

Program Overview

Room /Time	Arteveldeforum & Pedro de Gante	Auditorium	Jan & Hubert Van Eyck	Van Rysselberghe	Baekeland
MoM		PS1-MoM: ALD/ALE Plenary Session PS2-MoM: ALD/ALE Plenary Session			
MoA		AF1-MoA: ALD Precursors I & II	AF2-MoA: Plasma Enhanced ALD AF3-MoA: ALD Growth and Surface Chemistry	AA1-MoA: Emerging Applications of ALD I & II	ALE1-MoA: ALE of Metals and Alloys ALE2-MoA: ALE of Metal Oxides
MoP	Poster Sessions				
TuM		AA-TuM: ALD for Solar Energy Materials I & II	AF1-TuM: ALD Mechanisms and Modeling AF2-TuM: Conformality of ALD	AA2-TuM: ALD for Batteries and Energy Storage I & II	ALE1-TuM: ALE Selectivity and Anisotropy ALE2-TuM: ALE for GaN Devices
TuA		AM-TuA: Spatial, Large Area and Powder ALD I & II	AF-TuA: Characterization I & II	AA-TuA: ALD for Catalysis I & II	ALE1-TuA: ALE of Si-based Materials ALE2-TuA: Novel ALE Techniques and Materials
TuP	Poster Sessions				
WeM1		PS3-WeM: Highlighted ALD Contributed Talks			
WeM2		NS-WeM: 2D Nanomaterials by ALD I	EM-WeM: Organic and Organic-Inorganic Hybrid Materials I	AA-WeM: ALD for Semiconductor Applications I	AS-WeM: Selective ALD I
WeA		NS1-WeA: 2D Nanomaterials by ALD II/NS2-WeA: Nanomaterials by ALD - Nanoparticles & ALD on Polymers	EM-WeA: Organic and Organic-Inorganic Hybrid Materials II & III	AA-WeA: ALD for Semiconductor Applications II & III	AS-WeA: Selective ALD II & III

Anticipated Schedule Monday, June 29, 2020

Anticipated Schedule Monday Morning, June 29

8:45 AM	_____
9:00 AM	_____
9:15 AM	_____
9:30 AM	_____
9:45 AM	_____
10:00 AM	_____
10:15 AM	_____
10:30 AM	_____
10:45 AM	_____
11:00 AM	_____
11:15 AM	_____
11:30 AM	_____
11:45 AM	_____
12:00 PM	_____

Anticipated Schedule Monday Lunch, June 29

When	_____
Where	_____
With	_____

Anticipated Schedule Monday Afternoon, June 29

1:00 PM	_____
1:15 PM	_____
1:30 PM	_____
1:45 PM	_____
2:00 PM	_____
2:15 PM	_____
2:30 PM	_____
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5:30 PM	_____

Monday Morning, June 29, 2020

Room Auditorium		
8:30am		Plenary Session Session PS1-MoM ALD/ALE Plenary Session Moderators: Jean-François de Marneffe, IMEC, Jolien Dendooven, Ghent University, Christophe Detavernier, Ghent University, Erwin Kessels, Eindhoven University of Technology, Harm C.M. Knoop, Oxford Instruments Plasma Technology, Paul Poodt, TNO/Holst Center
8:45am	INVITED: PS1-MoM2 New Process Requirements Driven by More than Moore and More Moore Device Integration Innovations, Steven Steen , <i>M. McManus</i> , ASML, Netherlands; <i>P. Leray</i> , Imec, Belgium	
9:00am	Invited talk continues.	
9:15am		
9:30am	INVITED: PS1-MoM5 Innovations in ALD Chemistry Open Doors to Applications, Mikko Ritala , University of Helsinki, Finland	
9:45am	Invited talk continues.	
10:00am		
10:15am	Break & Exhibits	
10:30am	Break & Exhibits	
10:45am	INVITED: PS2-MoM10 The First Application of ALD Technology in Display Industry, Hyun-Chul Choi , LG Display, Republic of Korea	
11:00am	Invited talk continues.	Plenary Session Session PS2-MoM ALD/ALE Plenary Session Moderators: Jean-François de Marneffe, IMEC, Jolien Dendooven, Ghent University, Christophe Detavernier, Ghent University, Erwin Kessels, Eindhoven University of Technology, Harm C.M. Knoop, Oxford Instruments Plasma Technology, Paul Poodt, TNO/Holst Center
11:15am	INVITED: PS2-MoM12 ALD on Powders for Catalysis, Frank Rosowski , BASF SE, Germany	
11:30am	Invited talk continues.	
11:45am	INVITED: PS2-MoM14 The Flip Side of the Story: Atomic Layer Etching, Keren Kanarik , Lam Research Corp.	
12:00pm	Invited talk continues.	
12:15pm	Invited talk continues.	
12:30 pm	Sponsor Presentations	

Monday Afternoon, June 29, 2020

Room Auditorium		
1:30pm	INVITED: AF1-MoA1 Thermal Atomic Layer Deposition of Noble Metal Films Using Non-Oxidative Coreactants, <i>Charles H. Winter</i> , Wayne State University	ALD Fundamentals Session AF1-MoA ALD Precursors I & II Moderators: Seán Barry, Carleton University, Anjana Devi, Ruhr University Bochum, Germany
1:45pm	Invited talk continues.	
2:00pm	AF1-MoA3 Atomic Layer Deposition of Ruthenium-Containing Thin Films using RuO ₄ as both the Co-Reactant and the Metal Source, <i>Matthias Minjauw, J.-Y. Feng, C. Detavernier, J. Dendooven</i> , Ghent University, Belgium	
2:15pm	AF1-MoA4 Nickel β-ketoiminato Complexes as Versatile Precursors for the Deposition of Nickel Containing Thin Films, <i>Dennis Zywitzki, A. Devi</i> , Ruhr University Bochum, Germany	
2:30pm	AF1-MoA5 Visual Screening of Precursors for ALD/MLD, <i>Ola Nilsen, P.-A. Hansen</i> , University of Oslo, Norway	
2:45pm	AF1-MoA6 Atomic Layer Deposition of Titanium Disulphide (TiS ₂) using Diethyl disulphide (Et ₂ S ₂) as a New Sulphur Source, <i>Aditya Chalishazar, B. Mandol</i> , Indian Institute of Technology Bombay, India; <i>N. Mahuli</i> , University of Colorado - Boulder; <i>R. Rani, S. Sarkar</i> , Indian Institute of Technology Bombay, India	
3:00pm	AF1-MoA7 β-Silyl-Diamides and β-Silyl-Amidoamines Lead to Unusual Co(II & IV) Precursors, <i>David Zanders</i> , Ruhr University Bochum, Germany; <i>M. Griffiths, G. Bacic</i> , Carleton University, Canada; <i>J. Masuda</i> , Saint Mary's University, Canada; <i>A. Devi</i> , Ruhr University Bochum, Germany; <i>S. Barry</i> , Carleton University, Canada	
3:15pm	AF1-MoA8 A Low Cost, High Efficiency TMA-Replacement for the Deposition of Pure Aluminum Nitride Films by ALD, <i>Sydney Buttera</i> , Carleton University, Canada; <i>P. Rouf, H. Pedersen</i> , Linköping University, Sweden; <i>S. Barry</i> , Carleton University, Canada	
3:30pm	Break & Exhibits	
3:45pm	Break & Exhibits	
4:00pm	AF1-MoA11 Using Design of Experiments (DoE) in Development of a Ternary Atomic Layer Deposition Processes: A Case Study of CaMoO ₄ , <i>Julie Kvalvik, P.-A. Hansen, O. Nilsen</i> , University of Oslo, Norway	
4:15pm	AF1-MoA12 Polymeric Tin Trifluoroacetate Precursors for Atomic Layer Deposition of Fluorine-Doped Tin(IV) Oxide, <i>Goran Bacic, E. Goodwin</i> , Carleton University, Canada; <i>J.R. Gagnon, R.W. Boyd</i> , University of Ottawa, Canada; <i>S.P. McGarry, S. Barry</i> , Carleton University, Canada	
4:30pm	AF1-MoA13 Atomic Layer Deposition of TbF ₃ , <i>Elisa Atosuo, J. Ojala, M. Heikkila, K. Mizohata, J. Raisanen, M. Leskela, M. Ritala</i> , University of Helsinki, Finland	
4:45pm	AF1-MoA14 Highly Volatile In(III) Triazenide Precursors for Atomic Layer Deposition of Indium Nitride, <i>Nathan O'Brien, P. Rouf, R. Samii, K. Rönby</i> , Linköping University, Sweden; <i>S. Buttera</i> , Carleton University, Canada; <i>V. Kessler</i> , Swedish University of Agricultural Sciences, Sweden; <i>L. Ojamäe, H. Pedersen</i> , Linköping University, Sweden	
5:00pm	AF1-MoA15 ALD Precursor Chemistry: Synthetic Routes, Purification and Evaluation of Precursors, <i>Anjana Devi</i> , Ruhr University Bochum, Germany	
5:15pm	AF1-MoA16 New Cerium and Ytterbium Complexes as ALD Precursors: Synthesis, Characterisation, DFT Studies and Application, <i>Parmish Kaur</i> , Ruhr University Bochum, Germany; <i>R. Ghiyasi, S. Muhammad</i> , Aalto University, Finland; <i>A. Muriqi</i> , Tyndall National Institute, Ireland; <i>L. Mai</i> , Ruhr University Bochum, Germany; <i>M. Nolan</i> , University College Cork, Ireland; <i>M. Karppinen</i> , Aalto University, Finland; <i>A. Devi</i> , Ruhr University Bochum, Germany	
5:30pm	AF1-MoA17 Identification of an Intramolecular Stabilized Aminoalkyl Magnesium Precursor During the Developmental Precursor Chemistry of Non-Pyrophoric Alternatives to TMA and DEZ, <i>Lukas Mai, F. Preischel, A. Devi</i> , Ruhr University Bochum, Germany	

Monday Afternoon, June 29, 2020

Room Baekeland		
1:30pm	INVITED: ALE1-MoA1 Mechanistic Insights into Thermal Dry Atomic Layer Etching of Metals and Alloys, Andrew Teplyakov , University of Delaware	Atomic Layer Etching Session ALE1-MoA ALE of Metals and Alloys Moderators: Heeyeop Chae, Sungkyunkwan University, Alfredo Mameli, TNO/Holst Center
1:45pm	Invited talk continues.	
2:00pm	ALE1-MoA3 Thermal Atomic Layer Etching of Nickel Using SO_2Cl_2 and $\text{P}(\text{CH}_3)_3$, Jessica Murdzek, S.M. George , University of Colorado - Boulder	
2:15pm	ALE1-MoA4 Metal Etch by Plasma/Thermal Atomic Layer Etching, A. Goodyear, P. Alvarez, Mike Cooke , Oxford Instruments Plasma Technology, UK	
2:30pm	ALE1-MoA5 Thermal-Plasma ALE on Selected Metals for EUV and Integration Processes, Xia (Gary) Sang, E. Chen, J. Chang , University of California Los Angeles	
2:45pm	INVITED: ALE1-MoA6 Thermal-Cyclic Atomic Layer Etching of Cobalt via Organometallic Complex, Sumiko Fujisaki, Y. Yamaguchi, H. Kobayashi, K. Shinoda, M. Yamada, H. Hamamura , Hitachi, Japan; M. Izawa , Hitachi High-Technologies, Japan	
3:00pm	Invited talk continues.	
3:15pm	ALE1-MoA8 Mechanism of TiN Etch using NbF_5 and CCl_4 from First Principles, Suresh Kondati Natarajan , Aalto University, Finland; V. Sharma, M. Givens , ASM, Finland; T. Blomberg , Picosun Oy, Finland; S. Haukka , ASM, Finland; S.D. Elliott , Schrödinger, Inc.	
3:30pm	Break & Exhibits	
3:45pm	Break & Exhibits	
4:00pm	ALE2-MoA11 In situ and In vacuo Studies on Atomic Layer Etching of Al_2O_3 , Johanna Reif, M. Knaut, S. Killge, M. Albert, J.W. Bartha , Technische Universität Dresden, Germany	Atomic Layer Etching Session ALE2-MoA ALE of Metal Oxides Moderators: Venkateswara Pallem, American Air Liquide, Ishii Yohei, Hitachi High Technologies
4:15pm	ALE2-MoA12 Ab Initio Study on the Surface Reactions of Thermal Atomic Layer Etching of Al_2O_3 , Xiao Hu , Chemnitz University of Technology, Germany; J. Schuster, S. Schulz , Fraunhofer Institute for Electronic Nano Systems, Germany	
4:30pm	ALE2-MoA13 Volatile Products from Thermal Atomic Layer Etching Observed using Mass Spectrometer with Line-of-Sight Detection, Andrew Cavanagh, A. Lii-Rosales, S.M. George , University of Colorado - Boulder	
4:45pm	ALE2-MoA14 Isotropic Plasma ALE of Al_2O_3 using SF_6 Plasma and TMA, Nicholas Chittock, M. Vos, A. Mackus , Eindhoven University of Technology, Netherlands; H.C.M. Knoops , Oxford Instruments Plasma Technology, Netherlands; W.M.M. Kessels , Eindhoven University of Technology, Netherlands	
5:00pm	ALE2-MoA15 Blocking Thermal Atomic Layer Etching with Removable Etch Stop Layers, David Zywotko , University of Colorado - Boulder; O. Zandi, J. Faguet, P. Abel , TEL Technology Center, America, LLC; S.M. George , University of Colorado - Boulder	
5:15pm	ALE2-MoA16 Mechanism of the HF Pulse in the Thermal Atomic Layer Etch of HfO_2 and ZrO_2 : A First Principles Study, Rita Mullins , Tyndall National Institute, Ireland; S. Natarajan , Aalto University, Finland; S.D. Elliott , Schrödinger, Inc.; M. Nolan , Tyndall National Institute, Ireland	
5:30pm	ALE2-MoA17 Thermal Atomic Layer Etching of Ta_2O_5 and TaN using BCl_3 and HF: Evidence for a Conversion-Etch Mechanism, N. Johnson, Steven M. George , University of Colorado - Boulder	

