republic of)

AF-MoP-46 Density Functional Theory Study on the Selective Capping of Cobalt on Copper Interconnect, ***Khabib Khumaini,*** *R. Hidayat,* Sejong University, Korea (Republic of); *T. Mayangsari,* Universitas Pertamina, Indonesia; *T. Chowdhury, H. Kim,* Sejong University, Korea (Republic of); *S. Lee,* DNF Co. Ltd., Korea (Republic of); *W. Lee,* Sejong University, Korea (Republic of)

AF-MoP-47 A New Low Temperature PEALD Process for HfO_2 Thin Films, ***Florian Preischel,*** *D. Zanders,* Ruhr University Bochum, Germany; *A. Kostka,* Ruhr-University Bochum, Germany; *D. Rogalla, A. Devi,* Ruhr University Bochum, Germany

AF-MoP-48 Density Functional Theory Study on Atomic Layer Deposition of Silicon Nitride using Chlorosilane-type Precursors, ***Tanzia Chowdhury,*** *R. Hidayat, K. Khumaini, H. Son, H. Kim, W. Lee,* Sejong University, Korea (Republic of)

AF-MoP-49 PE-ALD of SiO_2 and Ti-doped SiO_2 in High Aspect Ratio Structures using Low Cost Precursors, ***Véronique Cremers,*** *G. Rampelberg, A. Werbrouck, J. Dendooven, C. Detavernier,* Ghent University, Belgium

AF-MoP-50 Importance of XPS Investigations of ALD Grown 2D Materials, ***Jhonatan Rodriguez Pereira,*** *R. Zazpe, J. Macak,* University of Pardubice, Czechia

AF-MoP-51 Atomic Layer Deposition for Modification of Various 1D Nanomaterials, ***Jan Macak,*** *R. Zazpe, H. Sopha,* University of Pardubice, Czechia; *M. Rihova,* Brno University of Technology, Czechia; *L. Hromadko, S. Thalluri,* University of Pardubice, Czechia

AF-MoP-52 Atomic Layer Deposition of Cobalt(II) Fluoride Thin Films, ***Elisa Atosuo,*** *M. Mäntymäki, K. Mizohata, M. Chundak, M. Leskelä, M. Ritala,* University of Helsinki, Finland

AF-MoP-53 Mechanistic Aspects of the Indium Nitride Growth under Atomic Layer Deposition Conditions: A Multiscale Modelling Study, ***Giane Damas,*** IFM, Sweden; *K. Rönnby,* Linköping University, IFM, Sweden; *H. Pedersen, L. Ojamäe,* Linköping University, Sweden

AF-MoP-54 Simple Nanoscale Thermal Techniques for the Measurement of ALD Grown Thin Films, ***Thomas Pfeifer,*** *S. Makarem, P. Hopkins,* University of Virginia, USA

AF-MoP-55 Investigation of Tris(trialkylsilyl)Phosphides in Atomic Layer Deposition, ***Jaroslav Charvot,*** University of Pardubice, Czechia; *M. Barr, J. Bachmann,* University of Erlangen-Nürnberg, Germany; *F. Bureš,* University of Pardubice, Czechia

AF-MoP-56 Plasma Enhanced Atomic Layer Deposition of Nickel Oxide from Nickelocene: Growth Characteristics and Photoelectrochemical Performance, ***Shane O'Donnell,*** *F. Jose, M. Snelgrove , C. McFeely , R. O'Connor,* Dublin City University, Ireland

AF-MoP-57 Computational Investigations of Precursor and Deposition Chemistry in ALD and AS-ALD, ***Ralf Tonner-Zech,*** Leipzig University, Germany

AF-MoP-58 Epitaxial-like Growth of Ga_2O_3 Films on GaN Substrate by ALD using GaCp and Combinations of H_2O and O_2 Plasma Gas and Annealing Process, ***Toshihide Nabatame,*** *M. Inoue, S. Soeya, T. Sawada, T. Onaya, A. Ohi,* National Institute for Materials Science, Japan; *M. Takahashi, K. Ito,* Osaka University, Japan; *N. Ikeda,* National Institute for Materials Science, Japan; *K. Tsukagoshi,* National institute for Materials Science, Japan

AF-MoP-59 The Impact of Oxygen Reactants on ALD InOx films using novel dimethyl[N^1-(tert-butyl)-N^2,N^2-dimethylethane-1,2-diamine]indium precursor, ***Seong-Hwan Ryu,*** *T. Hong, S. Choi,* Hanyang University, Korea; *J. Seok, J. Park,* Hansol Chemical, Korea (Republic of); *J. Park,* Hanyang University, Korea

AF-MoP-60 Development of an Innovative Method to Find New Efficient Gallium ALD Precursors, *P. Pavard,* CNRS-IPVF, France; *C. Gosmini,* LCM, École Polytechnique CNRS, France; *D. Lincot,* CNRS-IPVF, France; *V. Albin, V. Lair, A. Ringuede,* Chimie ParisTech, PSL University, CNRS, France; *A. Auffrant,* LCM, École Polytechnique CNRS, France; ***Nathanaelle Schneider,*** CNRS-IPVF, France

AF-MoP-61 Detailed Characterization of Bis(tri-isopropylcyclopentadienyl)strontium($Sr(iPr_3Cp)_2$) for the Understanding of $SrTiO_3$ Atomic Layer Deposition, ***Young Jae Park,*** Samsung Advanced Institute of Technology, Korea (Republic of); *J. Park,* Korea Research Institute of Standards and Science, Korea (Republic of); *J. Han, J. Lim, B. Choi,* Samsung Advanced Institute of Technology, Korea (Republic of); *S. Kang,* Korea Research Institute of Standards and Science, Korea (Republic of); *C. Baik,* Samsung Advanced Institute of Technology, Korea (Republic of)

AF-MoP-62 New Potential Synthesis Route of Molybdenum Nitride Nanosheets by Nitriding Molybdenum Disulphide Deposited by Atomic Layer Deposition (ALD), ***Julien Patouillard,*** SIMAP, Grenoble-INP, CNRS, France

AF-MoP-63 Phase-Transformation of as-Grown Crystalline VOx Films Using Ar-Plasma Annealing During Low-Temperature Hollow-Cathode Plasma-Assisted ALD Monitored via *in-Situ* Ellipsometry, ***Adnan Mohammad,*** *S. Ilhom,* University of Connecticut; *A. Okyay,* Stanford University; *B. Willis, N. Biyikli,* University of Connecticut

AF-MoP-64 ALD Process Monitoring and Optimisation by Self-Plasma OES, ***Mantas Drazdys,*** Centrer for Physical Sciences and Technology, Lithuania; *D. Astrauskyė,* Center for Physical Sciences and Technology, Lithuania; *R. Drazdys,* Center fro Physcial Sciences and Technology, Lithuania; *M. Audronis,* Nova Fabrica Ltd., Lithuania

AF-MoP-65 Growth of Boron Nitride by Atomic Layer Deposition Using the in-Situ Decomposition of Ammonium Carbamate, ***Ana Álvarez-Yenes,*** *M. Knez,* CIC nanoGUNE, Spain

AF-MoP-66 Modelling Atomic Layer Deposition of Noble Metals, ***Sylwia Klejna,*** AGH University of Science and Technology, Academic Centre for Materials and Nanotechnolog, Poland

AF-MoP-67 Effect of the N-Source on the Growth and Quality of Pe-ALD Tin Thin Films, ***Clémence Badie,*** Aix-Marseille University, France; *M. Barr, J. Bachmann,* Friedrich-Alexander-University Erlangen-Nürnberg (FAU), Germany; *T. Defforge, G. Gautier,* GREMAN, CNRS, Univ. Tours, France; *L. Santinacci,* Aix-Marseille University, France

AF-MoP-68 Silicon Nitride Grown by VHF (162 MHz) Plasma Enhanced Atomic Layer Deposition With Floating Multi-Tile Electrodes Using Di(Isopropylamino)Silane and N_2 Plasma, ***You Jin Ji,*** *H. Kim, K. Kim, J. Kang, D. Kim,* Sungkyunkwan University (SKKU), Korea (Republic of); *K. Kim,* Massachusetts Institute of Technology, Korea (Republic of); *D. Kim,* Sungkyunkwan University (SKKU), Korea (Republic of); *A. Ellingboe,* Dublin City University, Ireland; *G. Yeom,* Sungkyunkwan University (SKKU), Korea (Republic of)

AF-MoP-69 Computational Fluid Dynamics Study of ALD Processes: Benchmarking and Validation, ***Gizem Ersavas Isitman,*** *D. Izbassarov, R. L. Puurunen, V. Vuorinen,* Aalto University, Finland

AF-MoP-70 Feature-Scale Conformality of Atomic Layer Deposition from Continuum to Free Molecular Flow: How Knudsen Number Influences Thickness Profile Characteristics, *J. Velasco,* ***Christine Gonsalves,*** *G. Ersavas Isitman, J. Yim, E. Verkama, D. Izbassarov, V. Vuorinen, R. Puurunen,* Aalto University, Finland

AF-MoP-71 Nucleation Studies of Copper ALD on SiO_2 and Si_3N_4, ***Krzysztof Mackosz,*** Empa - Swiss Federal Laboratories for Materials Science and Technology , Switzerland; *A. Szkudlarek,* AGH University of Science and Technology, Academic Centre for Materials and Nanotechnology, Poland; *I. Utke,* Empa - Swiss Federal Laboratories for Materials Science and Technology, Switzerland

AF-MoP-72 Photocatalytic Degradation of Harmful Pollutants to Improve Indoor and Outdoor Air Quality, ***Tobias Graumann,*** *S. Pleger, C. Jacobs, C. Beyen, V. Sittinger,* Fraunhofer Institute for Surface Engineering and Thin Films IST, Germany

AF-MoP-73 High Vacuum Chemical Vapour Deposition: High Growth Rate ALD-Like Film Synthesis and Epitaxial CVD for Integrated Photonics, ***Wojciech Szmyt,*** *J. Geler-Kremer,* Empa, Swiss Federal Laboratories for Materials Science and Technology, Thun, Switzerland; *S. Abel,* Lumiphase AG, Switzerland; *J. Fompeyrine,* Lumiphase, AG, Switzerland; *P. Hoffmann,* Empa, Swiss Federal Laboratories for Materials Science and Technology, Thun, Switzerland

Emerging Materials
Room Arteveldeforum & Pedro de Gante - Session EM-MoP
Emerging Materials Poster Session
5:45pm

EM-MoP-2 Calcium and Vanadium Mixed Oxides With ALD, ***Fabian Krahl,*** *K. Nielsch,* Leibniz Institute for Solid State and Materials Research Dresden, Germany

EM-MoP-3 Atomic Layer Deposition of Highly Pure Metals for Memory Devices Preparation, ***Haojie Zhang,*** *B. Kalkofen, S. Parkin,* Max Planck Institute of Microstructure Physics, Germany

EM-MoP-4 Liquid Atomic Layer Deposition of Cu_2 (Bdc)$_2$ (Dabco) Through 3D-Printed Microfluidic Chips, ***Octavio Graniel,*** *D. Muñoz-Rojas,* University Grenoble Alpes, CNRS, Grenoble INP, LMGP, France; *J. Puigmartí-Luis,* Departament de Ciència dels Materials i Química Física, Institut de Química Teòrica i Computacional, ICREA, Catalan Institution for Research and Advanced Studies, Spain

EM-MoP-7 Atomic Layer Deposition of Yttrium Iron Garnet (YIG) for 3D Spintronics, ***Michaela Lammel,*** Institute for Metallic Materials, Leibniz Institute of Solid State and Materials Science, Germany; *D. Scheffler,* Institut für Festkörper- und Materialphysik, Technische Universität Dresden, Germany; *D. Pohl,* Dresden Center for Nanoanalysis (DCN), cfaed, Technische Universität Dresden, Germany; *P. Swekis,* Max-Planck Institute for Chemical Physics of Solids, Germany; *S. Reitzig,* Institut für angewandte Physik, Technische Universität Dresden, Germany; *S. Piontek,* Institute for Metallic Materials, Leibniz Institute of Solid State and Materials Science, Germany; *H. Reichlova, R. Schlitz,* Institut für Festkörper- und Materialphysik, Technische Universität Dresden, Germany; *K. Geishendorf,* Institute for Metallic Materials, Leibniz Institute of Solid State and Materials Science, Germany; *L. Siegl,* Universität Konstanz, Germany; *B. Rellinghaus,* Dresden Center for Nanoanalysis (DCN), cfaed, Technische Universität Dresden, Germany; *L. Eng,* Institut für angewandte Physik, Technische Universität Dresden, Germany; *K. Nielsch,* Institute for Metallic Materials, Leibniz Institute of Solid State and Materials Science, Germany; *S. Goennenwein,* Universität Konstanz, Germany; *A. Thomas,* Institut für Festkörper- und Materialphysik, Technische Universität Dresden, Germany

EM-MoP-13 ALD of Sulfide- and Selenide-Based Layered 2D Materials, ***Samik Mukherjee,*** *K. Nielsch,* Leibniz IFW Dresden, Germany

EM-MoP-14 Plasma Enhanced Atomic Layer Deposition of Scandium Nitride, ***Thomas Larrabee,*** *G. Rayner,* Kurt J. Lesker Company; *N. Strnad,* U.S. Army Research Laboratory; *N. O'Toole,* Kurt J. Lesker Company

EM-MoP-15 Yttrium Fluoride Coatings, ***Carlo Waldfried,*** Entegris, Inc.