Monday Afternoon, June 29, 2020

Room Jan & Hubert Van Eyck		
1:30pm	AF2-MoA1 The Effect of Plasma Parameters on Film Deposition and Bubble Formation, Andreas Werbrouck , <i>K. Van de Kerckhove, D. Depla, J. Dendooven, C. Detavernier</i> , Ghent University, Belgium	ALD Fundamentals Session AF2-MoA Plasma Enhanced ALD Moderators: Sumit Agarwal, Colorado School of Mines, Seung Wook Ryu, SK Hynix
1:45pm	AF2-MoA2 Ion Energy Distribution and Fluxes for a Newly-Designed Remote Plasma Source for ALD for GaN Devices, Harm C.M. Knoops , Oxford Instruments Plasma Technology, Netherlands; <i>K. Arts, J. Buijter, L.M. Martini</i> , Eindhoven University of Technology, Netherlands; <i>D. Hemakumara</i> , Oxford Instruments Plasma Technology, Netherlands; <i>M. Powell</i> , Oxford Instruments Plasma Technology, UK; <i>A. Kurek, Y. Shu</i> , Oxford Instruments Plasma Technology, Netherlands; <i>W.M.M. Kessels</i> , Eindhoven University of Technology, Netherlands; <i>C. Hodson, A. O'Mahony</i> , Oxford Instruments Plasma Technology, Netherlands	
2:00pm	AF2-MoA3 Plasma-Enhanced Atomic Layer Deposition of Cobalt and Cobalt Nitride: What Controls the Incorporation of Nitrogen?, Gerben van Straaten , <i>R. Deckers, M. Vos, W.M.M. Kessels, A. Creatore</i> , Eindhoven University of Technology, Netherlands	
2:15pm	AF2-MoA4 Recent Advances in Hollow Cathode Technology for Plasma Assisted ALD, K. Scott Butcher , <i>V. Georgiev, D. Georgieva</i> , Meaglow Ltd, Canada	
2:30pm	AF2-MoA5 Detection of Oxygen Vacancies in H ₂ -Plasma Enhanced Atomic Layer Deposited (PEALD) Ferroelectric Hafnia Zirconia Thin Films, H. Alex Hsain , NC State University; <i>G. Walters</i> , University of Florida; <i>Y. Lee, J. Jones</i> , NC State University; <i>T. Nishida</i> , University of Florida	
2:45pm	AF2-MoA6 Role of Substrate Bias Voltage and Duration on PEALD TiVN/Substrate Interface and Film Properties, Mark Sowa , Veeco ALD; <i>A. Kozen</i> , University of Maryland; <i>I. Chowdhury, E. Brown, J. Haik, T. Babuska, N. Strandwitz</i> , Lehigh University; <i>K. Van Meter, B. Krick</i> , Florida State University	
3:00pm	AF2-MoA7 Effect of an Electric Field on the Material Properties of Hafnium Oxide Thin Films Deposited by Plasma Enhanced Atomic Layer Deposition, Vivek Beladiya , <i>A. Szeghalmi</i> , Friedrich Schiller University, Germany	
3:15pm	AF2-MoA8 Study of the Surface Species During Thermal and Plasma-Enhanced Atomic Layer Deposition of Titanium Oxide Films using In-situ IR-Spectroscopy and In Vacuo X-ray Photoelectron Spectroscopy, Sofie Vandenbroucke , Ghent University - IMEC, Belgium; <i>E. Levrau, M. Minjauw, M. Van Daele</i> , Ghent University, Belgium; <i>E. Solano</i> , Ghent University, Belgium, Spain; <i>R. Vos</i> , IMEC, Belgium; <i>J. Dendooven, C. Detavernier</i> , Ghent University, Belgium	
3:30pm	Break & Exhibits	
3:45pm	Break & Exhibits	
4:00pm	INVITED: AF3-MoA11 As Deposited Epitaxial Functional Complex Oxides - Enabling Novel Technology, Henrik H. Sønsteby , University of Oslo, Norway	ALD Fundamentals Session AF3-MoA ALD Growth and Surface Chemistry Moderators: Christian Dussarat, Air Liquide Laboratories, Simon D. Elliot, Schrödinger, Inc.
4:15pm	Invited talk continues.	
4:30pm	AF3-MoA13 Atomic Layer Deposition of Lead Halides: PbCl ₂ and PbBr ₂ , Georgi Popov , University of Helsinki, Finland; <i>G. Bačić</i> , Carleton University, Canada; <i>C. Van Dijk</i> , University of Helsinki, Belgium; <i>L. Junkers, M. Mattinen, P. Jalkanen, K. Mizohata, J. Räsänen, M. Kemell, M. Leskelä</i> , University of Helsinki, Finland; <i>S. Barry</i> , Carleton University, Canada; <i>M. Ritala</i> , University of Helsinki, Finland	
4:45pm	AF3-MoA14 RT Atomic Layer Deposition of Aluminum Silicate and its Application to Ion Sorption Surfaces, <i>Y. Mori, T. Saito, K. Saito, K. Yoshida, M. Miura, K. Kanomata, B. Ahmmad, S. Kubota</i> , Fumihiko Hirose , Yamagata University, Japan	
5:00pm	AF3-MoA15 Nucleation and Growth of Thermal ALD Au Films - Towards Coalescence of Ultrathin Films, Virginia Wheeler , <i>B. Greenberg, N. Nepal, J. Avila, B. Feigelson</i> , U.S. Naval Research Laboratory	
5:15pm	AF3-MoA16 ABC-Type Pulsing for Improved ALD of Group 13 Nitrides using Trialkyl Metal Precursors, Henrik Pedersen , <i>P. Rouf, P. Deminskyi</i> , Linköping University, Sweden; <i>T. Törndahl</i> , Uppsala University, Sweden; <i>L. Ojamäe</i> , Linköping University, Sweden	
5:30pm	AF3-MoA17 Atomic Layer Deposition of Metal Thin Film using Discrete Feeding Method (DFM) and Electric Field/Potential Assisted-Atomic Layer Deposition (EA-ALD), Ji Won Han , <i>T.J. Park</i> , Hanyang University, Republic of Korea; <i>H.S. Jin</i> , SK Hynix Inc, Republic of Korea; <i>Y.J. Kim</i> , Hanyang University, Republic of Korea	

Monday Afternoon, June 29, 2020

Room Van Rysselberghe		ALD Applications Session AA1-MoA Emerging Applications of ALD I & II Moderators: Hyeontag Jeon, Hanyang University, Viljami Pore, ASM Microchemistry Ltd.
1:30pm	AA1-MoA1 ALD Enabled Metal Hydrides for Seasonal Energy Storage, <i>Steven Christensen</i> , National Renewable Energy Laboratory; <i>K. Gross</i> , H2 Technology Consulting; <i>N. Leick</i> , <i>N. Strange</i> , National Renewable Energy Laboratory; <i>M. Fitzgerald</i> , <i>S. Pylypenko</i> , Colorado School of Mines	
1:45pm	AA1-MoA2 Resistive Switching Maps for Films of Variable Conductivity Grown by Atomic Layer Deposition, <i>Kaupo Kukli</i> , University of Tartu, Estonia; <i>M. Kemell</i> , University of Helsinki, Finland; <i>H. Castán</i> , <i>S. Dueñas</i> , University of Valladolid, Spain; <i>M. Heikkilä</i> , University of Helsinki, Finland; <i>J. Kozlova</i> , <i>M. Rähn</i> , University of Tartu, Estonia; <i>M. Ritala</i> , <i>M. Leskelä</i> , University of Helsinki, Finland	
2:00pm	AA1-MoA3 Fabrication of Reliable Nano-Sized Memristive Devices by Means of ALD Process Control, <i>Susanne Hoffmann-Eifert</i> , <i>H. Zhang</i> , <i>A. Hardtdegen</i> , <i>S. Aussen</i> , <i>F. Cueppers</i> , Forschungszentrum Juelich GmbH, Germany	
2:15pm	AA1-MoA4 Atomic/Molecular Layer Deposition of Metal-Organic Thin Films with Redox-State Dependent Conductance Switching Towards Neuromorphic Computing, <i>Mikko Nisula</i> , Ghent University, Belgium; <i>A. Karttunen</i> , Aalto University, Finland; <i>M. Minjauw</i> , <i>J. Dendooven</i> , <i>C. Detavernier</i> , Ghent University, Belgium	
2:30pm	INVITED: AA1-MoA5 Using an ALD Formulation to Produce Pharmaceutical Clinical Trial Material Aimed as an Injectable Depot, <i>Mårten Rooth</i> , <i>A. Johansson</i> , <i>J. Hellrup</i> , <i>E. Mårtensson</i> , <i>R. Kivistö-Larsson</i> , Nanexa AB, Sweden; <i>T. Törndahl</i> , Uppsala University, Sweden	
2:45pm	Invited talk continues.	
3:00pm	AA1-MoA7 Understanding and Controlling Release and Aerosolization of Inhaled Drug Particles Engineered by Atomic Layer Deposition, <i>D. La Zara</i> , <i>F. Sun</i> , <i>F. Zhang</i> , Delft University of Technology, Netherlands; <i>M. Quayle</i> , <i>G. Petersson</i> , <i>S. Folestad</i> , AstraZeneca, Sweden; <i>Ruud van Ommen</i> , Delft University of Technology, Netherlands	
3:15pm	AA1-MoA8 In-vitro Screening of Materials and Laminates by Atomic Layer Deposition for Medical Device Coatings, <i>R. Ritasalo</i> , Picosun Oy, Finland; <i>O.M.E. Ylivaara</i> , VTT Technical Research Centre of Finland Ltd, Finland; <i>T. Sillanpää</i> , <i>P. Holmlund</i> , <i>A. Kärkkäinen</i> , VTT Technical Research Centre of Finland, Finland; <i>Tom Blomberg</i> , Picosun Oy, Finland	
3:30pm	Break & Exhibits	
3:45pm	Break & Exhibits	
4:00pm	AA1-MoA11 ALD and PE-ALD of High-Mobility Zinc-Tin-Oxide Semiconductor Layers: Towards Printable Electronic Devices, <i>T. Cho</i> , <i>C. Allemang</i> , <i>N. Farjam</i> , <i>O. Trejo</i> , <i>S. Ravan</i> , <i>R. Rodríguez</i> , <i>K. Barton</i> , <i>R. Peterson</i> , <i>Neil Dasgupta</i> , University of Michigan	
4:15pm	AA1-MoA12 Optimized Schottky Junctions by Atomic Layer Deposition for Piezotronic MEMS Strain Microsensors, <i>Raoul Joly</i> , <i>S. Girod</i> , <i>N. Adjeroud</i> , <i>M. El Hachemi</i> , <i>P. Grysan</i> , <i>T. Nguyen</i> , <i>K. Mengueliti</i> , <i>S. Klein</i> , <i>J. Polesel</i> , Luxembourg Institute of Science and Technology, Luxembourg	
4:30pm	AA1-MoA13 Passivation of Ge and Si Surfaces by Plasma-Enhanced ALD Al ₂ O ₃ , <i>Willem-Jan Berghuis</i> , <i>J. Melskens</i> , <i>B. Macco</i> , <i>R. Theeuwes</i> , <i>W.M.M. Kessels</i> , Eindhoven University of Technology, Netherlands	
4:45pm	AA1-MoA14 Embedded Organics in Crystalline Fluorides: A One-Step Approach to Sensitized Luminescence, <i>Per-Anders Hansen</i> , University of Oslo, Norway; <i>T. Zikmund</i> , Academy of Sciences of the Czech Republic, Czech Republic; <i>T. Yu</i> , Utrecht University, Netherlands; <i>J. Nitsche Kvalvik</i> , <i>T. Aarholt</i> , <i>Ø. Prytz</i> , University of Oslo, Norway; <i>A. Meijerink</i> , Utrecht University, Netherlands; <i>O. Nilsen</i> , University of Oslo, Norway	
5:00pm	AA1-MoA15 Atomic Layer Deposition of ZnO Quantum Dots for Optoelectronics, <i>Jin Li</i> , Ghent University, Belgium; <i>Y. Yu</i> , <i>X. Bi</i> , Beihang University, China	
5:15pm	INVITED: AA1-MoA16 Highly Efficient Antireflection Coatings on Strongly Curved Substrates, <i>Adriana Szeghalmi</i> , Friedrich Schiller University, Germany; <i>K. Pfeiffer</i> , Fraunhofer Institute for Applied Optics and Precision Engineering IOF, Germany; <i>L. Ghazaryan</i> , <i>P. Paul</i> , <i>V. Beladiya</i> , Friedrich Schiller University, Germany	
5:30pm	Invited talk continues.	

ALD Fundamentals

Room Arteveldeforum & Pedro de Gante - Session AF-MoP

ALD Fundamentals Poster Session

5:45pm

AF-MoP1 First Principles Study of Atomic Layer Deposition of CeO₂ on Hydroxylated TiO₂: the Role of TiO₂ Surface Facet, *Ji Liu, M. Nolan*, Tyndall National Institute, University College Cork, Ireland

AF-MoP2 A Novel Approach to Evaluate LEIS Data of 2D SnS₂ to Quantify the First and Second Atomic Layer Coverage, *P. Brüner*, IONTOF GmbH, Germany; *M. Mattinen, M. Ritala*, University of Helsinki, Finland; *Thomas Grehl*, IONTOF GmbH, Germany

AF-MoP3 The Structure and Properties of Titanium Nitride Layers Grown by Plasma Enhanced Atomic Layer Deposition on Different Substrates, *Valentina Korchnoy*, Technion - Israel Institute of Technology, Israel; *I. Krylov*, Tower Semiconductor Ltd., Israel; *X. Xu, Y. Qi, K. Weinfeld, M. Eizenberg, D. Ritter*, Technion - Israel Institute of Technology, Israel

AF-MoP4 Novel selenium ALD precursors, *Jaroslav Charvot, D. Pokorný, F. Bureš, R. Zazpe, J. Macák*, University of Pardubice, Czech Republic

AF-MoP5 Study on Decomposition of Cyclopentadienyl Tris(dimethylamino)Zirconium [CpZr(NMe₂)₃] for ALD Process, *Eunmi Choi, H. Kim, S. Kim, S.J. Maeng, N.-K. Chung, J.Y. Yun*, Korea Research Institute of Standard and Science (KRISS), Republic of Korea

AF-MoP6 Study of Titanium Nitride ALD Process using High Purity Hydrazine Compared to NH₃, *Hayato Murata*, Taiyo Nippon Sanso Corporation, Japan; *T. Mizuno*, Taiyo Nippon Sanso Corporation; *K. Andachi, G. Tsuchibuchi*, Taiyo Nippon Sanso Corporation, Japan; *D. Alvarez, Jr., J. Spiegelman*, RASIRC; *K. Suzuki*, Taiyo Nippon Sanso Corporation, Japan

AF-MoP7 New Molybdenum and Tungsten Precursors for Transition Metal Dichalcogenide Materials, *Jan-Lucas Wree, M. Wilken, J.-P. Glauber, A. Devi*, Ruhr University Bochum, Germany

AF-MoP8 Epitaxial Growth of High-*k* Ba_xSr_{1-x}TiO₃ Thin Films by Atomic Layer Deposition, *T. Le, John Ekerdt*, University of Texas at Austin

AF-MoP9 Atomic Layer Deposition of ZnO Based Laminate Thin Films for BEOL Applications, *Shóna Doyle, M.E. Pemble, I. Povey*, Tyndall National Institute, Ireland

AF-MoP10 SnO Thin Films via Water Assisted 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, D. Rogalla*, Ruhr University Bochum, Germany; *M. Karppinen*, Aalto University, Finland; *A. Devi*, Ruhr University Bochum, Germany

AF-MoP11 Atomic Layer-Deposited Superconducting Niobium Nitride for Quantum Device Applications, *E. Knehr*, Institute of Micro- and Nanoelectronic Systems, Karlsruhe Institute of Technology, Germany; *Mario Ziegler, S.P. Linzen*, Leibniz Institute for Photonic Technologies Jena, Germany; *A. Kuzmin, K. Ilin*, Institute of Micro- and Nanoelectronic Systems, Karlsruhe Institute of Technology, Germany; *R. Stolz, E. Ilichev, H. Schmidt, M. Siegel*, Leibniz Institute for Photonic Technologies Jena, Germany

AF-MoP12 Carbenes Can Make a CVD Process into an ALD Process by Surface Passivation, *Aya Kadri, M. Griffiths*, Carleton University, Canada; *J. Masuda*, Saint Mary's University, Canada; *S. Barry*, Carleton University, Canada

AF-MoP13 Comparison Study of Thermal and Plasma ALD with and without Bias, *Hyeontag Jeon, C. Jung, S. Park, S. Song, B. Kim, Y. Kim, J. Song, S.W. Han*, Hanyang University, Republic of Korea

AF-MoP14 High Wet Etch Resistance SiO₂ Films Deposited by Plasma-Enhanced Atomic Layer Deposition using 1,1,1-Tris(Dimethylamino)Disilane, *Su Min Hwang*, University of Texas at Dallas; *H. Kim, Z. Qin*, The University of Texas at Dallas; *A. Ravichandran*, University of Texas at Dallas; *J. Lee*, The University of Texas at Dallas; *Y.C. Jung*, University of Texas at Dallas; *S.J. Kim*, Kangwon National University, Republic of Korea; *J. Ahn*, Hanyang University, Republic of Korea; *B.K. Hwang, L. Lee, X. Zhou, DuPont; J. Kim*, University of Texas at Dallas

AF-MoP15 Applying a Figure of Merit to Known Copper Precursors, *Atilla Varga, M. Griffiths*, Carleton University, Canada; *J. Masuda*, Saint Mary's University, Canada; *S. Barry*, Carleton University, Canada

AF-MoP16 Conformality in Aluminum Oxide ALD Process Analyzed using the 3rd-Generation Silicon-Based Lateral High-Aspect-Ratio Test Structures, *Jihong Yim*, Aalto University, Finland; *O.M.E. Ylivaara*, VTT Technical Research Centre of Finland Ltd, Finland; *M. Yllammi, V. Korpelainen*, VTT Technical Research Centre of Finland, Finland; *E. Haimi, E. Verkama*, Aalto University, Finland; *M. Utraiainen*, VTT Technical Research Centre of Finland, Finland; *R. Puurunen*, Aalto University, Finland

AF-MoP17 Growth and Characterization of Aluminum Nitride using TMA, and NH₃ by Atomic Layer Deposition, *Yu-Chiao Lin, C.-C. Kei, C.-Y. Chang, C.-Y. Yang, C.-L. Chen*, National Applied Research Laboratories, Republic of China

AF-MoP18 Thermal SiN_x Using NH₃ and Anhydrous Hydrazine as Nitriding Agents, *S.M. Hwang, Dan Le, A. Ravichandran, A. Kondusamy*, University of Texas at Dallas; *D. Alvarez, J. Spiegelman*, RASIRC; *J. Kim*, University of Texas at Dallas

AF-MoP19 Observation of Transient Response of Langasite Crystal Microbalance (LCM) at High Temperature, *Masafumi Kumano*, Tohoku University, Japan; *K. Hikichi*, Technofine Co. Ltd, Japan; *M. Omote*, XMAT Corporation, Japan; *Y. Ohashi, A. Yoshikawa, S. Tanaka*, Tohoku University, Japan

AF-MoP20 Atomic Layer Deposition of Niobium Nitride Thin Film with NbCl₅ and NH₃, *Moo-Sung Kim, S.-W. Lee*, Versum Materials Korea, Republic of Korea; *S. Ivanov*, Versum Materials, Inc

AF-MoP21 Atomic Layer Deposition of Vanadium Oxides using Vanadyl Acetylacetonate as Precursor, *P.-C. Juan*, Ming Chi University of Technology, Republic of China; *W.-H. Cho*, National Applied Research Laboratories, Republic of China; *Chien Cheng Kuo*, National Central University, Republic of China; *G.-R. Li*, Ming Chi University of Technology, Republic of China; *C.-L. Chen, C.-Y. Yang, C.-C. Kei*, National Applied Research Laboratories, Republic of China

AF-MoP22 Room Temperature ALD using OH Radical Generated by Mixing High Purity Ozone and Ethylene Gas, *Takayuki Hagiwara, A. Abe, N. Kameda, T. Miura, Y. Morikawa, M. Kekura*, Meidensha Corporation, Japan; *K. Nakamura, H. Nonaka*, AIST, Japan

AF-MoP23 Film Properties of Al₂O₃ Film Formed by High Purity Ozone-ALD at Room Temperature, *Ayaka Abe, T. Hagiwara, N. Kameda, T. Miura, Y. Morikawa, M. Kekura*, Meidensha Corporation, Japan; *K. Nakamura, H. Nonaka*, AIST, Japan

AF-MoP24 Growth and Film Properties of Plasma-Enhanced and Thermal Atomic-Layer-Deposited Magnesium Oxide Films using bis(Ethylcyclopentadienyl)Magnesium Precursor, *J.H. Han, Wangu Kang, B.J. Choi*, Seoul National University of Science and Technology, Republic of Korea

AF-MoP25 Thermal Property Measurement of Tetrakis(Ethylmethylamido)Hafnium (TEMAHf) Precursor for High-*k* HfO₂ Dielectric Deposition, *Hayeong Kim*, University of Science and Technology, Republic of Korea; *E. Choi, S. Lee, S.J. Maeng, J.Y. Yun*, Korea Research Institute of Standard and Science, Republic of Korea

AF-MoP26 Density Functional Theory Study on the Reducing Agent for Atomic Layer Deposition of Tungsten using Tungsten Chloride Precursor, *R. Hidayat, Yewon Kim, T. Chowdhury*, Sejong University, Republic of Korea; *S.-H. Kim*, Yeungnam University, Republic of Korea; *W.-J. Lee*, Sejong University, Republic of Korea

AF-MoP27 Density Functional Theory Study on the Surface Reaction of the Hafnium Precursor with a Linked Amido-Cyclopentadienyl Ligand, *Romel Hidayat, H.-L. Kim*, Sejong University, Republic of Korea; *H. Kim, Y. Byun, J. Lee*, Mecaro, Republic of Korea; *W.-J. Lee*, Sejong University, Republic of Korea

AF-MoP28 Crystallized ZnO Room-Temperature Atomic Layer Deposition and its Application, *Kazuki Yoshida, K. Saito, M. Miura, K. Kanomata, B. Ahmmad, S. Kubota, F. Hirose*, Yamagata University, Japan

AF-MoP29 Development of Noble Hafnium Precursors for HfO₂ Thin Films, *Gayeon Lee*, Korea Research Institute of Chemical Technology, Republic of Korea; *S.M. Yeo, B.K. Park, T. Eom, C.G. Kim*, Korea Research Institute of Chemical Technology (KRICT), Republic of Korea; *H. Kim*, Yonsei University, Republic of Korea; *S.U. Son*, Sungkyunkwan University, Republic of Korea; *T.-M. Chung*, Korea Research Institute of Chemical Technology, Republic of Korea

AF-MoP30 Modelling of Low-Temperature Atomic Layer Deposition of Silicon Nitride using Plasma Excited Ammonia, *Kentaro Saito, K. Yoshida, M. Miura, K. Kanomata, B. Ahmmad, S. Kubota, F. Hirose*, Yamagata University, Japan

AF-MoP31 Water Permeation Characteristics of HfO₂-Inserted Organic-Inorganic Hybrid Thin Films, *Nak-Kwan Chung, K.M. Kim, H.Y. Kim, E. Choi, S.J. Maeng, J.Y. Yun*, Korea Research Institute of Standard and Science, Republic of Korea

AF-MoP32 Comparative Studies of Thermal-Atomic Layer Deposition and Plasma-Enhanced Atomic Layer Deposition HfO₂ Films, *Dongqi Xiao, X. Wu, W. Liu, S.-J. Ding*, Fudan University, China

AF-MoP33 Investigating the Reaction Chemistry of Atomic Layer Deposited SnOx on Perovskite using In-situ Quartz Crystal Microbalance, *Adam Hultqvist, J. Jacobsson, S. Svanström, T. Törndahl*, Uppsala University, Sweden; *U. Cappel*, Royal Institute of Technology, Sweden; *H. Rensmo, E. Johansson, G. Boschloo, M. Edoff*, Uppsala University, Sweden