Hybrid Materials & Infiltration
Room Arteveldeforum & Pedro de Gante - Session HM+EM+NS-MoP
Hybrid Materials & Infiltration Poster Session
5:45pm

HM+EM+NS-MoP-1 Converting Electrospun Polymer Fibers Into Metal Oxide Nanofibers, Nanobelts, and Core-Shell Fibers via Sequential Infiltration Synthesis, *R. Azoulay, M. Barzialy, I. Weisbord, R. Avrahami, E. Zussman,* Israel Institute of Technology, Israel; ***Tamar Segal-Peretz,*** Technion- Israel Institute of Technology, Israel

HM+EM+NS-MoP-2 First Principles Modelling of Growth of Hybrid Organic-Inorganic Films, ***Arbresha Muriqi,*** *M. Nolan,* Tyndall National Institute, University College Cork, Ireland

HM+EM+NS-MoP-3 Hybrid Organic-Inorganic Isoporous Membranes with Tunable Pore Sizes and Functionalities for Molecular Separation, *Z. Zhang,* Helmholtz-Zentrum hereon GmbH, Germany; ***Assaf Simon,*** *T. Segal-Peretz,* Technion IIT, Israel; *V. Abetz,* Helmholtz-Zentrum hereon GmbH, Germany

HM+EM+NS-MoP-4 Surface Functionalization of Porous Carbon Fibers by Vapor-Phase Methods for CO_2 Capture, ***Stephan Prünte,*** Eindhoven University of Technology, Netherlands; *G. van Straaten, D. van Eyck, J. van Dijck, H. de Neve,* Carbyon, Netherlands; *M. Creatore,* Eindhoven University of Technology, Netherlands

HM+EM+NS-MoP-5 Mechanical Behavior of Hybrid Organic-Inorganic Thin Films Fabricated by Sequential Infiltration Synthesis (SIS), ***Shachar Keren,*** *T. Segal-Peretz , N. Cohen,* Technion, Israel

HM+EM+NS-MoP-6 Plasma Enhanced-MLD Processes of Phosphorus-Containing Thin Films, ***Justin Lomax,*** University of Western Ontario, Canada; *E. Goodwin, P. Gordon,* Carleton University, Canada; *C. McGuiness,* Solvay, Canada; *S. Barry,* Carleton University, Canada; *C. Crudden,* Queen's University, Canada; *P. Ragogna,* University of Western Ontario, Canada

HM+EM+NS-MoP-7 Al_2O_3 Dot and Antidot Arrays Fabricated by Sequential Infiltration Synthesis in Hexagonally Packed PS-*b*-PMMA Block Copolymer Thin Films, ***Gabriele Seguini,*** *A. Motta, M. Bigatti, F. Caligiore,* CNR, Italy; *G. Rademaker, A. Gharbi, R. Tiron,* CEA/LETI-University Grenoble Alpes, France; *G. Tallarida, E. Cianci, M. Perego,* CNR, Italy

HM+EM+NS-MoP-8 Flexible and Conductive Zinc oxide – Zincone Nanolaminate Thin Films Deposited using Atomic and Molecular Layer Depositions, ***Seung Hak Song,*** *B. Choi,* Korea University, Korea (Republic of)

HM+EM+NS-MoP-9 Understanding of Polymer-Precursor Interactions during Sequential Infiltration Synthesis of Al_2O_3 in Polybutylene Succinate Films, ***Alessia Motta,*** *G. Seguini, C. Wiemer,* IMM-CNR, Italy; *R. Consonni, A. Boccia,* SCITEC-CNR, Italy; *G. Ambrosio, C. Baratto,* INO-CNR, Italy; *P. Cerruti,* IPCB-CNR, Italy; *S. Tagliabue,* Corapack srl., Italy; *M. Perego,* IMM-CNR, Italy

HM+EM+NS-MoP-10 On the Development and Atomic Structure of ZnO Nanoparticles Grown within Polymers using Sequential Infiltration Synthesis, ***Inbal Weisbord,*** *M. Barzilay,* Chemical Engineering Department, Technion, Israel; *A. Kuzmin, A. Anspoks,* Institute of Solid State Physics, University of Latvia; *T. Segal-Peretz,* Chemical Engineering Department, Technion, Israel

HM+EM+NS-MoP-11 Fabrication of Hafnium Oxide Nanostructures Using Block Copolymer Matrices via Sequential Infiltration Synthesis, ***Przemyslaw Pula,*** University of Warsaw, Poland

HM+EM+NS-MoP-12 ZIF-based Metal-Organic Frameworks for Cantilever Gas Sensors, ***Masoud Akbari,*** *C. Crivello, O. Graniel ,* Univ. Grenoble Alpes, CNRS, Grenoble INP, LMGP, France; *M. Defort , S. Basrour,* Univ. Grenoble Alpes, CNRS, Grenoble INP, TIMA, France; *K. Musselman,* Department of Mechanical and Mechatronics Engineering, University of Waterloo, Canada; *D. Muñoz-Rojas,* Univ. Grenoble Alpes, CNRS, Grenoble INP, LMGP, France

HM+EM+NS-MoP-13 Tuning the Thermal Properties of Molecular Layer-Deposited Hybrid Metalcone Films via Modulating Metal Mass, *M. Hoque,* University of Virginia, USA; *R. Nye,* North Carolina State University; *J. Tomko,* University of Virginia, USA; *G. Parsons,* North Carolina State University; ***Patrick Hopkins,*** University of Virginia

HM+EM+NS-MoP-14 Analysis of Rearranged Organic/Inorganic Hybrid 2D Tincone Film via Molecular Layer Deposition, ***GeonHo Baek***, *S. Lee, H. Kim, S. Choi, J. Park,* Hanyang University, Korea

HM+EM+NS-MoP-15 Molecuar Layer Depostion (Mld) of Polyamide 6,4, ***Marina Borraz Casanova***, CIC nanoGUNE, Spain

Nanostructure Synthesis and Fabrication
Room Arteveldeforum & Pedro de Gante - Session NS-MoP
Nanostructures Synthesis and Fabrication Poster Session
5:45pm

NS-MoP-1 Atmospheric Pressure ALD to Increase Organic Solvent Resistance of PDMS, ***Albert Santoso***, *A. Damen, S. Khedoe, V. van Steijn, R. van Ommen,* Delft University of Technology, Netherlands

NS-MoP-2 The Fabrication of Heterojunctions by Atomic Layer Deposition for Gas Sensing Application, ***Muhammad Hamid Raza***, *N. Pinna,* Humboldt-Universität zu Berlin, Germany

NS-MoP-4 Combining Initiated Chemical Vapor Deposition and Plasma-Enhanced Atomic Layer Deposition: A Study of Initial Growth and Interface Formation, ***Lisanne Demelius***, *K. Unger, A. Coclite,* Graz University of Technology, Austria

NS-MoP-11 Synthesis of Novel Composite Thin Film Systems With Outstanding Mechanical Properties, *L. Pethö,* Empa, Swiss Federal Laboratories for Materials Science and Technology, Thun, Switzerland; *C. Guerra,* Swiss Cluster, Switzerland; *T. Xie, T. Edwards, J. Michler, X. Maeder,* ***Ivo Utke***, Empa, Swiss Federal Laboratories for Materials Science and Technology, Thun, Switzerland

Plenary Session
Room Auditorium - Session PS-TuM1
Plenary Session II
Moderators: Jean-François de Marneffe, IMEC, Belgium, Erwin Kessels, Eindhoven University of Technology, Netherlands, Harm C.M. Knoops, Oxford Instruments Plasma Technology, Netherlands

8:30am		
8:45am	**INVITED: PS-TuM1-2** Plenary Lecture: Atomic Layer Etching: Real World Utilization and Future Outlook, ***Angélique Raley,*** Tokyo Electron America, Inc.*; H. Masanobu,* Tokyo Electron Miyagi, Ltd., Japan*; M. Hiromasa,* Tokyo Electron Miyagi Ltd., Japan*; T. Nishizuka,* Tokyo Electron Miyagi, Ltd., Japan*; P. Abel, J. Bannister,* Tokyo Electron America, Inc.*; P. Biolsi,* TEL Technology Center, America, LLC*; A. Ranjan, O. Zandi,* Tokyo Electron America, Inc.*; K. Subhadeep,* TEL Technology Center, America, LLC*; T. Hurd, Q. Wang, C. Netzband, S. Voronin, S. Arkalgud,* Tokyo Electron America, Inc.	
9:00am		
9:15am		
9:30am	**INVITED: PS-TuM1-5** ALD 2021 Innovator Awardee Talk: Up, Down and All Around: Controlling Atomic Placement in ALD, ***Stacey Bent,*** Stanford University	
9:45am		
10:00am	**PS-TuM1-7** ALE Student Award Finalist Talk: Direct Integration of HfO_2 ALD and Surface Selective ALE for Controlled HfO_2 Film Growth, ***Landon Keller,*** *S. Song, G. Parsons,* North Carolina State University	
10:15am	**PS-TuM1-8** ALE Student Award Finalist Talk: First-principles Insight into Non-equilibrium Chemistry in PEALE of Silicon Nitride with Hydrofluorocarbons, ***Erik Cheng,*** *G. Hwang,* University of Texas at Austin*; P. Ventzek, Z. Chen, S. Sridhar, A. Ranjan,* Tokyo Electron America	
10:30am	Break & Exhibits	

	ALD Applications **Room Auditorium - Session AA1-TuM2** **ALD for Medical Applications** **Moderators:** Mato Knez, CIC nanoGUNE, Spain, Angel Yanguas-Gil, Argonne National Lab	**ALD Applications** **Room Van Rysselberghe - Session AA2-TuM2** **ALD for FEOL** **Moderators:** Cheol Seong Hwang, Seoul National University, Korea (Republic of), Jonas Sundqvist, BALD Engineering AB, Sweden
10:45am	**AA1-TuM2-1** Plasma-assisted ALD of IrO_2 for Neuroelectronic Applications, ***Valerio Di Palma***, *A. Pianalto,* University of Milano Bicocca, Department of Materials Science, Italy; *M. Perego, G. Tallarida,* CNR-IMM, Unit of Agrate Brianza, Italy; *M. Fanciulli,* University of Milano Bicocca, Department of Materials Science. CNR-IMM, Unit of Agrate Brianza, Italy	**INVITED: AA2-TuM2-1** High ALD Equipment and Precursor Demand and 5-Year Forecast Due to Continued Semiconductor Device Scaling and Fab Expansions, ***Jonas Sundqvist***, Stockholm, Sweden
11:00am	**AA1-TuM2-2** Hydrophilic Surface Modification of Microfluidic Channel by Room Temperature PEALD SiO_2, ***Chien-Wei Chen***, Taiwan Instrument Research Institute, NARLabs, Taiwan; *Y. Yu, B. Li,* National Yang Ming Chiao Tung University, Taiwan	
11:15am	**AA1-TuM2-3** Atomic Layer Deposition (Ald) on 5-Aminosalicylic Acid for Delayed and Targeted Drug Release Treatment of Inflammatory Bowel Disease, ***Jaynlynn Sosa***, University of Central Florida; *P. Banerjee,* University of Central Florida	**AA2-TuM2-3** High-k Gate Dielectrics for ScAlN Barrier HEMT Structures, ***Neeraj Nepal***, *V. Wheeler,* U.S. Naval Research Laboratory; *. Downey,* U.S. Army Research Laboratory; *. Hardy, D. Meyer,* U.S. Naval Research Laboratory
11:30am	**INVITED: AA1-TuM2-4** Atomic Layer Deposition Enables Dimensionless, Biocompatible Encasings for Medical Implants Pro-Longing Their Lifetime, ***Juhani Taskinen***, *R. Ritasalo, M. Pudas, T. Blomberg, M. Matvejeff,* Picosun Oy, Finland	**AA2-TuM2-4** Ultra-thin High-κ Dielectrics Growth by ALD on MoS_2, ***Emanuela Schilirò***, *R. Lo Nigro,* CNR-IMM, Italy; *S. Panasci,* CNR-IMM, Department of Physics-University of Catania, Italy; *A. Mio,* CNR-IMM, Italy; *S. Agnello, F. Gelardi,* Department of Physics and Chemistry, University of Palermo, Italy; *F. Roccaforte, F. Giannazzo,* CNR-IMM, Italy
11:45am		**AA2-TuM2-5** Fabrication of a MOSFET Based on ZnO Using an Atomic Layer 3D-printer, ***Sonja Stefanovic***, *N. Gheshlaghi,* Friedrich-Alexander-University Erlangen-Nürnberg (FAU), Germany; *I. Kundrata,* Friedrich-Alexander-University Erlangen-Nürnberg (FAU), Dominica; *D. Zanders,* Ruhr Universität Bochum, Germany; *J. Bachmann,* Friedrich-Alexander-University Erlangen-Nürnberg (FAU), Germany

	ALD Fundamentals **Room Van Eyck - Session AF-TuM2** **Simulation, Modeling, and Theory of ALD II** **Moderators:** Simon Elliot, Schrödinger, Inc., Michael Nolan, University College Cork, Ireland	**Atomic Layer Etching** **Room Baekeland - Session ALE-TuM2** **Atomic Layer Cleaning (ALC), ALE Integrated with ALD, and Alternative ALE Approaches** **Moderators:** Jessica Murdzek, University of Colorado Boulder, Fred Roozeboom, University of Twente & LionVolt B.V., Netherlands
10:45am	**INVITED: AF-TuM2-1** Theoretical Understanding on the Chemical Principles of Atomic Layer Deposition, ***Bonggeun Shong***, Hongik University, Korea (Republic of)	**INVITED: ALE-TuM2-1** ALE from Selective Etching to Selective Deposition, ***Christophe Vallee***, SUNY POLY, Albany; *M. Bonvalot, M. Jaffal,* LTM-CNRS, University Grenoble Alpes, France; *C. Mannequin,* Tsukuba University, Japan; *R. Gassilloud, N. Posseme, T. Chevolleau,* CEA/LETI-University Grenoble Alpes, France
11:00am		
11:15am	**AF-TuM2-3** A Study of Area-Selective TiO_2 Deposition Using First Principles Based Thermodynamic Simulations, ***Yukio Kaneda***, Sony Semiconductor Solutions Corporation, Belgium; *E. Marques,* Katholieke Universiteit Leuven, Belgium; *S. Armini, A. Delabie, M. Setten, G. Pourtois,* IMEC, Belgium	**ALE-TuM2-3** Surface Modification for Atomic Layer Etching of TiAlC Using Floating Wire-Assisted Liquid Vapor Plasma at Medium Pressure, ***Thi-Thuy-Nga Nguyen***, Nagoya University, Japan; *K. Shinoda, H. Hamamura,* Hitachi, Japan; *K. Maeda, K. Yokogawa, M. Izawa,* Hitachi High-Tech, Japan; *K. Ishikawa, M. Hori,* Nagoya University, Japan
11:30am	**AF-TuM2-4** Chemistry of Plasma Enhanced Atomic Layer Deposition of Co using CoCp2 and Nitrogen/Hydrogen Plasma, ***Ji Liu***, *M. Nolan,* Tyndall National Institute, University College Cork, Ireland	**ALE-TuM2-4** Atomic Layer Processing Approach for Achieving Abrupt Epitaxial Interfaces on AlN, ***Virginia Wheeler***, *D. Boris, A. Lang, G. Jernigan, N. Nepal, S. Walton,* Naval Research Laboratory
11:45am	**AF-TuM2-5** Adsorption Mechanics of Trimethyl Metal Precursors on AlN, GaN and InN, ***Karl Rönnby***, *H. Pedersen, L. Ojamäe,* Linköping University, Sweden	

Tuesday Afternoon, June 28, 2022

	Room Auditorium	
1:30pm	**AM1-TuA-1** Atomic Layer Deposition Equipment Used in Industrial Production of More Than Moore Devices, ***Taguhi Yeghoyan,*** Yole Développement, France	**ALD for Manufacturing** **Session AM1-TuA** **ALD for Manufacturing I** **Moderators:** Hardik Jain, TNO/Holst Center, Netherlands, Maksym Plakhotnyuk, ATLANT 3D Nanosystems
1:45pm	**AM1-TuA-2** Spatial ALD on Large-Area Porous Substrates: How to Avoid Supply Limitation and Maximize Precursor Efficiency?, ***Paul Poodt,*** SALDtech B.V., Netherlands	
2:00pm	**AM1-TuA-3** Atmospheric-Pressure Plasma-Assisted Spatial Atomic Layer Deposition of Silicon Nitride, ***Jie Shen,*** TNO-Holst Centre, Netherlands; *F. Roozeboom,* University of Twente, Netherlands; *A. Mameli,* TNO-Holst Centre, Netherlands	
2:15pm	**INVITED: AM1-TuA-4** Recent Development of Large Scale ALD for Non-IC industrial Applications, ***Wei-Min Li,*** Jiangsu Leadmicro Nano Technology Co. Ltd., China	
2:30pm		
2:45pm	**AM1-TuA-6** An Innovative Method for in Situ Calorimetry of ALD/ALE Surface Reactions, ***Anil Mane,*** *J. Elam,* Argonne National Laboratory	
3:00pm	**AM1-TuA-7** Production-Suitable 200 Mm Batch ALD/MLD Thin Film Encapsulation Toward Flexible OLED Manufacturing, ***Jesse Kalliomäki,*** *E. Rimpilä, R. Ritasalo, T. Sarnet,* Picosun Oy, Finland	
3:15pm	**AM1-TuA-8** Roll-to-Roll ALD Coatings for Battery Cell Interfaces at Production Scale, ***Andrew Cook,*** Beneq, Finland	
3:30pm	Break & Exhibits	
3:45pm		
4:00pm	**AM2-TuA-11** High-Throughput Nanocoating Technology for Energy Applications, ***Dmitrii Osadchii,*** Delft IMP B.V., Netherlands	**ALD for Manufacturing** **Session AM2-TuA** **ALD for Manufacturing II** **Moderators:** Rong Chen, Huazhong University of Science and Technology, China, Ruud van Ommen, Delft University of Technology, Netherlands
4:15pm	**AM2-TuA-12** Optimizing Vapor Delivery of Transition-Metal Diazadienyl Complexes for ALD Processes, ***James Maslar,*** *B. Kalanyan,* NIST-Gaithersburg; *V. Dwivedi,* NASA Goddard Space Flight Center; *D. Moser,* EMD Electronics	
4:30pm	**INVITED: AM2-TuA-13** Inherently Selective Atomic Layer Process Based on Spatial Micronozzles: Microreactor Selective Area Direct Atomic Processing (µSADALP), ***Maksym Plakhotnyuk,*** ATLANT 3D Nanosystems, Denmark; *I. Kundrata,* ATLANT 3D Nanosystems, Germany; *J. Bachmann,* Friedrich-Alexander-University Erlangen-Nürnberg (FAU), ATLANT 3D Nanosystems, Germany	
4:45pm		
5:00pm	**AM2-TuA-15** Atomic Layer Rastering, ***Ivan Kundrata,*** ATLANT 3D Nanosystems ApS, Slovakia	
5:15pm	**AM2-TuA-16** Maskless Localized Atomic Layer Deposition: Surface Structuration and Functionalization, *L. Midani, W. Ben-Yahia, V. Salles,* Université Lyon 1, France; ***Catherine Marichy,*** CNRS-LMI, France	
5:30pm	**AM2-TuA-17** New Spatial ALD/CVD Approaches for Area-Selective Deposition, ***David Muñoz-Rojas,*** CNRS-LMGP, Université Grenoble Alpes, France; *C. Masse de la Huerta,* LMGP, France; *V. Nguyen,* phenikaa University, Viet Nam; *A. Sekkat, C. Crivello, F. Toldrá-Reig, C. Jimenez, O. Graniel, M. Dibenedetto,* LMGP, France	

Tuesday Afternoon, June 28, 2022

	Room Baekeland	
1:30pm 1:45pm	**INVITED: ALE1-TuA-1** Surface Reaction Mechanisms by Metal-Organic Compound Formations in Atomic Layer Etching Processes, ***Tomoko Ito,*** Osaka University, Japan*; A. Basher,* King Abdullah University of Science and Technology, Saudi Arabia*; K. Karahashi, S. Hamaguchi,* Osaka University, Japan	**Atomic Layer Etching** **Session ALE1-TuA** **In situ Studies, Mechanisms and Modeling of ALE** **Moderators:** Sumit Agarwal, Colorado School of Mines, Dmitry Suyatin, Lund University, Sweden
2:00pm	**ALE1-TuA-3** Atomic Layer Etching of Al_2O_3 on Metallic Substrates Using *in situ* Auger Electron Spectroscopy, ***Andrew Cavanagh****, S. George,* University of Colorado at Boulder	
2:15pm	**ALE1-TuA-4** In-situ Optical Emission Spectroscopy as a Tool to Characterize Cyclic Quasi-Atomic Layer Etching, ***Yoana Ilarionova,*** Lund University, Sweden*; M. Karimi,* AlixLabs, Sweden*; D. Lishan, D. Geerpuram,* Plasma-Therm LLC*; R. Jafari Jam, D. Suyatin, J. Sundqvist,* AlixLabs, Sweden*; I. Maximov,* Lund University, Sweden	
2:30pm	**ALE1-TuA-5** Atomic Layer Etching of CAR/SOG in EUV Patterning of 300 Mm Wafers - Selectivity and Roughness Mechanisms, ***Francois Loyer****, P. Bezard, R. Blanc, F. Lazzarino, S. De Gendt,* IMEC, Belgium	
2:45pm	**ALE1-TuA-6** Ab Initio Calculations on the Thermal Atomic Layer Etching of Copper, ***Xiao Hu****, J. Schuster,* Chemnitz University of Technology, Fraunhofer Institute for Electronic Nano Systems, Center for Materials, Architectures and Integration of Nanomembranes (MAIN), Research Fab Microelectronics Germany., Germany	
3:00pm	**ALE1-TuA-7** Transport and Reaction Kinetics Modelling of Thermal ALE in High Aspect Ratio Hafnium Oxide Structures, ***Andreas Fischer****, D. Mui, A. Routzahn, R. Gasvoda, J. Sims, T. Lill,* Lam Research Corporation	
3:15pm	**ALE1-TuA-8** Damage Formation in the Underlying Silicon after the Removal of Silicon Nitride by Atomic Layer Etching: A Molecular Dynamics Study, ***Jomar Tercero,*** Osaka University, Japan*; A. Hirata,* Sony Semiconductor Solutions Corporation, Japan*; M. Isobe, K. Karahashi,* Osaka University, Japan*; M. Fukasawa,* Sony Semiconductor Solutions Corporation, Japan*; S. Hamaguchi,* Osaka University, Japan	
3:30pm 3:45pm	Break & Exhibits	**Atomic Layer Etching** **Session ALE2-TuA** **Plasma and/or Anisotropic ALE II** **Moderators:** Ankur Agarwal, KLA-Tencor, Christophe Vallee, SUNY POLY, Albany
4:00pm 4:15pm	**INVITED: ALE2-TuA-11** Plasma Processes for Isotropic and Anisotropic Atomic Layer Etching, ***Adrie Mackus,*** Eindhoven University of Technology, Netherlands	
4:30pm	**ALE2-TuA-13** SF_6 and Ar Plasma Based Atomic Layer Etching of Gallium Nitride (GaN), ***Lamiae Hamraoui****, T. Tillocher, P. Lefaucheux,* GREMI CNRS/Université d'Orléans, France*; M. Boufnichel,* STMicroelectronics Tours, France*; R. Dussart,* gremi CNRS/Université d'Orléans, France	
4:45pm	**ALE2-TuA-14** SF_6 Physisorption based Cryo-ALE of Silicon, ***Jack Nos****, G. Antoun, T. Tillocher, P. Lefaucheux,* GREMI CNRS/Université d'Orléans, France*; A. Girard, C. Cardinaud,* IMN CNRS/Université de Nantes, France*; R. Dussart,* GREMI CNRS/Université d'Orléans, France	
5:00pm	**ALE2-TuA-15** Precision and Repeatability of ALE Process in AlGaN/GaN Layer by in-Situ Etch Depth Monitoring, ***Sungjin Cho,*** Oxford Instruments Plasma Technology, UK*; M. Loveday,* 1Oxford Instruments Plasma Technology, UK*; A. Newton,* Oxford Instruments Plasma Technology, UK*; D. Cornwell, M. Binetti, T. Zettler,* Laytec AG, Germany	
5:15pm	**ALE2-TuA-16** Investigation of Self-Limiting Sputtering of Fluorinated Al_2O_3 and HfO_2: Where's the Limit?, ***Nicholas Chittock****, W. Hoek, S. Balasubramanyam,* Eindhoven University of Technology, The Netherlands*; J. Escandon Lopez, K. Buskes,* ProDrive Technologies, Netherlands*; H. Knoops,* Oxford Instruments Plasma Technology, UK*; E. Kessels, A. Mackus,* Eindhoven University of Technology, The Netherlands	
5:30pm	**ALE2-TuA-17** Isotropic Plasma ALE of Al_2O_3 using F-based Plasma and $AlMe_3$: Key Parameters, Upscaling and Applications, ***Yi Shu,*** Oxford Instruments Plasma Technology, UK*; N. Chittock, E. Kessels, A. Mackus,* Eindhoven University of Technology, Netherlands*; A. O'Mahony,* Oxford Instruments Plasma Technology, UK*; H. Knoops,* Oxford Instruments Plasma Technology, Netherlands	

Tuesday Afternoon, June 28, 2022

	Room Van Eyck	
1:30pm	**AF1-TuA-1** Reaction Mechanisms of ALD of Transition Metal Oxides from Metal Amido Complexes and Water, ***Giulio D'Acunto***, *R. Timm, J. Schnadt,* Lund University, Sweden	**ALD Fundamentals** **Session AF1-TuA** **Characterization I** **Moderators:** Jan-Willem Clerix, Imec , Belgium, Aile Tamm, University of Tartu, Estonia
1:45pm	**AF1-TuA-2** An *in-Vacuo* X-Ray Photoelectron Spectroscopy Study of the Reaction of Trimethylaluminum With Water, Oxygen and Argon Plasma for Low Temperature Atomic Layer Deposition, *L. Cao,* ***Jin Li****, M. Minjauw, J. Dendooven, C. Detavernier,* Department of Solid State Sciences, Ghent University, Belgium	
2:00pm	**AF1-TuA-3** *In Vacuo* Cluster Tool for Studying Reaction Mechanisms in ALD and ALE Processes, ***Heta-Elisa Nieminen****, M. Chundak, M. Putkonen, M. Ritala,* University of Helsinki, Finland	
2:15pm	**AF1-TuA-4** Watching the ALD of Pt Films in Real-Time, ***Esko Kokkonen****,* Max IV Laboratory, Sweden*; M. Kaipio, H. Nieminen,* University of Helsinki, Finland*; F. Rehman,* Lund University, Sweden*; V. Miikkulainen,* Aalto University, Finland*; M. Putkonen, M. Ritala, S. Huotari,* University of Helsinki, Finland*; J. Schnadt,* Lund University, Sweden*; S. Urpelainen,* University of Oulu, Finland	
2:30pm	**AF1-TuA-5** In Situ X-Ray Studies of Lamellar Dichalcogenides Prepared by Molecular Layer Deposition and Thermal Annealing, ***Petros Abi Younes****,* CEA/LETI-University Grenoble Alpes, France*; E. Skopin,* LTM - MINATEC - CEA/LETI, France*; M. Zhukush, C. Camp,* Univ. Lyon, CNRS-UCB Lyon 1, France*; N. Aubert , G. Ciatto,* Synchrotron SOLEIL Beamline SIRIUS, France*; N. Schneider,* UMR-IPVF, CNRS, France*; M. Richard,* ESRF, France*; N. Gauthier,* CEA/LETI-University Grenoble Alpes, France*; E. Quadrelli,* Univ. Lyon, CNRS, France*; D. Rouchon,* CEA/LETI-University Grenoble Alpes, France*; H. Renevier,* Laboratoire des Matériaux et du Génie Physique, France	
2:45pm	**AF1-TuA-6** *In Situ* Spectroscopic Ellipsometry of 3D Patterned Nanostructures for Real Time Profile Evolution During ALD, ***S. Novia Berriel****,* University of Central Florida*; N. Keller,* Onto Innovation*; P. Banerjee,* University of Central Florida	
3:00pm	**INVITED: AF1-TuA-7** Pyroelectric Calorimetry: Measuring the Time-Resolved Heat of ALD Half Reactions, ***Ashley R. Bielinski****, A. Martinson,* Argonne National Laboratory	
3:15pm		
3:30pm	Break & Exhibits	
3:45pm		
4:00pm	**INVITED: AF2-TuA-11** Get the Full Picture: Full-Range Time-Resolved In Situ Mass Spectrometry During ALD, ***Andreas Werbrouck****, J. Dendooven, C. Detavernier,* Ghent University, Belgium	**ALD Fundamentals** **Session AF2-TuA** **Characterization II** **Moderators:** Bart Macco, Eindhoven University of Technology, Netherlands, Juan Santo-Domingo Peñaranda, Ghent University, Belgium
4:15pm		
4:30pm	**AF2-TuA-13** Strategies to Produce Boron-Containing ALD Thin Films Using Trimethyl Borate Precursor: From Thermal to Plasma to Combined-Plasma Approach, ***Arpan Dhara****, A. Werbrouck, J. Li, J. Dendooven, C. Detavernier,* Ghent University, Belgium	
4:45pm	**AF2-TuA-14** Examining Large Grain Growth and Low Temperature Crystallization Kinetics for TiO_2 Thin Films Prepared by Atomic Layer Deposition (ALD), ***Jamie Wooding****, K. Kalaitzidou, M. Losego,* Georgia Institute of Technology	
5:00pm	**AF2-TuA-15** Deposition and Characterization of Hafnium Dioxide Films Embedding Nickel Nanoparticles, ***Markus Otsus****, J. Merisalu, T. Viskus, T. Kahro, A. Tarre, K. Kalam, A. Kasikov, P. Ritslaid, J. Kozlova, K. Kukli, A. Tamm,* University of Tartu, Estonia	
5:15pm	**AF2-TuA-16** Biased QCM for Studies of Reductive Surface Chemistry Induced by Plasma Electrons, ***Pentti Niiranen****, H. Nadhom, D. Lundin, H. Pedersen,* Linköping University, IFM, Sweden	
5:30pm	**AF2-TuA-17** NHC Monolayer Growth Behaviour and Film Durability Measured by QCM, ***Eden Goodwin****,* Carleton University, Canada*; A. Veinot, I. Singh,* Queens University, Canada*; P. Ragogna,* Western University, Canada*; C. Crudden,* Queens University, Canada*; S. Barry,* Carleton University, Canada	