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AF-MoP34 Development of Indium Precursors for Deposition of Indium Oxide, *Takashi Ono, K. Yamamoto, S. Kamimura, C. Dussarrat*, Air Liquide Laboratories, Japan

AF-MoP35 Highly Improved Growth and Electrical Properties of Pt Thin Films by Atomic Layer Deposition using Dimethyl(N,N-Dimethyl-3-Buten-1-Amine-N) Platinum and O₂ Reactant, *Woo-Jae Lee, S.-H. Kwon, W.H. Jae*, Pusan National University, Republic of Korea

AF-MoP36 Studying the Co-Reactant Role During Plasma-Enhanced Atomic Layer Deposition of Palladium, *Ji-Yu Feng, M. Minjauw, R.K. Ramachandran, M. Van Daele, H. Poelman*, Ghent University, Belgium; *T. Sajavaara*, University of Jyväskylä, Finland; *J. Dendooven, C. Detavernier*, Ghent University, Belgium

AF-MoP37 Plasma Enhanced Atomic Layer Deposition of Carbon Incorporated Silicon Oxynitride (SiON) Thin Films Using Novel Organochlorosiloxane Precursors, *Zhiyang Qin*, The University of Texas at Dallas; *S.M. Hwang, A. Ravichandran, D. Le, Y.C. Jung*, University of Texas at Dallas; *B.K. Hwang, L. Lee, X. Zhou, DuPont; J. Kim*, University of Texas at Dallas

AF-MoP38 Atomic Layer Deposition of Yttrium Oxide Using a Liquid Yttrium Precursor, *Y-08, Ming Fang, J.-S. Lehn, J. Eldo, J. Woodruff, R. Kanjolia*, EMD Performance Materials

AF-MoP39 Thickness Determination of Ultra Thin Layers by X-ray Reflectometry and Fast Fourier Transformation, *Michaela Lammel, K. Geishendorf, K. Nielsch, A. Thomas*, IFW Dresden, Germany

AF-MoP40 Reactive Ballistic Transport in Horizontal Macrotrenches Under ALD and CVD Conditions: A Comparison with Vertical Structures, *Angel Yanguas-Gil*, Argonne National Laboratory

AF-MoP41 Understanding Fundamental Structure and Reactivity Relationships of Aminosilanes Based on Their Sticking Coefficient, *Haripin Chandra, K. Cuthill, R. Frohlich, R. Pearlstein*, Versum Materials

AF-MoP42 Thermal Atomic Layer Deposition of Elemental Antimony at Room Temperature: Growth and Uniformity Studies, *Majeda Al Hareiri, D. Emslie*, McMaster University, Canada

AF-MoP43 Nanomechanical Characterization of Crystalline Anatase Titanium Oxide Films Synthesized Using Atomic Layer Deposition, *Y. Mohammed, P. Lin, K. Zhang, Helmut Baumgart, A. Elmustafa*, Old Dominion University

AF-MoP44 Understanding the Influence of *In-situ* Ar-Plasma Annealing Processes on the Film Properties of ALD-Grown AlN Layers, *Saidjafarzoda Ilhom, A. Mohammad, D. Shukla, J. Grasso, B. Willis*, University of Connecticut; *A.K. Okyay*, Stanford University; *N. Biyikli*, University of Connecticut

AF-MoP45 Thin-Film Deposition from Mo(CO)₆: The Effect of Co-Reactants and Temperature on Film Purity, *Phillip Chen, S. Nguyen, B. Hendrix, T. Baum*, Entegris, Inc.

AF-MoP46 Feasibility of Boron Nitride Film Growth at Lower-than 250°C Substrate Temperature via Hollow-Cathode Plasma-ALD: In-situ Monitoring of Plasma Composition Effect, *Adnan Mohammad, D. Shukla, S. Ilhom, B. Willis, J. Grasso*, University of Connecticut; *A.K. Okyay*, OkayayTech; *N. Biyikli*, University of Connecticut

AF-MoP47 Ti-Doped ZnO Thin Films by Atomic Layer Deposition: Growth Mechanism Study and Influence of Process Parameters on Material Properties, *Damien Coutancier*, IPVF-CNRS, France; *O. Fournier*, IPVF-EDF, France; *S. Zhang*, IPVF-CNRS, France; *S. Bernardini*, IPVF-Total, France; *F. Donsanti*, IPVF-EDF, France; *N. Schneider*, IPVF-CNRS, France

AF-MoP48 Effect of Deposition Temperature on Titanium Nitride in Plasma-Enhanced Atomic Layer, *Heli Seppänen, E. Österlund, H. Lipsanen*, Aalto University, Finland

AF-MoP49 Piezoelectric Properties of ZnO Thin Films Grown by Plasma-Enhanced Atomic Layer Deposition, *Taher Abu Ali, J. Pilz*, Graz University of Technology, Austria; *P. Schöffner, B. Stadlober*, Joanneum Research Forschungsgesellschaft, Austria; *A.M. Coclite*, Graz University of Technology, Austria

AF-MoP50 Infrared Spectroscopy of SiNx Grown by Atomic Layer Deposition on Structured Substrates, *Yuji Otsuki, Y. Suzuki, M. Kagaya, K. Oshimo, H. Murakami, K. Ouchi*, Tokyo Electron Technology Solutions Limited, Japan

AF-MoP51 Enabling Strong Magnetolectric 2-2 Composites Made of AlN Films Grown by Plasma-Enhanced ALD on Magnetostrictive Foils for Energy Harvesting Applications, *Tai Nguyen, N. Adjero, S. Glinsek, Y. Fleming, J. Guillot, J. Polesel-Maris*, Luxembourg Institute of Science and Technology, Luxembourg

AF-MoP52 Introducing Alkylhalides as a Surface Protector and Halogen Impurity Reducing Agent in ALD of TiN, *Changbong Yeon, J. Jung, S. Kim, K.C. Tan, J.H. Kim, S.J. Lee, Y.-S. Park*, Soulbrain, Republic of Korea

AF-MoP53 On the Fundamentals of ALD: The Importance of Getting the Picture Right, *Riikka Puurunen*, Aalto University, Finland; *R. van Ommen*, Delft University of Technology, Netherlands

AF-MoP54 Novel ALD Processes and Precursors in 2010s, *Markku Leskelä, M. Mattinen, G. Popov, M. Kaipio, M. Ritala*, University of Helsinki, Finland

AF-MoP55 A New ALD Process for Y₂O₃: A Comparative Study using Three Different Nitrogen Coordinated Yttrium Precursors, *Nils Boysen, S. Beer, D. Zanders, D. Rogalla, A. Devi*, Ruhr University Bochum, Germany

AF-MoP56 Molecular Engineering of Yttrium Formamidates: Study on the Physicochemical Properties and Evaluation for ALD of Y₂O₃, *Sebastian Beer, N. Boysen, A. Devi*, Ruhr University Bochum, Germany

AF-MoP57 New Progress of the Ultra-high Speed In-situ Spectroscopic Ellipsometry for ALD Applications, *Gai Chin*, ULVAC Inc., Japan

AF-MoP58 Influence of the Titanium Precursor Nature on the Atomic Layer Deposition of TiO₂ Thin Films, *Clemence Badie*, Aix Marseille University, CNRS, CINaM, France; *M. Dufond, M. Diouf, C. Laffon, P. Parent, D. Ferry*, Aix Marseille Univ., CNRS, CINaM, France; *D. Grosso*, Aix Marseille Univ., Université de Toulon, CNRS, IM2NP, France; *J. Kools*, Encapsulix SAS, France; *S.D. Elliott*, Schrödinger, Inc.; *L. Santinacci*, Aix Marseille Univ., CNRS, CINaM, France

AF-MoP59 In-situ Real-Time and Ex-situ Spectroscopic Analysis of Al₂O₃ Films Prepared by PEALD, *Paul Plate, F. Naumann, J. Reck, H. Gargouri, B. Gruska, A. Blümich*, SENTECH Instruments GmbH, Germany; *A. Mahmoodinezhad, C. Janowitz, K. Henkel, J.I. Flege*, BTU Cottbus-Senftenberg, Germany

AF-MoP60 Conformality of TMA/H₂O and TMA/O₃ Processes Evaluated using Lateral High-Aspect-Ratio Structures, *Sakari Lepikko*, Aalto University, Finland; *O.M.E. Yliavaara*, VTT Technical Research Centre of Finland Ltd, Finland; *J. Yim, E. Verkama*, Aalto University, Finland; *M. Utriainen*, VTT Technical Research Centre of Finland, Finland; *R. Puurunen, R. Ras*, Aalto University, Finland

AF-MoP61 Synthesis, Thermal Characterization, and ALD Deposition Results of New Volatile Molybdenum Precursors, *Michael Land, P. Gordon*, Carleton University, Canada; *K. Robertson*, Saint Mary's University, Canada; *S. Barry*, Carleton University, Canada

AF-MoP62 Atomic Layer Modulation using Steric Hindrance of Precursors, *H.B.R. Lee, Chi Thang Nguyen*, Incheon National University, Republic of Korea

AF-MoP63 Tungsten Films Grown by Plasma-Enhanced Atomic Layer Deposition with Newly Synthesized Metalorganic and Halide Precursor, *Yujin Lee, S. Seo, T. Nam, H. Lee, H. Yoon, S. Lee*, Yonsei University, Republic of Korea; *J.H. Seo, J.H. Seok*, Hansol Chemical, Republic of Korea; *H. Kim*, Yonsei University, Republic of Korea

AF-MoP64 Metal Aminoalkoxide Precursors for ALD Metal Oxide Films, *Atsushi Sakurai, H. Sato*, Adeka Corporation, Japan; *A. Saito*, Adeka Corporation, Republic of Korea; *M. Hatase, A. Nishida, T. Yoshino, M. Enzu, N. Okada, A. Yamashita*, Adeka Corporation, Japan

AF-MoP65 Surface Reaction Mechanism during Atomic Layer Deposition of Al₂O₃ using Water, Methanol, and Ethanol as the Oxidants, *H. Kim, Seunggi Seo, W.J. Woo, I.-K. Oh*, Yonsei University, Republic of Korea; *B. Shong*, Hongik University, Republic of Korea

AF-MoP66 Evaluation and Investigation on Reaction Mechanism of Novel Hf Alkoxide Precursors for Atomic Layer Deposition of HfO₂, *H. Kim, Hwi Yoon*, Yonsei University, Republic of Korea; *G. Lee*, Korea Research Institute of Chemical Technology, Republic of Korea; *Y. Lee, S. Seo, S. Lee*, Yonsei University, Republic of Korea; *T.-M. Chung*, Korea Research Institute of Chemical Technology, Republic of Korea

AF-MoP67 Phase-Induced Surface Free Energy Control of Plasma Enhanced Atomic Layer Deposition HfO₂ Thin Films, *H. Kim, Sangyoon Lee, H. Yoon, S. Lee*, Yonsei University, Republic of Korea

AF-MoP68 Low-Temperature ALD of Tungsten Nitride Thin Films using BTBMW and Anhydrous Hydrazine, *Dan Le, A. Kondusamy, S.M. Hwang, A. Ravichandran, J. Mohan, Y.C. Jung*, University of Texas at Dallas; *D. Alvarez, J. Spiegelman*, RASIRC; *M. Markevitch*, NASA Goddard Space Flight Center; *J. Kim*, University of Texas at Dallas

AF-MoP69 Room Temperature ALD using High-Purity Ozone Gas, *Naoto Kameda, T. Hagiwara, A. Abe, T. Miura, Y. Morikawa, M. Kekura*, Meidensha Corporation, Japan; *K. Nakamura, H. Nonaka*, AIST, Japan

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AF-MoP70 Atomic Layer Deposition of Zinc Oxide Thin Films using a Liquid Cyclopentadienyl-Based Precursor, bis(*n*-propyltetramethylcyclopentadienyl)Zinc, *Fumikazu Mizutani, S. Higashi, N. Takahashi*, Kojundo Chemical Laboratory Co., Ltd., Japan; *M. Inoue, T. Nabatame*, National Institute for Materials Science, Japan

AF-MoP71 High Volatility Precursors for ALD Process of Rare Earth Oxides, *Nana Okada, A. Yamashita, M. Hatase, A. Nishida, C. Mitsui, A. Sakurai*, ADEKA Corporation, Japan

AF-MoP72 Temperature-Dependent Growth Characteristics of Germanium Oxide Thin Film by Atomic Layer Deposition, *Donghyuk Shin, J. Jeong, H. Park, D.-H. Ko*, Yonsei University, Republic of Korea

AF-MoP73 Computational Modeling of the Surface Chemistry for the Amidinate, Guanadinate and Triazenide Indium Precursors, *Karl Rönby, H. Pedersen, L. Ojamäe*, Linköping University, Sweden

AF-MoP74 Atomic Layer Deposition of Yttrium Oxide Films and their Properties of Water Wettability, *Bo Zhao, F. Mattelaer, G. Rampelberg, J. Dendooven, C. Detavernier*, Ghent University, Belgium