Tuesday Afternoon, June 28, 2022

	Room Van Rysselberghe	
1:30pm	**INVITED: AA1-TuA-1** Atomic Layer Deposition for Display from Photoluminescent Materials to Devices and Encapsulation, ***Rong Chen,*** State Key Laboratory of Digital Manufacturing Equipment and Technology, School of Mechanical Science and Engineering, China	**ALD Applications** **Session AA1-TuA** **ALD for Display Applications** **Moderators:** Jin-Seong Park, Hanyang University, Korea (Republic of), Ganesh Sundaram, Veeco-CNT
1:45pm		
2:00pm	**AA1-TuA-3** High-Stability and High-Performance PEALD-IZO/IGZO Top-Gate Thin-Film Transistor via Nano-Scale Thickness Control, *J. Park,* ***Yoon-Seo Kim****, W. Lee, H. Oh, T. Hong,* Hanyang University, Korea	
2:15pm	**AA1-TuA-4** Atomic Layer Infiltration Enabled Flexible Encapsulations, ***Fan Yang****, Y. Zhang, D. Wen, K. Cao,* State Key Laboratory of Digital Manufacturing Equipment and Technology, School of Mechanical Science and Engineering, Huazhong University of Science and Technology, China*; R. Chen,* State Key Laboratory of Digital Manufacturing Equipment and Technology, School of Mechanical Science and Engineering, Huazhong University of Science and Technology , China	
2:30pm	**AA1-TuA-5** Impacts of Deposition Temperatures on Insulation Properties of Atmospheric Pressure Spatial ALD Al_2O_3 Thin Films for Flexible PEALD IGZO TFT, ***Dong-Gyu Kim****, K. Yoo, S. Lee, W. Lee, J. Park,* Hanyang University, Korea	
2:45pm	**AA1-TuA-6** Enhanced Crystallinity Using in-Situ Atomic Layer Deposition Process of Al_2O_3 on P-Type SnO Thin Film and the Associated Device Applications, ***Hye-Mi Kim****, S. Choi, J. Park,* Hanyang University, Korea	
3:00pm	**AA1-TuA-7** Oxidant- and Temperature-Dependent Growth Behavior of ALD-Processed ZnO Thin Films and their Applications inTransistors, *J. Yang, A. Bahrami,* ***Sebastian Lehmann****, S. He, N. Kornelius,* Leibniz Institute for Solid State and Materials Research, Germany	
3:15pm	**AA1-TuA-8** Origins of High Off-current of P-type SnO TFTs and Reduction by Source/drain Modulation, ***Su-Hwan Choi****, H. Kim, J. Park,* Hanyang University, Korea (Republic of)	
3:30pm	Break & Exhibits	
3:45pm		
4:00pm	**AA2-TuA-11** Electron-Enhanced Atomic Layer Deposition (EE-ALD) of Titanium Nitride Using Ammonia Reactive Background Gas, ***Zachary Sobell****, S. George,* University of Colorado at Boulder	**ALD Applications** **Session AA2-TuA** **ALD for BEOL** **Moderators:** Scott Clendenning, Intel Corporation, John Conley, Oregon State University
4:15pm	**AA2-TuA-12** Atomic Layer Deposition of MoNx Thin Film Using New Synthesized Liquid Mo Precursor, ***Byunguk Kim****, T. Kang, S. Kim, H. Jeon,* Hanyang University, Korea	
4:30pm	**AA2-TuA-13** Atomic Layer Deposition of Tungsten Nitride Thin Film using WCl_5 as a Fluorine-free W Precursor and its Application into the Diffusion Barrier for Cu and Ru Interconnects, ***Kang-Min Seo****, G. Bea, S. Kim,* School of Materials Science and Engineering, Yeungnam University, Korea (Republic of)	
4:45pm	**AA2-TuA-14** Thermal Atomic Layer Deposition of Ru With H_2 Molecules for Emerging Ru Interconnects, ***Yohei Kotsugi****,* Chemical Materials Development Department, TANAKA Precious Metals, Japan*; Y. Kim, T. Cheon, S. Kim,* School of Materials Science and Engineering, Yeungnam University, Korea (Republic of)	
5:00pm	**AA2-TuA-15** The Oxygen-Free Thermal ALD and Area Selective ALD of Ruthenium Film, *I. Liu,* SAFC HITECH TAIWAN CO., LTD., Taiwan*;* ***Bhushan Zope****, G. Liu,* EMD Performance Materials Corp.*; J. Woodruff,* EMD Electronics*; J. Chiu,* SAFC HITECH TAIWAN CO., LTD., Taiwan	
5:15pm	**AA2-TuA-16** ALD-Prepared 2D Transition Metal Dichalcogenides as Diffusion Barriers in Interconnects, ***Sanne Deijkers****, A. de Jong,* Eindhoven University of Technology, The Netherlands*; H. Sprey, J. Maes,* ASM Belgium*; E. Kessels, A. Bol, A. Mackus,* Eindhoven University of Technology, The Netherlands	
5:30pm	**AA2-TuA-17** Evolution of Structural and Electrical Properties of Molecular Layer Deposited Hafnicone Films after Thermal Processing for Applications in Low-*K* Etch Stops, ***Vamseedhara Vemuri,*** Lehigh University*; S. King,* Intel, USA*; N. Strandwitz,* Lehigh University	

ALD Applications
Room Arteveldeforum & Pedro de Gante - Session AA-TuP
ALD Applications Poster Session
5:45pm

AA-TuP-1 Atomic Layer Deposition of MoS_2 Decorated TiO_2 Nanotubes for Photoelectrochemical Water Splitting, ***Chengxu Shen***, *E. Wierzbicka,* Institut für Chemie and IRIS Adlershof, Humboldt-Universität zu Berlin, Germany*; T. Schultz, R. Wang, N. Koch,* Institut für Physik and IRIS Adlershof, Humboldt-Universität zu Berlin, Germany*; N. Pinna,* Institut für Chemie and IRIS Adlershof, Humboldt-Universität zu Berlin, Germany

AA-TuP-2 Impact of ALD-TiO_2 Overlayer on Hematite Nanorod Arrays for the Photoelectrochemical Water Splitting, ***Jiao Wang,*** Humboldt University Berlin, Germany*; L. Liccardo,* Ca' Foscari University of Venice, Italy*; H. Habibimarkani, E. Moretti,* Ca´Foscari University of Venice, Italy*; N. Pinna,* Humboldt University Berlin, Germany

AA-TuP-3 Improvement of the Performance of III-IV Multi-Junction Solar Cells Using Atomic Layer Deposited Antireflective Coatings, ***Mantas Drazdys,*** *D. Astrauskytė, R. Drazdys, T. Paulauskas,* Center for Physical Sciences and Technology, Lithuania

AA-TuP-4 Li-Nb-O Protection Layer for Li-ion Battery Electrodes *via* Atomic-Layer-Deposition, ***Dae Woong Kim***, *W. Hong, J. Park,* Hyundai Motor Company, Korea (Republic of)*; S. Oh,* Hyundai Motor Comp, Korea (Republic of)*; M. Lee, S. Noh, T. Park,* Hanyang University, Korea

AA-TuP-5 ALD Ge-Se-S Amorphous Chalcogenide Alloys via Post Plasma Sulfurization for OTS Applications, ***Myoungsub Kim***, *S. Park, T. Kim, S. Seo, M. Lee, S. Chung, T. Lee, H. Kim,* Yonsei University, Korea

AA-TuP-6 Low-Temperature ALD for Electronic Applications, ***Jun Yang***, *A. Bahrami, S. Mukherjee, S. He, S. Lehmann, K. Nielsch,* Institute for Metallic Materials, Leibniz Institute of Solid State and Materials Science Dresden, Germany

AA-TuP-7 Atomic Layer Deposition, Annealing and Characterization of FeS_x Layers, ***Zsofia Baji***, *I. Cora, Z. Fogarassy, B. Pécz,* Centre for Energy Research, Hungary

AA-TuP-8 N-Doped TiO_2 Nanotubes Synthesized by Atomic Layer Deposition for the Degradation of Acetaminophen, ***Syreina Alsayegh***, Institut Européen des Membranes, France*; M. Bechelany,* Institut Européen des membranes, France*; M. ABID, F. TANOS,* Institut Européen des Membranes, France*; G. LESAGE, F. Zaviska,* Institut Européen des membranes, France

AA-TuP-9 Iron-Nickel Oxide and Iron-Nickel Sufide Deposited by Atomic Layer Deposition for the Oxygen Evolution Reaction in Alkaline Media, ***Estelle Jozwiak***, Humboldt University Berlin, Germany*; N. Pinna,* humboldt University Berlin, Germany

AA-TuP-10 Forming-Free Non-Linear Resistive Switching Memory Devices With ALD-Grown HfO_x/TaO_x Bilayers, ***Mari Napari***, *F. Simanjuntak, S. Stathopoulos, T. Prodromakis,* University of Southampton, UK

AA-TuP-11 Film Properties of Al_2O_3 on Si and Graphene substrates deposited by UV Enhanced Atomic Layer Deposition, ***Geonwoo Park***, *J. Shin, D. Go, J. An,* Seoul National University of Science and Technology, Korea (Republic of)

AA-TuP-12 Atomic Layer Deposition of Ruthenium Using a Zero-Valent Precursor, ***Ella Rimpila***, *J. Hamalainen, P. King,* Picosun Oy, Finland

AA-TuP-13 Wake-Up-Free Metal-Ferroelectric-Metal Capacitor Consisted of $Hf_{0.5}Zr_{0.5}O_2$ and Tin(200) Bottom Electrode, ***Dong Hee Han***, *A. Lee, M. Nam,* Department of Advanced Materials Engineering for Information and Electronics, Kyung Hee University, Korea (Republic of)*; T. Moon,* Inorganic Material Lab, Material Research Center, Samsung Advanced Institute of Technology, Korea (Republic of)*; W. Jeon,* Department of Advanced Materials Engineering for Information and Electronics, Kyung Hee University, Korea (Republic of)

AA-TuP-14 Investigating the Y-Doped HfO_2 Thin Film for the Metal-Insulator-Metal Capacitor Application Using a Cocktail Precursor, ***YoungUk Ryu***, *H. Seol,* Department of Advanced Materials Engineering for Information and Electronics, Kyung Hee University, Korea (Republic of)*; H. Oh, I. Hwang, Y. Park,* SK trichem Co. Ltd., Korea (Republic of)*; W. Jeon,* Department of Advanced Materials Engineering for Information and Electronics, Kyung Hee University, Korea (Republic of)

AA-TuP-15 Atomic-layer-deposited Molybdenum Dioxide Thin Films as Promising Electrode Candidates for Application to Next-generation-dynamic-random-access-memory Devices, ***Yewon Kim***, *A. Lee, D. Han, S. Moon, T. Youn, M. Lee, W. Jeon,* Department of Advanced Materials Engineering for Information and Electronics, Kyung Hee University, Korea (Republic of)

AA-TuP-16 Improving Properties of Atomic-layer deposited ZrO_2 Thin Film by Employing the Discrete Feeding Method with Various Zr-based Precursors, ***Aejin Lee***, *M. Nam, Y. Kim, W. Jeon,* Department of Advanced Materials Engineering for Information and Electronics, Kyung Hee University, Korea (Republic of)

AA-TuP-17 Atomic Layer Deposition of AlN Films With and Without Plasma Piezoelectric Effect, ***Noureddine Adjeroud***, Luxembourg Institute of Science and Technology (LIST), Luxembourg

AA-TuP-18 Growth of Rutile TiO_2 on VO_2 by Atomic Layer Deposition for DRAM Capacitor Application, ***Seungwoo Lee***, *D. Han, M. Nam, Y. Kim,* Kyung Hee University, Korea (Republic of)*; D. Kim, K. Kim, Y. Park,* SK Trichem Co. Ltd., Korea (Republic of)*; W. Jeon,* Kyung Hee University, Korea (Republic of)

AA-TuP-19 Superconducting Nbn: Sputtered Versus Plasma ALD With Bias, ***Tania Hemakumara***, *Y. Shu,* Oxford Instruments Plasma Technology, UK*; H. Knoops,* Oxford Instruments Plasma Technology, Netherlands*; R. Renzas,* Oxford Instruments Plasma Technology*; V. Gauthier, V. Giglia, S. Nicolay,* Université de Sherbrooke, Canada*; M. Weides,* University of Glasgow, UK*; M. Pioro-Ladrière, D. Drouin,* Université de Sherbrooke, Canada*; R. Sundaram,* Oxford Instruments Plasma Technology, UK

AA-TuP-20 Membrane Design by ALD/MLD for Hydrogen Sensing, *S. Sayegh, M. Drobek, A. Julbe,* ***Mikhael Bechelany***, European Institute of Membranes, France

AA-TuP-21 Schottky Diodes to Gallium Nitride Prepared by Plasma-Enhanced Atomic Layer Deposition, ***Suzanne Mohney***, *I. Campbell, A. Molina, A. Agyapong, M. Thomas,* Penn State University