AF-MoP75 Hollow-Cathode Plasma-Assisted Atomic Layer Deposition of III-Nitrides: How the Substrate and Plasma Chemistry Impacts the Raman Spectroscopy Analysis of GaN and InN Thin Films, *Mustafa Alevli, N. Gungor*, Marmara University, Turkey; *S. Ilhom, A. Mohammad, D. Shukla, N. Biyikli*, University of Connecticut

AF-MoP76 Effect of Ligand Structure on Crystallinity of Atomic Layer Deposited Titanium Dioxide, *Sanghun Lee*, Yonsei University, Republic of Korea; *W. Noh*, Air Liquide Laboratories Korea, Republic of Korea; *H. Kim*, Yonsei University, Republic of Korea

AF-MoP77 Atomic Layer Deposition Growth of Molybdenum Oxide from Molybdenum Pentachloride, *Victor Koroteev, M. Knez*, CIC nanoGUNE BRTA, Spain

AF-MoP78 In-situ FTIR Study of ALD Cu using Copper(II) Acetylacetonate for Ultrathin Functional Films, *Abdulla Bin Afif, A. Dadlani, A. Flaten, P. Köllensperger, J. Torgersen*, Norwegian University of Science and Technology, Norway

AF-MoP79 Atomic Layer Deposition of Tungsten Oxide with Tunable Oxygen Vacancies Concentration, *Maksim Kozodaev, R. Romanov, Y. Lebedinskii, A. Chernikova, A. Koroleva, A. Slavich, A. Markeev*, Moscow Institute of Physics and Technology, Russian Federation

AF-MoP80 Optical Emission Spectroscopy for Electron and Gas Temperature Determination During Plasma ALD of Nitrides with RF Substrate Biasing, *Luca Matteo Martini, K. Arts*, Eindhoven University of Technology, Netherlands; *H.C.M. Knoops*, Oxford Instruments Plasma Technology, Netherlands; *W.M.M. Kessels, R. Engeln*, Eindhoven University of Technology, Netherlands

AF-MoP81 Temperature Controlled Ru and RuO₂ Growth via O* Radical-Enhanced Atomic Layer Deposition with Ru(EtCp)₂, *Anna Chernikova, Y. Lebedinskii, M. Kozodaev, R. Khakimov, E. Korostylev*, Moscow Institute of Physics and Technology, Russian Federation; *C.S. Hwang*, Seoul National University, Republic of Korea; *A. Markeev*, Moscow Institute of Physics and Technology, Russian Federation

AF-MoP82 XPS Sputter Depth Profiling Analysis of LiAlON Solid-State Electrolyte Thin Films, *Xianlin Luo*, Karlsruhe Institute of Technology, Germany

AF-MoP83 Determining Important Surface Coefficients with OD Modeling and Sensitivity Analysis, *Anna Dzarasova*, Quantemol Ltd, UK; *M. Haničinec*, UCL, UK; *S. Mohr*, Quantemol Ltd, UK; *J. Tennyson*, UCL, UK

AF-MoP84 Homoleptic and Heteroleptic Alkoxide Precursors for Deposition of Aluminum Oxide Thin Films, *Liao Cao, F. Mattelaer, G. Rampelberg*, Ghent University, Belgium; *F. Hashemi, R. van Ommen*, Delft University of Technology, Netherlands; *M. Tiitta*, VOLATEC, Finland; *J. Dendooven, C. Detavernier*, Ghent University, Belgium

AF-MoP85 The Role of Steric Hindrance During Plasma Enhanced ALD of SiO₂, *Chenhui Qu, M. Kushner*, University of Michigan

AF-MoP86 Machine Learning for Atomic Layer Deposition: Process Optimization Based on Growth Profiles, *Angel Yanguas-Gil, J.W. Elam*, Argonne National Laboratory

AF-MoP87 Characterization of Crystalline AlN Thin films Grown on Si and GaN Substrates Through PEALD, *Jihye Kim, Y.D. Tak, H.S. Park*, ISAC Research Inc., Republic of Korea

AF-MoP88 Modelling Pattern Density Effects in ALD on High-Aspect Ratio Features, *T. Muneshwar*, Synthergy Inc., Canada; *H.Y. Kim, S.-H. Jung, H. Cho, A. Dhamdhere, S. Rathi, N. Mukherjee*, Eugenius, Inc.; *Gem Shoute*, Synthergy Inc., Canada

AF-MoP89 Atomic Layer Deposition of TaO_x, TaN and TaON, *Bireswar Mandal, R. Rani, S. Sarkar*, Indian Institute of Technology Bombay, India

AF-MoP90 Plasma-Enhanced ALD of as-Grown Crystalline VO_x and the Evolution of its Phase Structure via Critically Tuned Post-Deposition Annealing Process, *Adnan Mohammad, D. Shukla, S. Ilhom, K.D. Joshi, B. Willis, N. Biyikli*, University of Connecticut

AF-MoP91 The Role of Plasma in Controlling Oxide Film Properties Grown by Plasma-Enhanced Atomic Layer Epitaxy, *Scott Walton, D. Boris, V. Wheeler, J. Avila, S. Qadri, N. Nepal*, U.S. Naval Research Laboratory; *J. Woodward*, ASEE; *C.R. Eddy, Jr.*, U.S. Naval Research Laboratory

AF-MoP92 Investigating the Role of N₂ Plasma Composition on the Atomic Layer Growth of InN Films Using Hollow-Cathode Plasma Source, *S. Ilhom, A. Mohammad, D. Shukla, J. Grasso, B. Willis*, University of Connecticut; *A.K. Okyay*, Stanford University; *Necmi Biyikli*, University of Connecticut

AF-MoP93 As-Grown Crystalline β-Ga₂O₃ Films via Plasma-Enhanced ALD at Low Substrate Temperatures, *Saidjafarzoda Ilhom, A. Mohammad, D. Shukla, J. Grasso, B. Willis*, University of Connecticut; *A.K. Okyay*, Stanford University; *N. Biyikli*, University of Connecticut

AF-MoP94 Aluminum Oxide ALD with Hydrogen Peroxide: Comparative Study of Growth and Film Characteristics for Anhydrous H₂O₂, H₂O₂/H₂O Mixtures, H₂O and Ozone, *J. Spiegelman, Dan Alvarez*, RASIRC; *K. Andachi, G. Tsuchibuchi, K. Suzuki*, Taiyo Nippon Sanso Corporation, Japan

AF-MoP95 Indium Aluminum Nitride Growth Kinetics and Crystallinity Studied Using *In Situ* and *Ex Situ* Synchrotron X-ray Scattering, *Jeffrey Woodward*, ASEE; *S. Rosenberg*, Sandia National Laboratories; *S.D. Johnson*, U.S. Naval Research Laboratory; *Z.R. Robinson*, SUNY College at Brockport; *N. Nepal*, U.S. Naval Research Laboratory; *K.F. Ludwig*, Boston University; *C.R. Eddy, Jr.*, U.S. Naval Research Laboratory

Atomic Layer Etching

Room Arteveldeforum & Pedro de Gante - Session ALE-MoP Atomic Layer Etching Poster Session 5:45pm

ALE-MoP1 Wafer-Scale HF-Free Thermal ALE of SiO_x, *Martin McBriarty, J. McWilliams, K. Littau*, Intermolecular

ALE-MoP2 Atomic Layer Etching of Silicon Oxide with CF₃I and O₂ Plasma, *Seon Yong Kim, T. Lee, I.-S. Park, J. Ahn*, Hanyang University, Republic of Korea

ALE-MoP3 Density Functional Theory Study on the Reactions of Fluorine-Containing Molecules on Silicon Nitride Surface, *Tanzia Chowdhury, R. Hidayat, H.-L. Kim*, Sejong University, Republic of Korea; *T.R. Mayangsari*, Universitas Pertamina, Indonesia; *S. Park*, Wonik IPS, Republic of Korea; *J. Jung, W.-J. Lee*, Sejong University, Republic of Korea

ALE-MoP4 Atomic Layer Etching (ALE) of Silicon Nitride Passivation Layers for AlGaIn Based Transistors, *Matthew Loveday*, Oxford Instruments Plasma Technology, UK

ALE-MoP5 Opportunity of Process Time Optimization with Plasma Diagnostics of a QALE Process for Low-*k* Dielectrics, *Sebastian Oehler, A. Vatsal, M. Rudolph, V. Brackmann*, Fraunhofer Institute for Photonic Microsystems, Germany; *B. Sass*, GLOBALFOUNDRIES Dresden, Germany; *T. Mikolajick*, Technische Universität Dresden, Germany

ALE-MoP6 Investigation of Plasma-Surface Reactions in a Large Scale Very-High-Frequency(162MHz) CCP for Atomic Layer Processing of SiO₂, *Cleo Harvey, A. Ellingboe*, Dublin City University, Ireland

ALE-MoP7 Conformal and Damage-Free Atomic Layer Etching of Silicon, *Yu-Tung Yin*, National Taiwan University, Republic of China, Taiwan, Republic of China; *P.-H. Cheng, C.-H. Ling*, National Taiwan University, Republic of China; *C.-I. Wang, M.J. Chen*, National Taiwan University, Republic of China, Taiwan, Republic of China

ALE-MoP8 Atomic Layer Processing: Evolution and Distinctness of ALD and ALE as Research Areas, *Elsa Alvaro*, Northwestern University; *A. Yanguas-Gil*, Argonne National Laboratory

ALD for Manufacturing

Room Arteveldeforum & Pedro de Gante - Session AM-MoP

ALD for Manufacturing Poster Session

5:45pm

AM-MoP1 Comparative Study of ALD Barrier Oxides for Moisture Barrier Applications in LED Manufacturing, **Sebastian Taeger**, M. Mandl, OSRAM Opto Semiconductors GmbH, Germany; R. Ritasalo, T. Piilvi, Picosun Oy, Finland; R. Tomasiunas, I. Reklaitis, Vilnius University, Lithuania

AM-MoP2 Comparison of Group VI Precursors for Application in ALD/ALE, **David Ermert**, R. Wright Jr., T. Baum, Entegris, Inc.

AM-MoP3 Advanced 3D Particle Functionalization using Self-Limiting Reactions in Fluidized Bed Reactor Technology, **Didier Ari**, T. Da Cunha, A. Maulu, N. Adjeroud, K. Menguelti, M. Gerard, D. Lenoble, Luxembourg Institute of Science and Technology, Luxembourg

AM-MoP4 Plasma Enhanced ALD using a Capacitively Coupled Plasma in a Cross Flow Reactor, **Jacques Kools**, C. Barbos, A. Melendez, C. Coudreau, J. Hill, G. Manouelian, Encapsulix SAS, France

AM-MoP5 Wafer Scale Conformality using Lateral High Aspect Ratio Test Structures, **Oili M.E. Ylivaara**, F. Gao, VTT Technical Research Centre of Finland Ltd, Finland; R. Puurunen, Aalto University, Finland; M. Utraiainen, VTT Technical Research Centre of Finland, Finland

AM-MoP6 P-Type Semiconductor Cu₂O Deposited via Atmospheric Pressure Spatial Atomic Layer Deposition: A Step Towards Low-Cost Photovoltaic Solar Harvesters, **Abderrahime Sekkat**, D. Bellet, Grenoble INP/CNRS, France; A. Kaminski-Cachopo, IMEP-LaHC, France; G. Chichignoud, SIMAP, France; D. Muñoz-Rojas, Grenoble INP/CNRS, France

AM-MoP7 Design of an Add-on Module for High Temperature (>240°C) Precursor Delivery for Lab-made ALD and MLD Reactors, and Demonstration of Aluminum-Terephthalate MLD, **Kristian Lausund**, G.N. Parsons, North Carolina State University

AM-MoP8 Hybrid PEALD/PECVD Reactor Design for Depositing Thick GaN Films on Si, **Biral Kuyel**, J. Marshall, A. Alphonse, K.P. Hong, Nano-Master, Inc.