AA-TuP-22 Development of High-k Gate Insulator Deposition Process for Next-Generation Thin Film Transistor Using Atomic Layer Deposition, ***Min Kyeong Nam***, *A. Lee, D. Han, S. Lee, W. Jeon,* Department of Advanced Materials Engineering for Information and Electronics, Kyung Hee University, Korea (Republic of)

AA-TuP-23 Co-Coated Si X-Ray Optics With Atomic Layer Deposition, ***Yukine Tsuji***, *A. Fukushima, D. Ishi, Y. Ezoe, K. Ishikawa, M. Numazawa, T. Uchino, S. Sakuda, A. Inagaki, Y. Ueda, H. Morishita, L. Sekiguchi, T. Murakawa,* Tokyo Metropolitan University, Japan*; K. Mitsuda,* National Astronomical Observatory of Japan

AA-TuP-24 Optimization of High-Performance P-Channel Sno Thin Film Transistor Using Atomic Layer Deposition, ***Myeong Gil Chae***, *J. Kim,* Seoul National University of Science and Technology, Korea (Republic of)*; B. Park, T. Chung,* Korea Research Institute of Chemical Technology (KRICT), Korea (Republic of)*; S. Kim,* Korea Institute of Science and Technology (KIST), Korea (Republic of)*; J. Han,* Seoul National University of Science and Technology, Korea (Republic of)

AA-TuP-25 Intense Pulsed Light Annealing of Low-temperature Atomic-layer-deposited SnO Thin Films for P-channel Thin Film Transistor, ***Jina Kim***, *M. Chae,* Seoul National University of Science and Technology, Korea (Republic of)*; B. Park, T. Chung,* Korea Research Institute of Chemical Technology (KRICT), Korea (Republic of)*; J. Choi, K. Cho,* Korea institute of industrial technology (KITECH), Korea (Republic of)*; W. Lee,* Myongji University, Korea (Republic of)*; J. Han,* Seoul National University of Science and Technology, Korea (Republic of)

AA-TuP-26 Hafnium Zirconium Oxide-Based Ferroelectric Field Effect Transistor With Atomic-Layer-Deposited Indium Gallium Tin Oxide Channel Layer, ***Hyeonhui Jo***, *J. Won, P. Youn, J. Kim, H. Jang, W. Jo, J. Han,* Department of Materials Science and Engineering, Seoul National University of Science and Technology, Korea (Republic of)

AA-TuP-27 Interface and Electrolyte Design to Enable Stable Zn Metal Anode for Aqueous Zn-ion Batteries, ***Jian Liu***, University of British Columbia, Canada

AA-TuP-28 ALD-Coated Mesoporous Films for Electrocatalysis, ***Nicola Pinna***, *M. Raza,* Institut für Chemie and IRIS Adlershof, Humboldt-Universität zu Berlin, Germany*; M. Frisch, R. Krähnert,* Department of Chemistry, Technische Universität Berlin, Germany

AA-TuP-29 Nanoscale Energy Transport Processes in Chalcogenide-Based Phase Change Materials, ***Kiumars Aryana***, *P. Hopkins,* University of Virginia

AA-TuP-30 Comparison of the Insulating Properties of Aluminum Oxide (Al_2O_3) High-K Layers at the Early Growth Stages of by Thermal- and Plasma-Enhanced Atomic Layer Deposition on AlGaN/GaN Heterostructures, ***Raffaella Lo Nigro***, *E. Schilirò, P. Fiorenza, G. Greco, F. Giannazzo, F. Roccaforte,* CNR-IMM, Italy

AA-TuP-31 Amorphous ALD Alumina On a Quartz Plate Enables Significant Cost of Ownership (CoO) Reduction in Metal Plasma Etch Chambers, ***Jeff Young***, Intel Corporation*; G. Mata-Osoro, P. Spring,* INFICON Ltd., Liechtenstein*; J. Delle Donne,* Ultra Clean Technologies (UCT)*; R. Parise,* Ultra Clean Technologies*; V. Venkatesan,* Ultra Clean Technologies (UCT)

AA-TuP-32 Application of Powder Atomic Layer Deposition to Solid Oxide Fuel Cell Electrodes, ***Sung Eun Jo***, *H. Kim, B. Yang, J. An,* Seoul National University of Science and Technology, Korea (Republic of)

AA-TuP-33 Evaluation of Temporal vs. Spatial Atomic Layer Deposition Techniques for the Production of Ceramic Nanofiltration Membranes, *J. Peper,* University of Twente, Netherlands*; H. Jain,* TNO/Holst Cent, Netherlands*; M. Nijboer, A. Nijmeijer, F. Roozeboom, A. Kovalgin,* ***Mieke Luiten-Olieman,*** University of Twente, Netherlands

AA-TuP-34 Robust YF_3 Batch ALD Process With a Novel Precursor for Plasma Etch Tool Component Protection, *J. Kalliomäki, E. Manninen, J. Mariam,* ***Peter King,*** *R. Ritasalo,* Picosun Oy, Finland

AA-TuP-35 Surface Modification of Atomic Layer Deposited Metal Oxides: Vapor-Phase Grafting of Functional Silanes, ***Vepa Rozyyev,*** University of Chicago*; R. Pathak, R. Shevate,* Argonne National Laboratory, USA*; J. Murphy,* University of Chicago*; A. Mane,* Argonne National Laboratory, USA*; S. Sibener,* University of Chicago*; J. Elam,* Argonne National Laboratory, USA

AA-TuP-36 Developing ALD RuO_x Process for Coating Porous Current Collectors for Supercapacitor Applications, ***Sakeb Hasan Choudhury,*** LAAS-CNRS, France*; G. Vignaud,* Université Bretagne Sud, France*; P. Dubreuil, D. Pech,* LAAS-CNRS, France

AA-TuP-37 Defect Engineering in Corrosion Protected Semiconductor Photoanodes by Atomic Layer Deposition of Titania, ***Oliver Bienek,*** *B. Fuchs, M. Kuhl, D. Silva, T. Rieth, A. Henning, I. Sharp,* Walter Schottky Institut and Physics Department, Technische Universität München, Germany

AA-TuP-38 Film Characteristics of Lanthanide Oxide Thin Film by Using Atomic Layer Deposition Method, ***Suin Kim,*** *M. Kim,* EMD Performance Materials, Korea (Republic of)*; S. Ivanov,* EMD Performance Materials

AA-TuP-39 Advanced 3D Mxene ALD Assembly Through Precious Metal Conformal Coating for Clean Energy Applications, ***Debananda Mohapatra,*** *Y. Kim, Y. Park, S. Kim,* Yeungnam University, Korea (Republic of)

AA-TuP-40 Toward a Rational Surface Texture Designof FBR-ALD Pt/CCatalyst to Enhance PEMFC Performance, ***Ji-Hu Baek,*** *S. Kwon, S. Lee,* Pusan National University, Korea (Republic of)

AA-TuP-41 Plasma Enhanced Atomic Layer Deposition (PEALD) of Silicon Nitride for FEOL Applications, ***Marco Lisker,*** *M. Kalishettyhalli Mahadevaiah,* IHP Frankfurt (Oder), Germany

AA-TuP-42 Mechanical and Optical Properties of Alumina Doped Hafnia Deposited by Plasma Assisted Atomic Layer Deposition, ***Taivo Jõgiaas,*** University of Tartu, Estonia

AA-TuP-43 Al Doped Zno Thin Film on High Aspect Ration Structure (1:10) by Ald Process for Biomedical Application, ***Po-Tsung Hsieh,*** *T. Tsai, T. Wang, C. Lin, T. Chen, H. Tu,* Core Facility Center, National Cheng Kung University, Taiwan

AA-TuP-44 H_2 Separative Membrane Fabricated by Thermal Atomic Layer Deposition, ***Clémence Badie,*** Aix-Marseille University, France*; M. Drobek,* CNRS- Univ. Montpellier, France*; M. Bechelany,* CNRS/Univ. Montpellier, France*; J. Decams,* Annealsys, France*; L. Santinacci,* Aix-Marseille University, France

AA-TuP-45 Universal Relationship between Spontaneous Polarization and Coercive Field of HfZrO Ferroelectric, ***Min Liao,*** *J. Xiang, X. Wang,* Institute of Microelectronics, Chinese Academy of Sciences, China

AA-TuP-46 Synthesis of Noble Metal Nanoparticles by ALD for Electrocatalysis, ***Sitaramanjaneya Mouli Thalluri,*** *R. Zazpe, H. Sopha, J. Macak,* University of Pardubice, Czechia

AA-TuP-47 Protection of Platinum Electrocatalysts for Water Electrolysis Using Atomic Layer Deposited Silicon Dioxide, ***Ming Li,*** *R. Kortlever, R. van Ommen,* Delft University of Technology, Netherlands

AA-TuP-48 ALD-Deposition of Cathodic Materials for 3D Li-Ion Micro Batteries - Ongoing Results, ***Antoine Peisert,*** *G. Lamblin, D. Lenoble, N. Adjeroud,* Luxembourg Institute of Science and Technology (LIST), Luxembourg

AA-TuP-49 Disentangling the Effect of Diffusion and Solubility in the Gas Barrier Properties of ALD Alumina Thin Films, *S. Bhudia, J. Barbe, M. Gerard,* Luxembourg Institute of Science and Technology (LIST), Luxembourg*; V. Cassio,* MET-LUX S.A., Luxembourg*;* ***Renaud Leturcq,*** Luxembourg Institute of Science and Technology (LIST), Luxembourg

AA-TuP-50 Vapor Phase Infiltration (VPI) on Polymers Fibers and Fabrics for Multifunctional and Antimicrobial Textile, ***Natalia Chamorro,*** *M. Knez,* CIC nanoGUNE, Spain

AA-TuP-51 Impact of Substrate Bias on the Wear Rate of Plasma Enhanced Atomic Layer Deposited TiVN, ***Mark Sowa,*** Veeco ALD*; M. Chowdhury,* Department of Materials Science and Engineering, Lehigh University*; K. Van Meter, T. Babuska,* Department of Mechanical Engineering, Florida State University*; A. Kozen,* Department of Materials Science & Engineering, University of Maryland, College Park*; N. Strandwitz,* Department of Materials Science and Engineering, Lehigh University*; B. Krick,* Department of Mechanical Engineering, Florida State University

AA-TuP-52 Thermal and Aqueous Media Stability of $Sr_2Mgsi_2O_7:Eu^{2+}$, Dy^{3+} Phosphors Encapsulated by Al_2O_3 Using Atomic Layer Deposition (ALD), ***Erkul Karacaoglu,*** Karamanoglu Mehmetbey University, Turkey*; A. Okyay,* Okyay Technologies and with the Stanford University*; H. Yurdakul,* Kutahya Dumlupinar University, Turkey*; M. Losego,* Georgia Institute of Technology, USA

AA-TuP-53 Fabrication of High-Quality Titanium Nitride Thin Film as a Cu Diffusion Barrier Layer by Hollow Cathode Plasma Atomic Layer Deposition at Low Temperature, ***Ha Young Lee,*** *J. Han, B. Choi,* Seoul National University of Science and Technology, Korea (Republic of)

AA-TuP-54 Adjusting Crystal Structure in an In-Zn-O System Deposited by PEALD and its TFT Application, ***TaeHyun Hong,*** *Y. Kim, J. Park,* Hanyang University, Korea (Republic of)

AA-TuP-55 Pt-coated Si X-ray Optics with Plasma Atomic Layer Deposition for GEO-X Mission, ***Masaki Numazawa,*** *D. Ishi, A. Fukushima, Y. Ezoe, K. Ishikawa, S. Sakuda, T. Uchino, A. Inagaki, H. Morishita, Y. Ueda, T. Murakawa, Y. Tsuji, L. Sekiguchi,* Tokyo Metropolitan University, Japan*; K. Mitsuda,* National Astronomical Observatory of Japan

AA-TuP-56 Structural and Optical Properties of Atomically Engineered Ir/Al_2O_3 Heterostructures, ***Pallabi Paul,*** *P. Schmitt,* Friedrich Schiller University Jena, Germany*; Z. Wang, W. Li, M. Kling,* Ludwig-Maximilians-University of Munich, Max Planck Institute of Quantum Optics, Germany*; A. Tünnermann,* Fraunhofer Institute for Applied Optics and Precision Engineering IOF , Germany*; A. Szeghalmi,* Fraunhofer Institute for Applied Optics and Precision Engineering, Germany

AA-TuP-57 Broadband Absorbers by ALD: An Opportunity for Solar-Driven Applications, ***Mario Ziegler,*** *V. Ripka,* Leibniz Institute of Photonic Technology, Germany*; P. Cheng,* TU Ilmenau, Germany*; K. Kc, H. Wagner, U. Huebner,* Leibniz Institute of Photonic Technology, Germany*; D. Wang, P. Schaaf,* TU Ilmenau, Germany

AA-TuP-58 PE-ALD Synthesis and Characterization of Silver Nanoparticles and Ultrathin Films, ***Petru Lunca-Popa,*** Luxembourg Institute of Science and Technology (LIST), Luxembourg*; S. Guillemot,* ASM, Korea (Republic of)*; R. Leturcq,* Luxembourg Institute of Science and Technology (LIST), Luxembourg

AA-TuP-59 Bipolar and Unipolar Resistive Switching in HfO_2 Based Films Embedding Ni Particles, ***Joonas Merisalu,*** *M. Otsus, T. Viskus, T. Kahro, A. Tarre, A. Kasikov, P. Ritslaid, J. Kozlova, J. Aarik, K. Kukli, A. Tamm,* University of Tartu, Estonia

AA-TuP-60 Novel Sulfide and Nitride Materials by Plasma Enhanced Atomic Layer Deposition, ***Jakob Zessin,*** SENTECH Instruments GmbH, Germany*; M. Hagel, T. Reindl,* SF Nanostructuring Lab, Max Planck Institute for Solid State Research, Germany*; K. Küster,* SF Interface Analysis, Max Planck Institute for Solid State Research, Germany*; P. Plate,* SENTECH Instruments GmbH, Germany

AA-TuP-61 Atomic Layer Deposition of Epsilon Near Zero Transparent Conducting Oxides, ***Emily Duggan,*** Tyndall National Institute, University College Cork, Ireland*; D. Ghindani,* Tampere University, Finland*; J. Lin,* Tyndall National Institute, University College Cork, Ireland*; H. Caglayan,* Tampere University, Finland*; I. Povey,* Tyndall National Institute, University College Cork, Ireland