Emerging Materials

Room Arteveldeforum & Pedro de Gante - Session EM-MoP

Emerging Materials Poster Session

5:45pm

EM-MoP1 Interface State Densities in p-Metal-Oxide-Semiconductor Capacitors with Atomic-Layer Deposition Al₂O₃ on Ultraviolet/Ozone-Treated GaN Surface, **Kwangeun Kim**, Hongik University, Republic of Korea

EM-MoP2 Atomic Layer Deposition Vanadium Oxide Thin Films and Post-Deposition Annealing, **Jianguo Li**, Xi'an Modern Chemistry Research Institute, China

EM-MoP3 Wafer-Scale, Conformal, and Low-Temperature Synthesis of Layered TiN Disulfides for Emerging Non-Planar and Flexible Electronics, **J.J. Pyeon**, I.-H. Baek, Korea Institute of Science and Technology (KIST), Republic of Korea; G. Lee, T.-M. Chung, Korea Research Institute of Chemical Technology (KRICT), Republic of Korea; J.H. Han, Seoul National University of Science and Technology, Republic of Korea; C.-Y. Kang, **Seong Keun Kim**, Korea Institute of Science and Technology (KIST), Republic of Korea

EM-MoP4 Introducing the Concept of Pulsed Vapor Phase Copper-Free Surface Click-Chemistry using the ALD Technique, **Iva Saric**, R. Peter, M. Kolympadi Markovic, I. Jelovica Badovinac, University of Rijeka, Croatia; C. Rogero, Materials Physics Center (CSIC-UPV/EHU), Spain; M. Ilyn, Donostia International Physics Center, Spain; M. Knez, CIC nanoGUNE, Spain; G. Ambrozic, University of Rijeka, Croatia

EM-MoP5 First Principles Modelling of Growth of Hybrid Organic-Inorganic Films, **Arbresha Muriqi**, M. Nolan, Tyndall National Institute, Ireland

EM-MoP6 Doped Amorphous Silicon Derived from ALD Coatings, **Sarah Tymeck**, Friedrich-Alexander-University Erlangen-Nürnberg, Germany; Y. Zhuo, Friedrich-Alexander-University Erlangen-Nürnberg; H. Sun, J. Bachmann, Friedrich-Alexander-University Erlangen-Nürnberg, Germany

EM-MoP7 Thermal Atomic Layer Deposition of Aluminum Nitride using a Liquid Aluminum Dihydride Complex and Ammonia, **Jun Hwan Choi**, D.H. Ma, J.S. Kim, UP Chemical Co., Ltd., Republic of Korea; T. Chowdhury, R. Hidayat, H.-L. Kim, W.-J. Lee, Sejong University, Republic of Korea; W. Koh, UP Chemical Co., Ltd., Republic of Korea

EM-MoP8 Understanding the Growth Kinetics of Hybrid Films by Spatial Molecular Layer Deposition, **Hardik Jain**, F. van den Bruele, P. Poedt, TNO/Holst Center, Netherlands

EM-MoP9 Quinizarin: A Large Aromatic Molecule Ideal for Atomic Layer Deposition, **Per-Anders Hansen**, O. Nilsen, University of Oslo, Norway

EM-MoP10 Superconducting and Insulating Nitride-Based Thin Films Deposited by Plasma Enhanced Atomic Layer Deposition, **I. Gonzales Diaz-Palacio**, L. Ehmcke, Universität Hamburg, Germany; K.P. Furlan, Technische Universität Hamburg, Germany; M. Wenskat, W. Hillert, R. Blick, **Robert Zierold**, Universität Hamburg, Germany

EM-MoP11 Preparation of ZnO/Organosilane/ZnO Hybrid Thin Films via Atomic Layer Deposition (ALD) and Solution Surface Modification: Investigation of Photocatalytic Performances After Annealing, **Maria Kolympadi Markovic**, R. Peter, I. Jelovica Badovinac, I. Šarić, M. Perčić, R. Radičić, D. Marković, University of Rijeka, Croatia; M. Knez, CIC nanoGUNE BRTA, Spain; G. Ambrožić, University of Rijeka, Croatia

EM-MoP12 Thermal ALD Growth of Ir and IrO_x Films Using (MeCp)Ir(COD) and Oxygen, **Guo Liu**, J. Woodruff, EMD Performance Materials; T. Okamura, Merck Performance Materials Ltd., Japan; D. Moser, R. Kanjolia, EMD Performance Materials

EM-MoP13 Development of Routes to Multi-Cation and Multi-Anion Materials by ALD, **Ann Greenaway**, National Renewable Energy Laboratory; A. Fioretti, Ecole Polytechnique Fédérale de Lausanne, Switzerland; A. Tamboli, S. Christensen, National Renewable Energy Laboratory

EM-MoP14 Improvements of Photolithography in PMMA Toward EUV by Transition Metal Infiltration, **S.W. Kim**, **Jin-Hyun Kim**, The University of Texas at Dallas; S.M. Hwang, Y.C. Jung, University of Texas at Dallas; K. Tan, J.-F. Veyan, The University of Texas at Dallas; C.-Y. Nam, Brookhaven National Laboratory; J. Ahn, Hanyang University, Republic of Korea; R. Choi, Inha University, South Korea; J. Kim, University of Texas at Dallas

EM-MoP15 Low Temperature Thermal a-SiC Deposition Using Pulse CVD and ALD, **Susumu Yamauchi**, M. Fujikawa, Tokyo Electron Technology Solutions Limited, Japan; T. Miyahara, TEL Technology Center, America, LLC

EM-MoP16 Novel Approach for Conformal Chemical Vapor Phase Deposition of Ultra-Thin Conductive Silver Films, **Sabrina Wack**, P. Lunca Popa, N. Adjeroud, R. Leturcq, Luxembourg Institute of Science and Technology, Luxembourg

EM-MoP17 When ALD Outperforms MOCVD: Direct Comparison of Epitaxial InN Films, **C.W. Hsu**, P. Deminskyi, I. Martinovic, J. Palisaitis, **Henrik Pedersen**, Linköping University, Sweden

EM-MoP18 Amorphous-to-Crystalline Transition and Photoluminescence Switching in Guest-Absorbing Metal-Organic Network Thin Films, **Amr Ghazy**, Aalto University, Finland

EM-MoP19 Solution-Based ALD Routes Towards Thin Films of Organic-Inorganic Hybrid Perovskites, **Vanessa Koch**, M.K.S. Barr, P. Büttner, I. Minguez-Bacho, D. Döhler, J. Bachmann, Friedrich-Alexander-University Erlangen-Nürnberg, Germany

EM-MoP20 Tuning Properties of Vapor Deposited ZIF-8 Thin Films with Preferred Orientation, **Marianne Kräuter**, A.M. Coclite, Graz University of Technology, Austria

EM-MoP21 Atomic Layer Deposition of Digitally Doped Al: CuO Films and the Effect of Al on CuO Film Composition, Structure, and Optoelectronic Properties, **Jason Avila**, C.R. Eddy, Jr., V. Wheeler, U.S. Naval Research Laboratory

EM-MoP22 Understanding and Controlling Metal Oxide Growth Within Polymer Films in Sequential Infiltration Synthesis, **Neta Shomrat**, I. Weisbord, R. Azoulay, A. Kaushansky, T. Segal-Peretz, Technion - Israel Institute of Technology, Israel

EM-MoP23 Photoactive Hybrid Thin Films by Molecular Layer Deposition, **Melania Rogowska**, P.-A. Hansen, University of Oslo, Norway; H. Valen, Nordic Institute of Dental Materials, Norway; O. Nilsen, University of Oslo, Norway

EM-MoP24 Inducing Conductivity into Parylene C by Vapor Phase Infiltration of In₂O₃, **Oksana Iurkevich**, E. Modin, CIC nanoGUNE BRTA, Spain; I. Šarić, R. Peter, M. Petravić, University of Rijeka, Croatia; M. Knez, CIC nanoGUNE BRTA, Spain

EM-MoP25 Growth of Hybrid Materials with Glycine, L-Aspartic Acid and Titanium using Molecular Layer Deposition, **Srinath Murali**, University of Oslo, Norway; D. Dartt, Harvard University; T.P. Utheim, O. Nilsen, University of Oslo, Norway

EM-MoP26 Solution Atomic Layer Deposition of Cu-BDC SURMOF Thin Films, **Maïssa K. S. Barr**, S. Nadiri, Friedrich-Alexander University of Erlangen-Nürnberg, Germany; D.-H. Chen, P. Weidler, Karlsruhe Institute of Technology, Germany; H. Baumgart, Old Dominion University; J. Bachmann, Friedrich-Alexander-University Erlangen-Nürnberg, Germany; E. Redel, Karlsruhe Institute of Technology, Germany

Monday Evening Poster Sessions, June 29, 2020

EM-MoP27 Thin Film Engineering of Metal-Metal Oxide Multilayers, *Carlos Guerra*, Empa, Switzerland; *T. Xie*, Hunan University, China; *T. Edwards*, *N. Della Ventura*, *D. Casari*, *I. Utke*, *J. Michler*, *L. Petho*, Empa, Switzerland

EM-MoP29 ALD-Grown Gallium Oxide Thin Films with Properties Close to Bulk Wafers, *Elham Rafie Borujeny*, *K. Cadien*, University of Alberta, Canada

EM-MoP30 Crystalline GaN Film Growth at a Thermal Budget Approaching 100°C Using Hollow-Cathode Plasma-Assisted Atomic Layer Deposition, *Deepa Shukla*, *A. Mohammad*, *S. Ilhom*, *N. Biyikli*, University of Connecticut

Anticipated Schedule Tuesday, June 30, 2020

Anticipated Schedule Tuesday Morning, June 30

8:30 AM	_____
8:45 AM	_____
9:00 AM	_____
9:15 AM	_____
9:30 AM	_____
9:45 AM	_____
10:00 AM	_____
10:15 AM	_____
10:30 AM	_____
10:45 AM	_____
11:00 AM	_____
11:15 AM	_____
11:30 AM	_____
11:45 AM	_____
12:00 PM	_____

Anticipated Schedule Tuesday Lunch, June 30

When	_____
Where	_____
With	_____

Anticipated Schedule Tuesday Afternoon, June 30

1:00 PM	_____
1:15 PM	_____
1:30 PM	_____
1:45 PM	_____
2:00 PM	_____
2:15 PM	_____
2:30 PM	_____
2:45 PM	_____
3:00 PM	_____
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3:45 PM	_____
4:00 PM	_____
4:15 PM	_____
4:30 PM	_____
4:45 PM	_____
5:00 PM	_____
5:15 PM	_____

Tuesday Morning, June 30, 2020

Room Auditorium		
8:30am	INVITED: AA-TuM1 Atomic Layer Deposition Enabling Higher Efficiency Solar Cells, Bram Hoex , University of New South Wales, Australia	ALD Applications Session AA-TuM ALD for Solar Energy Materials I & II Moderators: Han-Bo-Ram Lee, Incheon National University, Wei-Min Li, Jiangsu Leadmicro Nano-Equipment Technology Ltd.
8:45am	Invited talk continues.	
9:00am	AA-TuM3 Lowering the Recombination of Molybdenum Oxide Hole-Selective Contacts with 1 nm Hydrogenated Aluminum Oxide Films for Silicon Solar Cells, Geoffrey Gregory , C. Feit, P. Banerjee, K. Davis, University of Central Florida	
9:15am	AA-TuM4 ALD of Photon-Upconverting Thin-Films for Photovoltaic Application, Muhammad Safdar , A. Ghazy, Aalto University, Finland; M. Lastusaari, University of Turku, Finland; A. Aho, A. Tukiainen, Tampere University, Finland; H. Savin, Aalto University, Finland; M. Guina, Tampere University, Finland; M. Karppinen, Aalto University, Finland	
9:30am	AA-TuM5 Thermal Stability of Ozone-Based ALD Al ₂ O ₃ Capped with PECVD SiN _x for Silicon Surface Passivation, Armin Richter , C. Reichel, Fraunhofer Institute for Solar Energy Systems ISE, Germany; J. Fittkau, MKS Instruments Deutschland GmbH, Germany; A. Ek, E.S. Duman, Fraunhofer Institute for Solar Energy Systems ISE, Germany; C. Le Tiec, MKS Instruments Deutschland GmbH, Germany; A. Moldovan, J. Benick, Fraunhofer Institute for Solar Energy Systems ISE, Germany	
9:45am	AA-TuM6 Atomic Layer Deposition of Zn _{1-x} Mg _x O and Zn _{1-x} Mg _x O: Al as Transparent Conducting Films for Chalcopyrite Solar Cells, Poorani Gnanasambandan , R. Leturcq, P. Lunca-Popa, Luxembourg Institute of Science and Technology, Luxembourg; M. Sood, S. Siebentritt, Université du Luxembourg, Luxembourg	
10:00am	Break & Exhibits	
10:15am	Break & Exhibits	
10:30am	Break & Exhibits	
10:45am	INVITED: AA-TuM10 Tuning Properties of ALD Oxide and Sulfide Materials for Photovoltaic Applications, Nathanaelle Schneider , IPVF-CNRS, France	
11:00am	Invited talk continues.	
11:15am	AA-TuM12 Solar Cells Based on Phase-Pure Sb ₂ S ₃ by Atomic Layer Deposition Forming Planar and Coaxial Heterojunctions, Ignacio Minguez Bacho , P. Büttner, F. Scheler, D. Döhler, Friedrich-Alexander-University Erlangen-Nürnberg, Germany; C. Pointer, E. Young, Lehigh University; J. Bachmann, Friedrich-Alexander-University Erlangen-Nürnberg, Germany	
11:30am	AA-TuM13 Metal Oxide Infilling of Quantum Dot Thin Films: Charge Separation, Stabilization, and Solar Cell Formation, Fatemeh Hashemi , R. Crisp, J. Alkemade, G. Grimaldi, N. Kirkwood, L.D.A. Siebbeles, J.R. van Ommen, A. Houtepen, Delft University of Technology, Netherlands	
11:45am	AA-TuM14 ALD of Al ₂ O ₃ on Perovskite Solar Cells: Role of Active Interfacial Engineering, S. Ghosh, N. Mahuli, Shaibal Sarkar , Indian Institute of Technology Bombay, India	

Tuesday Morning, June 30, 2020

Room Baekeland		
8:30am	INVITED: ALE1-TuM1 Atomic Scale Wet Etching of Compound Semiconductors: Digital Versus Non-digital Approaches, <i>Dennis van Dorp</i> , Imec, Belgium	Atomic Layer Etching Session ALE1-TuM ALE Selectivity and Anisotropy Moderators: Ankur Agarwal, KLA-Tencor, Sumit Agarwal, Colorado School of Mines
8:45am	Invited talk continues.	
9:00am	INVITED: ALE1-TuM3 Highly Selective Atomic Layer Etching for Semiconductor Application, <i>Akiko Hirata</i> , Sony Semiconductor Solutions Corp., Japan	
9:15am	Invited talk continues.	
9:30am	ALE1-TuM5 Aspect-Ratio Dependence of Isotropic Thermal ALE and Mitigation Thereof, <i>Andreas Fischer</i> , <i>A. Routzahn</i> , <i>T. Lill</i> , Lam Research Corp.	
9:45am	ALE1-TuM6 Precise Ion Energy Control with Tailored Waveform Biasing for Atomic Layer Etching, <i>Tahsin Faraz</i> , <i>Y. Verstappen</i> , <i>M. Verheijen</i> , Eindhoven University of Technology, Netherlands; <i>J. Lopez</i> , <i>E. Heijdra</i> , <i>W. van Gennip</i> , Prodrive Technologies B.V., Netherlands; <i>W.M.M. Kessels</i> , <i>A. Mackus</i> , Eindhoven University of Technology, Netherlands	
10:00am	Break & Exhibits	
10:15am	Break & Exhibits	
10:30am	Break & Exhibits	
10:45am	INVITED: ALE2-TuM10 GaN Damage Evaluation After Conventional Plasma Etching and Anisotropic Atomic Layer Etching, <i>Simon Ruel</i> , <i>P. Pimenta-Barros</i> , CEA-Leti, France; <i>N. Chauvet</i> , Lam Research, France; <i>F. Le Roux</i> , CEA-Leti, France; <i>S. Tan</i> , Lam Research; <i>F. Gaucher</i> , Lam Research, France; <i>N. Posseme</i> , CEA-Leti, France	Atomic Layer Etching Session ALE2-TuM ALE for GaN Devices Moderators: Steven M. George, University of Colorado - Boulder, Nicolas Possémé, CEA-Leti
11:00am	Invited talk continues.	
11:15am	ALE2-TuM12 Analysis of Ion Energy Dependence of Depth Profile of GaN by In-situ Surface Analysis, <i>M. Hasagawa</i> , <i>Takayoshi Tsutsumi</i> , Nagoya University, Japan; <i>A. Tanide</i> , <i>S. Nakamura</i> , SCREEN Holdings Co., Ltd., Japan; <i>H. Kondo</i> , <i>K. Ishikawa</i> , <i>M. Hori</i> , Nagoya University, Japan	
11:30am	ALE2-TuM13 Atomic Layer GaN Etching by HBr Neutral Beam, <i>S. Samukawa</i> , <i>Takahiro Sawada</i> , <i>D. Ohori</i> , Tohoku University, Japan; <i>K. Sugawara</i> , <i>M. Okada</i> , <i>K. Nakata</i> , <i>K. Inoue</i> , Sumitomo Electric Industries, Ltd., Japan; <i>D. Sato</i> , <i>H. Kurihara</i> , Showa Denko K.K., Japan	
11:45am	ALE2-TuM14 ALE Preparation of GaN Substrates for Epitaxial Growth, <i>Jeffrey Daulton</i> , <i>R. Molnar</i> , <i>T. Osadchy</i> , MIT Lincoln Laboratory	

Tuesday Morning, June 30, 2020

Room Jan & Hubert Van Eyck		
8:30am	AF1-TuM1 First-Principles Understanding of Plasma-Enhanced Atomic Layer Deposition of Silicon Nitride, <i>Gyeong Hwang, T.-H. Yang</i> , University of Texas at Austin; <i>P. Ventzek</i> , Tokyo Electron America Inc.; <i>T. Iwao, K. Ishibashi</i> , Tokyo Electron Ltd.	ALD Fundamentals Session AF1-TuM ALD Mechanisms and Modeling Moderators: Annelies Delabie, IMEC, Michael Nolan, University College Cork
8:45am	AF1-TuM2 Automated Design of Thermally Stable Heteroleptic Precursors by Computational Screening, <i>Simon D. Elliott, D. Giesen, S. Kwak, M. Halls</i> , Schrödinger, Inc.	
9:00am	AF1-TuM3 Characterization of Plasma Enhanced Atomic Layer Deposition of Ru and Co using Cp Precursors and Nitrogen Plasma, <i>Ji Liu, M. Nolan</i> , Tyndall National Institute, University College Cork, Ireland	
9:15am	AF1-TuM4 Reaction Mechanism Studies on ALD Process of Co ₃ Sn ₂ , <i>Heta-Elisa Nieminen, M. Kaipio, M. Ritala</i> , University of Helsinki, Finland	
9:30am	AF1-TuM5 Unravelling the Reaction Mechanisms of Trimethyl Borate for the Atomic Layer Deposition Boron- and Hydrogen-Doped Alumina Films with Non-uniform Transversal Doping Profiles, <i>F. Mattelaer, Véronique Cremers, M. Van Daele, M. Minjauw, M. Nisula</i> , Ghent University, Belgium; <i>S.D. Elliot</i> , Schrödinger, Inc.; <i>T. Sajavaara</i> , University of Jyväskylä, Finland; <i>J. Dendooven, C. Detavernier</i> , Ghent University, Belgium	
9:45am	AF1-TuM6 Surface Chemistry and Reaction Kinetics During the Initial Cycles of Al ₂ O ₃ ALD on SiO ₂ and H/Si Studied by Vibrational Sum-Frequency Generation, <i>Vincent Vandalon, W.M.M. Kessels</i> , Eindhoven University of Technology, Netherlands	
10:00am	Break & Exhibits	
10:15am	Break & Exhibits	
10:30am	Break & Exhibits	
10:45am	AF2-TuM10 Role of Ions in Film Conformality and Quality during Plasma-Assisted ALD of SiO ₂ and TiO ₂ , <i>Karsten Arts, S. Deijkers</i> , Eindhoven University of Technology, Netherlands; <i>M. Utrianen</i> , VTT Technical Research Centre of Finland, Finland; <i>R. Puurunen</i> , Aalto University, Finland; <i>W.M.M. Kessels, H.C.M. Knoop</i> , Eindhoven University of Technology, Netherlands	ALD Fundamentals Session AF2-TuM Conformality of ALD Moderators: Riikka Puurunen, Aalto University, Myung Mo Sung, Hanyang University
11:00am	AF2-TuM11 Modeling Purge Time for Atomic Layer Deposition in 3D Porous Structures, <i>Hardik Jain, F. van den Bruele, P. Poodt</i> , TNO/Holst Center, Netherlands	
11:15am	AF2-TuM12 Development of High Surface Area Transition Metal Oxides using ALD, <i>Robert Baumgarten, P. Ingale, K. Knemeyer, R. Naumann d'Alnoncourt, M. Driess</i> , Technische Universität Berlin, Germany; <i>F. Rosowski</i> , Basf Se, Germany	
11:30am	AF2-TuM13 ALD Conformality: Effects of Process Parameters on the Simulated Saturation Profile, <i>E. Verkama, Jihong Yim</i> , Aalto University, Finland; <i>M. Ylilampi</i> , VTT Technical Research Centre of Finland, Finland; <i>R. Puurunen</i> , Aalto University, Finland	
11:45am	AF2-TuM14 Process Parameter and Substrate Dependence of Sticking Coefficients in ALD Processes, <i>Martin Knaut, I. Ahmed</i> , Technische Universität Dresden, Germany; <i>L. Jäckel</i> , Fraunhofer Institute for Electronic Nano Systems, Germany; <i>M. Albert, J.W. Bartha</i> , Technische Universität Dresden, Germany	

Tuesday Morning, June 30, 2020

Room Van Rysselberghe		ALD Applications Session AA2-TuM ALD for Batteries and Energy Storage I & II Moderators: Arrelaine Dameron, Forge Nano, Neil Dasgupta, University of Michigan
8:30am	INVITED: AA2-TuM1 Conformal Ion Conductors Enabling Nanoscale 3D Solid-State Energy Storage, <i>Keith Gregorczyk, B. Nuwayhid, A. Jarry, N. Kim, S.B. Lee, G. Rubloff</i> , University of Maryland	
8:45am	Invited talk continues.	
9:00am	AA2-TuM3 Ultrathin TiN by Thermal ALD as Electrically Conducting Li-ion Diffusion Barrier for Integrated 3D Thin-Film Batteries, <i>Jan Speulmanns, A.M. Kia, S. Bönhardt, M. Czernohorsky, W. Weinreich</i> , Fraunhofer IPMS, Germany	
9:15am	AA2-TuM4 Atomic Layer Deposition of Nitrogen Doped Al- and Ti-Phosphate for Li-ion Battery Applications, <i>Lowie Henderick</i> , Ghent University, Belgium; <i>H. Hamed</i> , University of Hasselt, Belgium; <i>F. Mattelaer, M. Minjauw</i> , Ghent University, Belgium; <i>J. Meersschant</i> , IMEC, Belgium; <i>J. Dendooven</i> , Ghent University, Belgium; <i>M. Safari</i> , University of Hasselt, Belgium; <i>P.M. Vereecken</i> , KU Leuven – University of Leuven/IMEC, Belgium; <i>C. Detavernier</i> , Ghent University, Belgium	
9:30am	AA2-TuM5 Atomic Layer Deposition of Lithium Based Oxides for 3D Microbattery Applications, <i>Ryan Sheil, D. Butts, Y.-C. Perng</i> , University of California Los Angeles; <i>J. Mars</i> , SLAC National Accelerator Laboratory; <i>J. Cho, C. Choi</i> , University of California Los Angeles; <i>M. Toney</i> , SLAC National Accelerator Laboratory; <i>B. Dunn, J. Chang</i> , University of California Los Angeles	
9:45am	AA2-TuM6 Passivation of Lithium Metal Anodes with ALD Aluminum Fluoride, <i>John Hennessy, J-P. Jones, K. Billings</i> , Jet Propulsion Laboratory	
10:00am	Break & Exhibits	
10:15am	Break & Exhibits	
10:30am	Break & Exhibits	
10:45am	AA2-TuM10 Controlled Atomic Layer Deposition of Aluminum Oxide to Improve the Performance of Lithium-Sulfur Batteries, <i>S. Garcia</i> , CIC nanoGUNE, Spain; <i>O. Leonet, E. Azaceta, I. Gomez, A. Reijfs, A. Blazquez</i> , CIDETEC, Spain; <i>Mato Knez</i> , CIC nanoGUNE, Spain	
11:00am	AA2-TuM11 Next-Generation Li-ion Batteries Enabled by Large-Area Atmospheric-Pressure Spatial Atomic Layer Deposition, <i>Mahmoud Ameen, I. Beeker, L. Haverkate, B. Anothumakool, F. Grob, D. Hermes, N. Huijssen, S. Khandan Del, F. Roozeboom, S. Unnikrishnan</i> , TNO/Holst Center, Netherlands	
11:15am	AA2-TuM12 ALD Al ₂ O ₃ and MoS ₂ Coated TiO ₂ Nanotube Layers as Anodes for Lithium Ion Batteries, <i>H. Sopha</i> , University of Pardubice, Czech Republic; <i>A. Tesfaye</i> , Ecole de Mine, France; <i>R. Zazpe</i> , University of Pardubice, Czech Republic; <i>T. Djenizian</i> , Ecole de Mine, France; <i>Jan Macak</i> , University of Pardubice, Czech Republic	
11:30am	INVITED: AA2-TuM13 Molecular Layer Deposition for Stabilization of Electrochemical Materials, <i>Chunmei Ban</i> , University of Colorado - Boulder	
11:45am	Invited talk continues.	