AA-TuP-62 Magnetic Domain Creation by Local Reduction of Nickel Oxide Films, ***Gabriele Botta,*** BRTA CIC nanoGUNE, Italy*; M. Knez,* Nanomaterials Senior Scientists Ikerbasque professor in BRTA CIC nanoGUNE, Croatia

AA-TuP-63 Optical and Electrical Device Properties of Plasma-Ald Grown β-Ga_2O_3, *A. Rezk,* Khalifa University of Science, Technology & Research, United Arab Emirates*; I. Saidjafarzoda,* University of Connecticut*;* ***Ali Kemal Okyay,*** Stanford University*; A. Nayfeh,* Khalifa University of Science, Technology & Research, United Arab Emirates*; N. Bıyıklı,* University of Connecticut

AA-TuP-64 The Electrical and Physical Characterization of n-type MoO_x Thin-Film Fabricated by Plasma-Enhanced Atomic Layer Deposition, *D. Wang,* Feng Chia University, Taiwan*;* ***Pi-Chun Juan,*** *C. Tou,* Ming Chi University of Technology, Taiwan*; W. Cho, C. Chen, C. Kei,* National Applied Research Laboratories, Taiwan

AA-TuP-65 Enhanced Self-Assembled Monolayer Surface Coverage by ALD NiO in P-I-N Perovskite Solar Cells, *N. Phung, M. Verheijen, A. Todinova, K. Datta, M. Verhage,* Eindhoven University of Technology, Netherlands*; A. Al-Ashouri, H. Köbler, X. Li, A. Abate, S. Albrecht,* Helmholtz Zentrum Berlin, Germany*;* ***Mariadriana Creatore,*** Eindhoven University of Technology, Netherlands

AA-TuP-66 Direct Chemical Vapour Deposition of Graphene on Atomic Layer Deposited Functional Nickel Oxide, ***Geedhika Poduval,*** *D. Ji, S. Bremner, R. Joshi, B. Hoex,* UNSW Sydney, Australia

AA-TuP-67 The Role of Defects in Tuning the Properties of Highly Conductive Cuprous Oxide Thin Films Revealed Through Positron Annihilation Spectroscopy, ***Abderrahime Sekkat,*** LMGP/IMEP-LAHC/SIMAP, France; *M. Oskar Liedke,* HZDR, Germany; *V. Huong Nguyen,* Phenikaa, Viet Nam; *M. Butterling,* HZDR, Germany; *F. Baiutti, J. de Dios Sirvent,* IREC, Spain; *M. Weber, L. Rapenne, D. Bellet,* LMGP, France; *G. Chichignoud,* SIMAP, Grenoble-INP, CNRS, France; *A. Kaminski-Cachopo,* IMEP-LAHC, France; *E. Hirschmann, A. Wagner,* HZDR, Germany; *D. Muñoz-Rojas,* LMGP, France

AA-TuP-68 Highly Conformal CoO_x Layer Formed by Atomic Layer Deposition for High Performance Supercapacitors, *S. Adhikari, G. Noh,* Chonnam National University, Korea (Republic of); ***do heyoung kim,*** 5-404, Engineering Building 5,, Korea (Republic of)

AA-TuP-69 Ultra-low Resistivity Molybdenum Carbide Thin Films Deposited by Plasma-Enhanced Atomic Layer Deposition Using a Cyclopentadienyl-based Precursor, ***Min-Ji Ha,*** *J. Choi, J. Ahn,* Hanyang University, Korea (Republic of)

AA-TuP-70 A Simple Strategy to Realize Super Stable Ferroelectric Capacitor via Interface Engineering, ***Hyo-Bae Kim,*** Hanyang University, Korea (Republic of); *K. Dae, J. Jang,* Korea Basic Science Institute (KBSI), Korea (Republic of); *J. Ahn,* Hanyang University, Korea (Republic of)

AA-TuP-71 Area-Selective Atomic Layer Deposition Brings Plasmonic Biosensors Into the Electronic Age, ***Corbin Feit,*** University of Central Florida; *P. Rathi, S. Singamaneni,* Washington University in St. Louis; *P. Banerjee,* University of Central Florida

AA-TuP-73 Annealed ALD TiN_x Layers for Through-Silicon Superconducting Interconnects, ***Kestutis Grigoras,*** *P. Eskelinen,* VTT Technical Research Centre of Finland, Ltd, Finland; *M. Caputo,* VTT Technical Research Centre of Finlandt, Ltd, Finland; *D. Datta,* VTT Technical Research Centre of Finland, LTD, Finland; *A. Ronzani,* VTT Technical Research Centre of Finland, Ltd, Finland; *E. Mannila, J. Govenius,* VTT Technical Research Centre of Finland, LTD, Finland

AA-TuP-74 Plasma-Enhanced Atomic Layer Deposition of Crystalline NiO Films Using Nickelocene and O2 Plasmas for BEOL p-Channel Devices, *S. Ilhom, A. Mohammad, M. Niemiec, D. Zacharzewski, P. Chardavoyne, S. Abdari,* ***Necmi Biyikli,*** University of Connecticut

ALD for Manufacturing
Room Arteveldeforum & Pedro de Gante - Session AM-TuP
ALD for Manufacturing Poster Session
5:45pm

AM-TuP-1 Atmospheric Pressure Plasma Enhanced Spatial ALD for Energy Applications, ***Corne Frijters,*** *V. Tielen, R. Pals, J. Smeltink, K. Driessen, H. Heezen, P. Poodt,* SALDtech B.V., Netherlands

AM-TuP-2 Computational Fluid Dynamics Analysis of Cyclone-Type Vaporizer for Atomic Layer Deposition, *D. Shin,* ***Cha-Hee Kim,*** Sejong University, Korea (Republic of); *S. Seo, Y. Lee, K. Jeong, D. Kim,* GO Element Co. Ltd., Korea (Republic of); *W. Lee,* Sejong University, Korea (Republic of)

AM-TuP-3 Lightweight, Modular Model for Multizone Spatial ALD, ***Angel Yanguas-Gil,*** *J. Elam,* Argonne National Laboratory

AM-TuP-4 Effect of Surface Treatment of Tan for Rapid Nucleation and Growth of ALD Ru Films, ***Corbin Feit,*** *U. Kumar, L. Tomar, Z. Caribe, N. Berriel , S. Seal , P. Banerjee,* University of Central Florida

AM-TuP-5 How to Improve ALD Process Consistency with Optimized Process Valves and Pneumatic Control Systems, ***Masroor Malik,*** *J. Butler,* Swagelok Company

AM-TuP-6 Spatial Atomic Layer Deposition for the Coating of Tubular Membranes, *F. Toldra-Reig,* Laboratoire des Matériaux et du Génie Physique, LMGP-CNRS, France; ***Clément Lausecker,*** Institut Européen des Membranes, IEM-CNRS / Laboratoire des Matériaux et du Génie Physique, LMGP-CNRS , France; *M. Weber,* Laboratoire des Matériaux et du Génie Physique, LMGP-CNRS, France; *M. Bechelany,* Institut Européen des Membranes, IEM-CNRS, France; *D. Muñoz-Rojas,* Laboratoire des Matériaux et du Génie Physique, LMGP-CNRS, France

AM-TuP-7 Hybrid PEALD/PECVD Reactor Design for Depositing Thick GaN Films on Si, ***Birol Kuyel,*** *J. Marshall, A. Alphonse,* NANO-MASTER, Inc.

AM-TuP-8 Deposition of $CeO_{2-\delta}$ Thin Films by Atmospheric-Pressure Spatial Atomic Layer Deposition, ***Ozden Celikbilek,*** Univ. Grenoble Alpes, CNRS, France; *M. Bianchini,* Catalonia Institute for Energy Research (IREC), Spain; *F. Toldra-Reid,* Univ. Grenoble Alpes, CNRS, Spain; *A. Sekkat ,* Univ. Grenoble Alpes, CNRS, France; *N. Alayo , A. Tarancón ,* Catalonia Institute for Energy Research (IREC), Spain; *D. Muñoz-Rojas ,* Univ. Grenoble Alpes, CNRS, France

AM-TuP-9 Thermoelectric Performance Improvement by Interface Engineering With Atomic-Layer-Deposited ZnO Thin Films on Snse Powders, ***Myeong Jun Jung,*** *Y. Weon, J. Park, Y. Yun, J. Byun, B. Choi,* Seoul National University of Science and Technology, Korea (Republic of)

AM-TuP-10 Mechanical Properties of Atomic-Layer-Deposited Al_2O_3/Y_2O_3 Nanolaminate Films on Aluminum Towards Protective Coatings, ***Barbara Putz,*** *J. Niemelä,* Empa, Swiss Federal Laboratories for Materials Science and Technology, Thun, Switzerland; *G. Mata-Osoro,* INFICON Ltd., Liechtenstein, Switzerland; *C. Guerra-Nunez,* SwissCluster, Switzerland; *K. Mackosz, I. Utke,* Empa, Swiss Federal Laboratories for Materials Science and Technology, Thun, Switzerland

AM-TuP-11 How to Improve Control of Plasma-Assisted Ald/Ale Processes by Accurate Measurement of Ion Flux, Ion Energy Distributions, and Ion-Neutral Ratios in Commercial Plasma Tools Using RFEAs, *A. Rawat, C. Linnane,* ***Sean Knott,*** *T. Gilmore,* Impedans Ltd, Ireland

Area Selective ALD
Room Arteveldeforum & Pedro de Gante - Session AS-TuP
Area Selective ALD Poster Session
5:45pm

AS-TuP-1 Thermally Assisted Area Selective Atomic Layer Deposition, ***Bart de Braaf,*** TU / Eindhoven, Netherlands

AS-TuP-2 An Approach to the Prevention of Chemical Deterioration of Surfaces During Ex-Situ Patterning Steps, ***Bernhard van der Wel,*** *T. Aarnink, A. Kovalgin,* University of Twente, the Netherlands

AS-TuP-3 Surface Dependence and Selectivity During Atomic Layer Deposition of $Ge_2Sb_2Te_5$, ***Jyoti Sinha,*** *L. Gallis, J. Clerix,* KU Leuven, IMEC Belgium , Belgium; *L. Nyns,* IMEC Belgium , Belgium; *A. Delabie,* KU Leuven, IMEC Belgium , Belgium

AS-TuP-4 *In-situ* Surface Cleaning and Area Selective Deposition of SiO_xN_y film on Cu patterns using Anhydrous N_2H_4, ***Su Min Hwang,*** *J. Kim, D. Le, Y. Jung, K. Tan, J. Veyan,* University of Texas at Dallas; *D. Alvarez, J. Spiegelman,* RASIRC; *J. Kim,* University of Texas at Dallas

AS-TuP-5 Inherently Area-Selective Atomic Layer Deposition of SiO_2 through Chemoselective Adsorption of an Aminodisilane Precursor on Oxide versus Nitride Substrates, ***Jeong-Min Lee,*** *J. Lee,* Hanyang University, Korea (Republic of); *H. Oh, B. Shong,* Hongik University, Korea (Republic of); *T. Park, W. Kim,* Hanyang University, Korea (Republic of)

AS-TuP-6 Organothiol Inhibitor Instigated Area Selective Deposition of HfO_2, ***Summal Zoha,*** *B. Gu,* Incheon National University, Korea (Republic of); *F. Pieck, R. Tonner,* Universität Leipzig, Germany; *H. Lee,* Incheon National University, Korea (Republic of)

Plenary Session
Room Auditorium - Session PS-WeM1
Plenary Session III
Moderators: Jolien Dendooven, Ghent University, Belgium, Christophe Detavernier, Ghent University, Belgium, Paul Poodt, Holst Centre / TNO, Netherlands

8:30am		
8:45am	**INVITED: PS-WeM1-2** ALD 2022 Innovator Awardee Talk: Prospects of Atomic Layer Deposition for Cell-Stacking Technology of Semiconductor Memory Devices, ***Cheol Seong Hwang,*** Seoul National University, Korea (Republic of)	
9:00am		
9:15am	**PS-WeM1-4** ALD Student Award Finalist Talk: Improving Self-Aligned Atomic Layer Deposited Gate Stacks for Electronic Applications, ***Amy Brummer,*** *D. Aziz, M. Filler, E. Vogel,* Georgia Institute of Technology	
9:30am	**PS-WeM1-5** ALD Student Award Finalist Talk: Towards High Throughput Molecular Layer Deposition of Alucone Films, ***Hardik Jain,*** Holst Centre / TNO, Netherlands*; M. Creatore,* Eindhoven University of Technology, The Netherlands*; P. Poodt,* Holst Centre / TNO, Netherlands	
9:45am	**PS-WeM1-6** ALD Student Award Finalist Talk: In-situ FTIR Analysis of Selectivity Loss Mechanism of TiO_2 Atomic Layer Deposition on Aminosilane-Passivated SiO_2 and H-terminated Si, ***Jan-Wilem Clerix,*** KU Leuven, NCSU, Imec, Belgium*; G. Dianat,* NCSU*; A. Delabie,* Imec, KU Leuven, Belgium*; G. Parsons,* NCSU	
10:00am	**PS-WeM1-7** ALD Student Award Finalist Talk: Sacrificial Etching Kinetics Control Extent of Pattern Alignment in Area-Selective Atomic Layer Deposition (AS-ALD) via Simultaneous Deposition and Etching, ***Hannah Margavio,*** *J. Kim,* North Carolina State University*; N. Arellano,* IBM Almaden Research Center*; G. Parsons,* North Carolina State University	
10:15am	**PS-WeM1-8** ALD Student Award Finalist Talk: Depositing Metal Oxides on Metalcones: Enhancing Initial Growth Through O_2 Plasma Densification, ***Juan Santo Domingo Peñaranda,*** *M. Minjauw, J. Li, S. Vandenbroucke, J. Dendooven, C. Detavernier,* Ghent University, Belgium	
10:30am	Break & Exhibits	

Wednesday Morning, June 29, 2022

	ALD Applications **Room Baekeland - Session AA1-WeM2** **ALD for Optical Applications** **Moderators:** Parag Banerjee, University of Central Florida, Matti Putkonen, University of Helsinki, Finland	**ALD Applications** **Room Van Rysselberghe - Session AA2-WeM2** **ALD for Memory Applications I** **Moderators:** Robert Clark, TEL Technology Center, America, LLC, Charles Dezelah, ASM, Finland
10:45am	**AA1-WeM2-1** Atomic Layer Deposition of Perovskite $K(Ta_x,Nb_{1-x})O_3$ films on Silicon for Integrated Photonics via KOtBu and H_2O, ***Eric Martin,*** Ohio State University*; J. Bickford,* Army Research Laboratory*; H. Sønsteby,* University of Oslo, Norway*; R. Hoffman,* Army Research Laboratory*; R. Reano,* Ohio State University	**AA2-WeM2-1** Sub 10-nm Ferroelectric HfO_2 Capacitors Doped with Gd, ***Evgeniy Skopin****, N. Guillaume, L. Alrifai, A. Bsiesy,* LTM - MINATEC - CEA/LETI, France
11:00am	**AA1-WeM2-2** Low-temperature ALD Sb_2Te_3 for Self-powered Broad-band Photodetector*,* ***Jun Yang****, A. Bahrami, S. Mukherjee, S. He, S. Lehmann, K. Nielsch,* Institute for Metallic Materials, Leibniz Institute of Solid State and Materials Science Dresden, Germany	**AA2-WeM2-2** Controlling Stochastic Resistive Switching in Organic-Inorganic Hybrid Memristor by Vapor-Phase Infiltration*, A. Subramanian,* Stony Brook University*; N. Tiwale, K. Kisslinger,* ***Chang-Yong Nam****,* Brookhaven National Laboratory
11:15am	**AA1-WeM2-3** Preparation of High Mobility Indium Hydroxide Doped by Atomic Layer Deposition and Study on Photoelectric Properties*,* ***Liangge Xu,*** Harbin Institute of Technology, China	**AA2-WeM2-3** Atomic Layer Deposited Vanadium Oxide Thin Films for Thermocromic and Microelectronic Applications*,* ***Zsofia Baji****, J. Volk, L. Pósa, G. Molnár,* Centre for Energy Research, Hungary*; A. Surca, G. Drazic,* National Institute of Chemistry, Slovenia
11:30am	**AA1-WeM2-4** ALD MgF2 Using $(EtCp)_2Mg$ and SF_6 Remote Plasma Source*,* ***Hoon Kim****, . Huang, . Allen, E. Pierce, , J. Wang,* Corning Inc.	**INVITED: AA2-WeM2-4** Brain-Based Inspiration: Towards Neuromorphic Computing With ALD Based Memristive Devices*, E. Perez, M. Kalishettyhalli Mahadevaiah, E. Perez-Bosch Quesada,* IHP - Leibniz Institut fuer innovative Mikroelektronik, Germany*; T. Rizzi,* IHP - Leibniz-Institut fuer innovative Mikroelektronik, Germany*;* ***Christian Wenger****,* IHP - Leibniz Institut fuer innovative Mikroelektronik, Germany
11:45am	**AA1-WeM2-5** Moisture Sensitivity of ALD Metal Fluorides for Far UV Optical Coatings*,* ***Robin Rodríguez****, J. Hennessy, A. Jewell, S. Nikzad,* Jet Propulsion Laboratory (NASA/JPL)	

Wednesday Morning, June 29, 2022

	Emerging Materials **Room Van Eyck - Session EM-WeM2** **Molecular Layer Deposition** **Moderators:** Arrelaine Dameron, Forge Nano, Ola Nilsen, University of Oslo, Norway	**Nanostructure Synthesis and Fabrication** **Room Auditorium - Session NS-WeM2** **2D Materials I** **Moderators:** Gregory N. Parsons, North Carolina State University, Henrik Pedersen, Linköping University, Sweden
10:45am	**EM-WeM2-1** Deposition of Copper-based Metal-Organic Framework Thin Film by Molecular Layer Deposition, ***Ben Gikonyo***, *C. Journet-Gautier, A. Fateeva, C. Marichy,* Université Claude Bernard Lyon 1, France	**INVITED: NS-WeM2-1** Atomic Layer Deposition of Layered Chalcogenides, ***Suzanne Mohney***, *J. Carter, I. Campbell, A. Agyapong,* Penn State University
11:00am	**EM-WeM2-2** ALD-Grown ZIF-8 Thin Films : Mechanism Insight Leads to Push Beyond the Current Thickness Limit, *V. Perrot,* Univ. Grenoble Alpes, CEA, LETI, France; *A. Roussey,* Univ. Grenoble Alpes, CEA, LITEN, France; *M. Veillerot, A. Benayad, D. Mariolle, F. Ricoul, V. Jousseaume,* Univ. Grenoble Alpes, CEA, LETI, France; ***Elsje Alessandra Quadrelli,*** CNRS, Univ Lyon IRCELYON , France	
11:15am	**EM-WeM2-3** Molecular Layer Deposition of Zeolitic Imidazolate Framework 8 Thin Films, ***Jorid Smets***, *A. Cruz, R. Ameloot,* KU Leuven, Belgium	**NS-WeM2-3** 2D Alloys of WS_2 and NbS_2 by PEALD, ***Jeff Schulpen***, *C. Lam,* Eindhoven University of Technology, The Netherlands; *E. Coleman, F. Gity,* Tyndall National Institute, University College Cork, Ireland; *M. Mattinen, M. Verheijen, E. Kessels,* Eindhoven University of Technology, The Netherlands; *R. Duffy,* Tyndall National Institute, University College Cork, Ireland; *A. Bol,* Eindhoven University of Technology, The Netherlands
11:30am	**EM-WeM2-4** Mld of Phosphane-Ene Polymer Thin Films: Bringing Solution Polymer Chemistry to a Gas Phase Process, *J. Lomax,* The University of Western Ontario, Canada; *E. Goodwin, P. Gordon,* Carleton University, Canada; *C. McGuiness,* Solvay; *C. Crudden,* Queen's University, Canada; *S. Barry,* Carleton University, Canada; ***Paul J. Ragogna***, The University of Western Ontario, Canada	**NS-WeM2-4** 2D Molybdenum Dichalcogenides by Atomic Layer Deposition, ***Raul Zazpe***, *J. Charvot, L. Hromadko, H. Sopha, J. Rodriguez Pereira , F. Bures, J. Macak,* University of Pardubice, Czechia
11:45am	**EM-WeM2-5** Molecular Atomic Layer Deposition of Inorganic-Organic Hybrid Dry Resist for EUV Application, ***Su Min Hwang***, *D. Le, Y. Jung, J. Veyan,* University of Texas at Dallas; *A. Subramanian, W. Lee,* Stony Brook University/Brookhaven National Laboratory; *N. Tiwale,* Brookhaven National Laboratory; *C. Nam,* Stony Brook University/Brookhaven National Laboratory; *M. Sung, J. Ahn,* Hanyang University, Korea (Republic of); *J. Kim,* University of Texas at Dallas	**NS-WeM2-5** Plasma-enhanced Atomic Layer Deposition of Crystalline MoS_2 Thin Films Using a Novel Precursor, ***Jeong-Hun Choi***, *M. Ha, D. Kim, J. Ahn,* Hanyang University, Korea (Republic of)

Wednesday Afternoon, June 29, 2022

	Room Auditorium	
1:30pm	**EM1-WeA-1** Self-Limiting Growth of Monocrystalline GaN Films via Sequential Triethylgallium and Forming Gas Plasma Cycles in Hollow-Cathode Plasma-ALD Reactor, *D. Shukla, S. Ilhom, A. Mohammad, B. Willis,* University of Connecticut*; A. Okyay,* Stanford University*; **Necmi Biyikli,*** University of Connecticut	**Emerging Materials** **Session EM1-WeA** **Emerging Materials** **Moderators:** Nathanaelle Schneider, CNRS-IPVF, France, Charles H. Winter, Wayne State University
1:45pm	**EM1-WeA-2** ALD of $In_{1-x}Ga_xN$, ***Henrik Pedersen**, P. Rouf, C. Hsu,* Linköping University, IFM, Sweden	
2:00pm	**EM1-WeA-3** Atomic Layer Doped Epitaxial β-Ga_2O_3 Films Grown via Supercycle and Co-dosing Approaches at 240 ℃, ***Saidjafarzoda Ilhom**, A. Mohammad, D. Shukla, B. Willis,* University of Connecticut*; A. Okyay,* Stanford University*; N. Biyikli,* University of Connecticut	
2:15pm	**EM1-WeA-4** Closing in on Room-Temperature Metal-Insulator-Transitions for Next Generation Electronics by Epitaxial Nickelate ALD, ***Linn Rykkje**, H. Sønsteby, O. Nilsen,* University of Oslo, Norway	
2:30pm	**EM1-WeA-5** Plasma-Enhanced Atomic Layer Deposition of Spinel Ferrite $CoFe_2O_4$ and $NiFe_2O_4$ Thin Films, ***Mari Napari**,* University of Southampton, UK*; M. Heikkila,* University of Helsinki, Finland*; S. Kinnunen, J. Julin,* University of Jyvaskyla, Finland*; T. Prodromakis,* University of Southampton, UK	
2:45pm	**EM1-WeA-6** Engineering Maxwell-Wagner Polarization in $Al_2O_3/TiO_2/Al_2O_3$ Nanolaminates Grown by Atomic Layer Deposition, ***Partha Sarathi Padhi**,* Raja Ramanna Centre for Advanced Technology, India*; R. Ajimsha, S. Rai, P. Misra,* Raja Ramanna Centre for Advanced Technology, India	
3:00pm	**EM1-WeA-7** Plasma Enhanced Spatial ALD of Silver and Copper Thin Films at Atmospheric Pressure using B_2O_3 Seed Layers, ***Tim Hasselmann**, B. Misimi,* University of Wuppertal, Germany*; N. Boysen,* Ruhr University Bochum, Germany*; D. Rogalla,* RUBION, Ruhr University Bochum, Germany*; D. Theirich,* University of Wuppertal, Germany*; A. Devi,* Ruhr University Bochum, Germany*; T. Riedl,* University of Wuppertal, Germany	
3:15pm	**EM1-WeA-8** Silicon-Based Polymer-Derived Ceramic Coatings by Post-Processing of Pre-Ceramic MLD Thin Films, ***Kristina Ashurbekova**, M. Knez,* CIC nanoGUNE, Spain	
3:30pm	Break	
3:45pm		
4:00pm	**NS-WeA2-11** Controlled Encapsulation of Monolayer MoS_2 with Ultrathin Aluminum Oxide for Low Resistance Tunnel Contact Formation, ***Alex Henning**, S. Levashov, J. Primbs, M. Bissolo, T. Grünleitner, C. Qian, J. Finley, I. Sharp,* Walter Schottky Institute and Physics Department, Technical University of Munich, Germany	**Nanostructure Synthesis and Fabrication** **Session NS-WeA2** **2D Materials II** **Moderators:** Suzanne Mohney, Penn State University, Riikka Puurunen, Aalto University, Finland
4:15pm	**NS-WeA2-12** Synthesis of Crystalline Tungsten Disulfide Using Atomic Layer Deposition and Post-Deposition Sulfur Annealing, ***Kamesh Mullapudi**, R. Addou,* Oregon State University*; C. Dezelah, D. Moser, J. Woodruff, R. Kanjolia,* EMD Performance Materials*; J. Conley Jr.,* Oregon State University	
4:30pm	**NS-WeA2-13** In-Situ-Prepared Protective Seed Layer by Plasma ALD on Graphene*, S. Riazimehr,* Oxford Instruments Plasma Technology, Germany*; A. Esteki,* RWTH Aachen University, Germany*; M. Powell,* Oxford Instruments Plasma Technology, UK*; M. Otto, G. Rinke, Z. Wang,* AMO GmbH, Germany*; A. Omahony,* Oxford Instruments Plasma Technology, UK*; M. Lemme,* RWTH Aachen University, Germany and AMO GmbH, Germany*; R. Sundaram,* Oxford Instruments Plasma Technology, UK*; **Harm Knoops**,* Oxford Instruments Plasma Technology, Netherlands	
4:45pm	**NS-WeA2-14** Polycrystalline MoS_2 Thin Films at 100 °C by Plasma-Enhanced Atomic Layer Deposition, ***Miika Mattinen**, M. Verheijen,* Eindhoven University of Technology, The Netherlands*; F. Gity, E. Coleman, R. Duffy,* Tyndall National Institute, University College Cork, Ireland*; E. Kessels,* Eindhoven University of Technology, The Netherlands*; A. Bol,* University of Michigan, Ann Arbor and Eindhoven University of Technology	
5:00pm	**NS-WeA2-15** Selectively Decorated Pt Nanoparticle on WS_2 by Atomic Layer Deposition for High-Performance Gas Sensor, ***Dain Shin**,* School of Electrical and Electronic Engineering, Yonsei University, Korea (Republic of)*; T. Nakazawa,* TANAKA Kikinzoku Kogyo K.K., Isehara Technical Center, Japan*; I. Sohn, S. Chung, H. Kim,* School of Electrical and Electronic Engineering, Yonsei University, Korea (Republic of)	

	Room Baekeland	
1:30pm	**AS1-WeA-1** Polystyrene Brush Deactivation Layers for Area Selective Atomic Layer Deposition, ***Caitlin McFeely***, *M. Snelgrove , K. Shiel, G. Hughes,* School of Physical Sciences, Dublin City University , Ireland; *P. Yadav, M. Morris,* AMBER Research Centre and School of Chemistry, Trinity College Dublin, Ireland; *E. McGlynn, R. O'Connor,* School of Physical Sciences, Dublin City University, Ireland	**Area Selective ALD** **Session AS1-WeA** **Area Selective Deposition I** **Moderators:** Amy Brummer, Georgia Institute of Technology, Il-Kwon Oh, Ajou University, Korea (Republic of)
1:45pm	**AS1-WeA-2** Area Selective Deposition of Ruthenium using a W Precursor Inhibitor, ***Chi Thang Nguyen***, *N. Trinh, M. Lee, H. Lee,* Department of Materials Science and Engineering, Incheon National University, Korea (Republic of)	
2:00pm	**AS1-WeA-3** Electron-beam Functional Group Pattering on HOPG for Area-Selective Atomic Layer Deposition, ***Matthias Young***, *G. Koerner, Q. Wyatt,* University of Missouri; *B. Bateman,* Berea College; *C. Boyle, M. Maschmann,* University of Missouri	
2:15pm	**AS1-WeA-4** Inhibitor Adsorption During Area-Selective ALD: Do Mixtures of Adsorption Configurations Lead to a Loss of Selectivity?, ***Marc Merkx***, *I. Tezsevin, P. Yu, J. Li, R. Lengers, E. Kessels,* Eindhoven University of Technology, Netherlands; *T. Sandoval,* Universidad Técnica Federico Santa Mariá, Chile; *A. Mackus,* Eindhoven University of Technology, Netherlands	
2:30pm	**AS1-WeA-5** Area Selective Deposition for ZnO Hard Mask by 2D-like Carbon fabricated by Molecular Layer Deposition, ***Seunghwan Lee***, *G. Baek, H. Yang,* Hanyang University, Korea; *T. Van, B. Shong,* Hongik University, Korea (Republic of); *J. Park,* Hanyang University, Korea	
2:45pm	**AS1-WeA-6** Bifunctionality of Si Precursors to Enable Area Selective Deposition of Ru and Atomic Layer Deposition of SiO_2, ***Sumaira Yasmeen***, *B. Gu, Y. Kang, H. Lee,* Incheon National University, Korea (Republic of)	
3:00pm	**INVITED: AS1-WeA-7** TiO_2 Area-Selective Deposition: Using Selectivity Loss Mechanisms to Advance Applications in Nanopatterns and EUV Resist Materials, ***Rachel Nye***, North Carolina State University; *K. Van Dongen,* KU Leuven, Belgium; *D. De Simone, J. de Marneffe, H. Oka,* IMEC, Belgium; *G. Parsons,* North Carolina State University; *A. Delabie,* IMEC, Belgium	
3:15pm		
3:30pm	Break	
3:45pm		
4:00pm	**AS2-WeA-11** Intrinsic Area-Selective Atomic Layer Deposition of Aluminium Nitride, ***Bernhard van der Wel***, *T. Aarnink, A. Kovalgin,* University of Twente, the Netherlands	**Area Selective ALD** **Session AS2-WeA** **Area Selective Deposition II** **Moderators:** Stacey Bent, Stanford University, Rachel Nye, North Carolina State University
4:15pm	**AS2-WeA-12** Surface-Diffusion Control Enables Tailored-Aspect-Ratio Nanostructures in Area-Selective Atomic Layer Deposition, ***Philip Klement***, *D. Anders, L. Gümbel, M. Bastianello, F. Michel, J. Schörmann, M. Elm,* Institute of Experimental Physics I & Center for Materials Research (ZfM), Justus Liebig University Giessen, Giessen, Germany; *C. Heiliger,* Institute of Theoretical Physics & Center for Materials Research (ZfM), Justus Liebig University Giessen, Giessen, Germany; *S. Chatterjee,* Institute of Experimental Physics I & Center for Materials Research (ZfM), Justus Liebig University Giessen, Giessen, Germany	
4:30pm	**INVITED: AS2-WeA-13** Study on Area-Selective Atomic Layer Deposition of Al_2O_3 with a Series of Al Precursors, ***Il-Kwon Oh***, Ajou University, Korea (Republic of)	
4:45pm		
5:00pm	**AS2-WeA-15** Selective Hydration of TiO_2 and In_2O_3: A Strategy for Site-Selective Atomic Layer Deposition at Surface Defects, *A. Martinson, E. Kamphaus, J. Jones, N. Shan,* Argonne National Laboratory, USA; *C. Luo, A. Hock,* Illinois Institute of Technology; *L. Cheng,* Argonne National Laboratory, USA; ***Ashley R. Bielinski***, Argonne National Laboratory	
5:15pm	**AS2-WeA-16** Self-Assembled Monolayer and "Click" Chemistry Deposition Treatments for Area-Specific Processing, ***Chad Brick***, *R. Liberatore,* Gelest, Inc; *B. Arkles,* Department of Chemistry, Temple University; *J. Goff,* Gelest, Inc	

Wednesday Afternoon, June 29, 2022

	Room Van Eyck	
1:30pm	**INVITED: EM2-WeA-1** Vapor Phase Infiltration of Polymers for the Synthesis of Organic-Inorganic Hybrid Materials: Process Kinetics, Chemical Pathways, and Final Hybrid Structure, ***Mark Losego***, Georgia Institute of Technology	**Emerging Materials** **Session EM2-WeA** **Vapor Phase Infiltration** **Moderators:** Anjana Devi, Ruhr University Bochum, Germany, Maarit Karppinen, Aalto University, Finland
1:45pm		
2:00pm	**EM2-WeA-3** Atomic Layer Deposition on Polymer Thin Films: On the Role of Precursor Infiltration and Reactivity, ***Robin Petit***, *J. Li, B. Van de Voorde, S. Van Vlierberghe, P. Smet, C. Detavernier,* Ghent University, Belgium	
2:15pm	**EM2-WeA-4** Obtaining Robust Hydrophilic Surface on Soft Polymer Through Atmospheric Pressure ALD, ***Albert Santoso***, *B. van der Berg, V. van Steijn, R. van Ommen,* Delft University of Technology, Netherlands	
2:30pm	**EM2-WeA-5** Modified 3D Printed Architectures: Effects of Infiltration by Alumina on ABS, ***Atilla Varga***, *S. Barry,* Carleton University, Canada	
2:45pm	**EM2-WeA-6** Polymer-Inorganic Hybrids for Inducing Self-Healing Functionality in Metal Oxides, ***Oksana Yurkevich***, *E. Modin,* CIC nanoGUNE, Spain; *I. Šarić, M. Petravić,* University of Rijeka, Croatia; *M. Knez,* CIC nanoGUNE, Spain	
3:00pm	**EM2-WeA-7** Tailoring the Interfacial Interactions of Porous Polymer Membranes to Accelerate Atomic Layer Deposition: The Latent Path to Antifouling Membranes, ***Rahul Shevate***, *V. Rozyyev, R. Pathak, A. Mane, S. Darling, J. Elam,* Argonne National Laboratory, USA	
3:15pm	**EM2-WeA-8** Ruthenium Nanostructures via Sequential Infiltration Synthesis in Self-Assembled Diblock Copolymer Thin Films, ***Nithin Poonkottil***, Ghent University, Belgium; *E. Solano,* ALBA Synchrotron, Spain; *A. Muriqi, M. Nolan,* Tyndall National Institute, University College Cork, Ireland; *C. Detavernier, J. Dendooven,* Ghent University, Belgium	
3:30pm	Break	
3:45pm		
4:00pm	**INVITED: EM3-WeA-11** Photoactive Hybrid Materials by MLD, ***Ola Nilsen***, *P. Hansen,* University of Oslo, Norway	**Emerging Materials** **Session EM3-WeA** **Hybrid Coatings** **Moderators:** Christophe Detavernier, Ghent University, Belgium, Mark Losego, Georgia Institute of Technology
4:15pm		
4:30pm	**EM3-WeA-13** Cerium (III) based Hybrid Inorganic-Organic Thin Films by ALD/MLD, ***Parmish Kaur***, Ruhr University Bochum, Germany; *A. Muriqi,* Tyndall National Institute, University College Cork, Ireland; *J. Wree,* Ruhr University Bochum, Germany; *R. Ghiyasi, M. Safdar,* Aalto University, Finland; *M. Nolan,* Tyndall National Institute, University College Cork, Ireland; *M. Karppinen,* Aalto University, Finland; *A. Devi,* Ruhr University Bochum, Germany	
4:45pm	**EM3-WeA-14** Modifying the Physico-Chemical Properties of Polymer Nanofiltration Membranes with Metal Oxide ALD, ***Kirti Sankhala***, *T. Segal-Peretz* , Technion, Israel	
5:00pm	**EM3-WeA-15** Modelling of the Growth of Al_2O_3-Based Hybrid Films: Role of Terminal Groups in Aromatic Molecules, ***Arbresha Muriqi***, Tyndall National Institute, University College Cork, Ireland; *M. Karppinen,* Aalto University, Finland; *M. Nolan,* Tyndall National Institute, University College Cork, Ireland	
5:15pm	**EM3-WeA-16** Engineering Biomimetic Biocompatible and Selectively Antibacterial Ultrathin Films by Vapor Phase Chemistry, ***Karina Ashurbekova***, *K. Ashurbekova,* CIC nanoGUNE, Spain; *A. Muriqi,* Tyndall National Institute, University College Cork, Ireland; *L. Barandiaran, B. Alonso-Lerma* , CIC nanoGUNE, Spain; *I. Šarić* , University of Rijeka , Croatia; *E. Modin, R. Perez-Jimenez* , CIC nanoGUNE, Spain; *M. Petravić,* University of Rijeka, Croatia; *M. Nolan,* Tyndall National Institute, University College Cork, Ireland; *M. Knez,* CIC nanoGUNE, Spain	

	Room Van Rysselberghe	
1:30pm	**AA1-WeA-1** Effects of Ultra-thin Atomic Layer Deposited MgO Buffer Layer on Structural and Electrical Properties of Beo and HfO_2 Films for Dynamic Random Access Memory Capacitors, ***Bo Wen Wang***, *H. Song, S. Byun, D. Kwon, J. Lim, H. Seo, T. Kim, H. Paik, J. Shin, C. Hwang,* Seoul National University, Korea (Republic of)	**ALD Applications** **Session AA1-WeA** **ALD for Memory Applications II** **Moderators:** Noureddine Adjeroud, Luxembourg Institute of Science and Technology (LIST), , Luxembourg, Christian Wenger, IHP - Leibniz Institut fuer innovative Mikroelektronik, Germany
1:45pm	**AA1-WeA-2** Comparison of TiO_xN_{1-x} Layer Formation at Ferroelectric-$Hf_xZr_{1-x}O_2$/TiN Interface by H_2O and O_2 Plasma Gases During Atomic Layer Deposition, ***Takashi Onaya***, National Institute of Advanced Industrial Science and Technology/Research fellow of Japan Society for the Promotion of Science, Japan; *T. Nabatame, T. Nagata, S. Ueda,* National Institute for Materials Science, Japan; *Y. Jung, H. Hernandez-Arriaga, J. Mohan, J. Kim,* The University of Texas at Dallas; *C. Nam, E. Tsai,* Brookhaven National Laboratory; *H. Ota, Y. Morita,* National Institute of Advanced Industrial Science and Technology, Japan	
2:00pm	**AA1-WeA-3** Atomic Layer Deposition of Ternary Germanium-Sulfur-Selenium and Its Application for Ovonic Threshold Switching, ***Seungwon Park***, *M. Kim, T. Kim, S. Chung, H. Kim,* School of Electrical & Electronic Engineering, Yonsei University, Korea (Republic of)	
2:15pm	**AA1-WeA-4** Scaling Down to sub-5 nm Ferroelectric $Hf_{0.5}Zr_{0.5}O_2$ Thin Films with Anhydrous H_2O_2 ALD Oxidant, ***Yong Chan Jung***, *J. Kim, H. Hernandez-Arriaga, D. Le, S. Hwang,* University of Texas at Dallas; *D. Alvarez, J. Spiegelman,* RASIRC; *T. Onaya,* National Institute of Advanced Industrial Science and Technology (AIST), Japan; *C. Nam, Y. Zhang,* Brookhaven National Laboratory; *S. Kim,* Kangwon National University, Korea (Republic of); *J. Kim,* University of Texas at Dallas	
2:30pm	**AA1-WeA-5** Engineering the Ferroelectric Properties in Hafnium Oxide by Co-Doping during Atomic Layer Deposition, ***Kati Kühnel***, *M. Lederer, A. Pourjafar, K. Mertens, F. Schöne, M. Neuber, L. Roy, T. Kämpfe, K. Seidel, M. Czernohorsky,* Fraunhofer IPMS, Center Nanoelectronic Technologies, Germany	
2:45pm	**AA1-WeA-6** Magnetic and Electric Properties of Atomic Layer Deposited HfO_2-Fe_2O_3 Thin Films, ***Kristjan Kalam***, *M. Otsus, R. Rammula,* University of Tartu, Estonia; *J. Link,* National institute of chemical physics and biophysics, Estonia; *R. Stern,* National Institute of Chemical Physics and Biophysics, Estonia; *G. Vinuesa, S. Duenas, H. Castan,* University of Valladolid, Spain; *K. Kukli, A. Tamm,* University of Tartu, Estonia	
3:00pm	**AA1-WeA-7** Atomic Layer Deposition of Antiferroelectric Perovskite Lead Hafnate Using O_2-Gas-Only as the Oxygen Precursor, ***Nicholas Strnad***, *W. Sarney,* Army Research Laboratory; *G. Fox,* Fox Materials Consulting, LLC; *B. Hanrahan,* Army Research Laboratory; *B. Rayner,* Kurt J. Lesker Company; *R. Rudy, J. Pulskamp,* Army Research Laboratory	
3:15pm	**AA1-WeA-8** *In-situ* Half-Cycle Study of High Purity H_2O_2-based HfO_2 Atomic Layer Deposition for Hf based Ferroelectric Devices Applications, ***Jinhyun Kim***, *Y. Jung, S. Hwang, D. Le, H. Hernandez-Arriaga, K. Tan,* University of Texas at Dallas; *D. Alvarez, J. Spiegelman,* RASIRC; *S. Kim,* Kangwon University; *J. Kim,* University of Texas at Dallas	
3:30pm	**Break**	
3:45pm	**Break**	
4:00pm	**INVITED: AA2-WeA-11** Mechanical Properties of ALD Coatings, ***Aile Tamm***, University of Tartu, Estonia; *H. Piirsoo,* University of Tartu,, Estonia; *J. Kozlova, T. Jõgiaas,* University of Tartu, Estonia	**ALD Applications** **Session AA2-WeA** **Emerging Applications of ALD** **Moderators:** Giuseppe Alessio Verni, ASM, Adrie Mackus, Eindhoven University, Netherlands
4:15pm		
4:30pm	**AA2-WeA-13** Superconducting Tantalum Nitride Prepared by Plasma ALD With RF Biasing for Quantum Applications, ***Silke Peeters***, Eindhoven University of Technology, Netherlands; *C. Lennon, R. Hadfield,* University of Glasgow, UK; *E. Kessels, H. Knoops,* Eindhoven University of Technology, Netherlands	
4:45pm	**AA2-WeA-14** Membrane Design by ALD for Hydrogen Purification, *L. Badouric, M. Drobek, A. Julbe,* ***Mikhael Bechelany***, European Institute of Membranes, France	

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