Tuesday Afternoon, June 30, 2020

Room Auditorium	
1:30pm	INVITED: AM-TuA1 Atomic Layer Deposition from Dissolved Precursors — ‘solution ALD’ or sALD, <i>M.K.S. Barr</i> , Friedrich-Alexander University of Erlangen-Nürnberg, Germany; <i>V. Koch</i> , Friedrich-Alexander-University Erlangen-Nürnberg, Germany; <i>S. Nadiri</i> , <i>I. Kundrata</i> , <i>P. Büttner</i> , <i>C. Asker</i> , Friedrich-Alexander University of Erlangen-Nürnberg, Germany; <i>E. Reinhardt</i> , Friedrich-Alexander-University Erlangen-Nürnberg, Germany; <i>D.-H. Chen</i> , <i>P. Weidler</i> , Karlsruhe Institute of Technology, Germany; <i>D. Segets</i> , University of Duisburg-Essen, Germany; <i>K. Fröhlich</i> , Institute of Electrical Engineering, SAS, Slovakia; <i>H. Baumgart</i> , Old Dominion University; <i>E. Redel</i> , Karlsruhe Institute of Technology, Germany; Julien Bachmann , Friedrich-Alexander-University Erlangen-Nürnberg, Germany
1:45pm	Invited talk continues.
2:00pm	AM-TuA3 A Novel Technique for Pulsed Liquid Source Vapor Delivery for ALD and Short Pulse CVD, <i>Kathleen Erickson</i> , <i>E. Ellsworth</i> , <i>T. Dinh</i> , MSP - A Division of TSI
2:15pm	AM-TuA4 An Atomic-Layer 3D Printer, <i>Ivan Kundrata</i> , ATLANT 3D Nanosystems, Denmark, Germany; <i>M. Plakhotnyuk</i> , ATLANT 3D Nanosystems, Denmark; <i>M.K.S. Barr</i> , <i>S. Tymeck</i> , Friedrich-Alexander University of Erlangen-Nürnberg, Germany; <i>K. Fröhlich</i> , Institute of Electrical Engineering, SAS, Slovakia; <i>J. Bachmann</i> , Friedrich-Alexander-University Erlangen-Nürnberg, Germany
2:30pm	AM-TuA5 Comparing Water Delivery Methods for ALD Processes, <i>James Maslar</i> , <i>B. Sperling</i> , <i>W. Kimes</i> , National Institute of Standards and Technology; <i>W. Kimmerle</i> , <i>K. Kimmerle</i> , NSI; <i>E. Woelk</i> , CeeVeeTech
2:45pm	AM-TuA6 Reducing Precursor Cost in PE-ALD SiO ₂ Processes, <i>Geert Rampelberg</i> , <i>V. Cremers</i> , <i>A. Werbroeck</i> , <i>J. Dendooven</i> , <i>C. Detavernier</i> , Ghent University, Belgium
3:00pm	AM-TuA7 Developments in the use of a Remote Plasma Sensor for ALD Process Monitoring and Control, <i>Joe Brindley</i> , <i>B. Daniel</i> , <i>V. Bellido-Gonzalez</i> , <i>D. Monaghan</i> , Gencoa Limited, UK
3:15pm	AM-TuA8 New Spatial ALD/CVD Approaches for Area-Selective Deposition, <i>David Muñoz-Rojas</i> , <i>C. Masse de la Huerta</i> , <i>A. Sekkat</i> , <i>C. Crivello</i> , <i>V. Nguyen</i> , <i>F. Toldra-Reig</i> , Grenoble INP/CNRS, France
3:30pm	Break & Exhibits
3:45pm	Break & Exhibits
4:00pm	AM-TuA11 Plasma Enhanced Spatial ALD of Metal Thin Films at Atmospheric Pressure, <i>Bujamin Misimi</i> , University of Wuppertal, Germany; <i>N. Boysen</i> , Ruhr University Bochum, Germany; <i>T. Hasselmann</i> , <i>D. Theirich</i> , University of Wuppertal, Germany; <i>A. Devi</i> , Ruhr University Bochum, Germany; <i>T. Riedl</i> , University of Wuppertal, Germany
4:15pm	AM-TuA12 SnO _x and ZnO Thin Films Deposited by Atmospheric-Pressure Spatial Atomic Layer Deposition for Gas Sensing Applications, <i>Masoud Akbari</i> , <i>A. Sekkat</i> , Grenoble INP/CNRS, France; <i>V.H. Nguyen</i> , Phenikaa University, Vietnam; <i>K. Musselman</i> , University of Waterloo, Canada; <i>D. Muñoz-Rojas</i> , Grenoble INP/CNRS, France
4:30pm	AM-TuA13 Plasma Enhanced Spatial Atomic Layer Deposition of Silicon Nitride Using Di(isopropylamino)silane and N ₂ Plasma, <i>Hisashi Higuchi</i> , TEL Technology Center, America, LLC; <i>D. O’Meara</i> , Tokyo Electron America Inc.; <i>S. Consiglio</i> , <i>H. Suzuki</i> , <i>C. Wajda</i> , <i>G. Leusink</i> , TEL Technology Center, America, LLC
4:45pm	AM-TuA14 Realization and <i>In-situ</i> OES Characterization of Saturated 10-100 ms Precursor Pulses in a 300 mm CCP Chamber Employing de Laval Nozzle Ring Injector for Fast ALD, <i>J. Sundqvist</i> , BALD Engineering AB, Sweden; Abhishekkumar Thakur , <i>S. Wege</i> , Plasway Technologies GmbH, Germany; <i>M. Krug</i> , Fraunhofer Institute for Ceramic Technologies and Systems IKTS, Germany
5:00pm	AM-TuA15 Advanced Materials for the Next Generation: ALD a Scalable Manufacturing Process for Powders, Arrelaine Dameron , <i>S. Moulton</i> , <i>J. DuMont</i> , <i>D. Lewis</i> , <i>T. Procelli</i> , <i>R. Tracy</i> , Forge Nano
5:15pm	AM-TuA16 Efficient Vapor Phase Infiltration of Polymer Powders in a Fluidized Bed Reactor: Practical Guidance for Industrial Applications, Livia Noëmi Glanzmann , <i>M. Knez</i> , CIC nanoGUNE, Spain

**ALD for Manufacturing
Session AM-TuA
Spatial, Large Area and Powder ALD I & II
Moderators:** Jonas Sundqvist, BALD Engineering AB,
Angel Yanguas-Gil, Argonne National Laboratory

Tuesday Afternoon, June 30, 2020

Room Baekeland		
1:30pm	INVITED: ALE1-TuA1 Realizing Selective Material Removal in Plasma-Based Atomic Layer Etching (ALE), <i>Gottlieb Oehrlein</i> , University of Maryland	Atomic Layer Etching Session ALE1-TuA ALE of Si-based Materials Moderators: Thorsten Lill, Lam Research Corp., Tetsuya Tatsumi, Sony Semiconductor Solutions Corp.
1:45pm	Invited talk continues.	
2:00pm	ALE1-TuA3 Atomic Layer Etching of SiO ₂ and Si ₃ N ₄ with Fluorocarbon, Hydrofluorocarbon, Fluoroether and Fluoroalcohol Compounds, <i>Yongjae Kim, S. Kim, H. Kang, Y. Lee, H. Chae</i> , Sungkyunkwan University, Republic of Korea	
2:15pm	ALE1-TuA4 Strategies to Enhance the Etch Selectivity During Plasma-Assisted Atomic-Scale Etching of SiO ₂ over SiN _x , <i>Ryan Gasvoda</i> , Colorado School of Mines; <i>Z. Zhang, E. Hudson</i> , Lam Research Corp.; <i>S. Agarwal</i> , Colorado School of Mines	
2:30pm	ALE1-TuA5 Cryo-ALE of SiO ₂ with C ₄ F ₈ Physisorption: Process Understanding and Enhancement, <i>Gaëlle Antoun, T. Tillocher, P. Lefauchaux, R. Dussart</i> , GREMI Université d'Orléans/CNRS, France; <i>A. Girard, C. Cardinaud</i> , IMN Université de Nantes/CNRS, France; <i>K. Yamazaki</i> , Tokyo Electron Limited, Japan; <i>J. Faguet, K. Maekawa</i> , TEL Technology Center, America, LLC	
2:45pm	ALE1-TuA6 Etch Stop Mechanisms of SiO ₂ and SiN Atomic-Layer Etching (ALE) by (Hydro)Fluorocarbon Plasmas; Molecular Dynamics Study, <i>Satoshi Hamaguchi, J. Tercero, M. Isobe, T. Ito, K. Karahashi</i> , Osaka University, Japan	
3:00pm	ALE1-TuA7 Interpretation of SiO ₂ Atomic Layer Etching via a Simple Analytic Model, <i>Yungseok Lee, I. Seong, J. Lee, S. Lee, C.H. Cho</i> , Chungnam National University, Korea; <i>S. Kim</i> , Nanotech, Korea; <i>S. You</i> , Chungnam National University, Korea	
3:15pm		
3:30pm	Break & Exhibits	
3:45pm	Break & Exhibits	
4:00pm	INVITED: ALE2-TuA11 Surface Reactions Between Metals and Diketone induced by Gas Cluster Ion Bombardments, <i>Noriaki Toyoda, K. Uematsu</i> , University of Hyogo, Japan	Atomic Layer Etching Session ALE2-TuA Novel ALE Techniques and Materials Moderators: Satoshi Hamaguchi, Osaka University, Alok Ranjan, Tokyo Electron America Inc.
4:15pm	Invited talk continues.	
4:30pm	INVITED: ALE2-TuA13 Precise Atomic Layer Control of 2D MoS ₂ by ALE Technique for Device Applications, <i>Geun Young Yeom, K.H. Kim, Y.J. Ji, K.S. Kim</i> , Sungkyunkwan University, Republic of Korea	
4:45pm	Invited talk continues.	
5:00pm	INVITED: ALE2-TuA15 Novel Chemistries for Layer-by-Layer Etching of 2D Semiconductor Coatings and Organic-Inorganic Hybrid Materials, <i>Anil U. Mane, M.J. Young, D. Choudhury, S. Letourneau, A. Yanguas-Gil, J.W. Elam</i> , Argonne National Laboratory	
5:15pm	Invited talk continues.	

Tuesday Afternoon, June 30, 2020

	ALD Fundamentals Room Jan & Hubert Van Eyck - Session AF-TuA Characterization I & II Moderators: Jiyoung Kim, University of Texas at Dallas, Jin-Seong Park, Hanyang University	ALD Applications Room Van Rysselberghe - Session AA-TuA ALD for Catalysis I & II Moderators: Stacey F. Bent, Stanford University, Rong Chen, Huazhong University of Science and Technology
1:30pm	AF-TuA1 Epitaxial BaSnO ₃ and SrSnO ₃ Perovskite Growth on SrTiO ₃ (001) via Atomic Layer Deposition, <i>P.-Y. Chen, C. Lam, B. Edmondson, A. Posadas, A. Demkov, John Ekerdt</i> , University of Texas at Austin	AA-TuA1 Design of Advanced Photocatalytic Materials by Atomic Layer Deposition (ALD), <i>Syreina Alsayegh, M. Bechelany, F. Zaviska, G. Lesage</i> , Institut Européen des Membranes, France; <i>A.-C. Razzouk, J. Stephan</i> , Lebanese University, Lebanon
1:45pm	AF-TuA2 Laterally Resolved Low Energy Ion Scattering Study of Selective ALD Model Samples, <i>Philipp Brüner, T. Grehl</i> , IONTOF GmbH, Germany; <i>A. Mameji, F. Roozeboom, P. Poedt</i> , TNO/Holst Center, Netherlands	AA-TuA2 Vertically Aligned Carbon Nanotubes Growth on the Iron Oxide Nanolayer Deposited by Atmospheric Pressure Atomic Layer Deposition, <i>Sahar Vahdatifar, Y. Mortazavi, A.A. Khodadadi</i> , University of Tehran, Iran; <i>S. Saedy</i> , Delft University of Technology, Netherlands
2:00pm	AF-TuA3 In situ Characterization of Quantum Dot Photoluminescence during Atomic Layer Deposition: Towards Stable Cd-Free QD-Based Devices, <i>Robin Petit, N. Zawacka, J. Kuhs, P. Smet, Z. Hens, C. Detavernier</i> , Ghent University, Belgium	AA-TuA3 Atomic Layer Deposition of Manganese Oxide Ultra-Fine Clusters on Titanium Dioxide Nanoparticles for Photocatalytic Hydrogen Production: Experiments & Simulations, <i>Saeed Saedy, R. Verma</i> , Delft University of Technology, Netherlands; <i>S. Rhatigan</i> , University College Cork, Ireland; <i>J. Liu</i> , Delft University of Technology, Ireland; <i>M. Nolan</i> , University College Cork, Ireland; <i>R. van Ommen</i> , Delft University of Technology, Netherlands
2:15pm	AF-TuA4 Capturing the Dynamic Atomic Structure in ALD Reactions with In situ XANES, <i>ab initio</i> Simulations, and Machine Learning. <i>Orlando Trejo</i> , University of Michigan; <i>A. Dadlani</i> , Norwegian University of Science and Technology, Norway; <i>F. De La Paz, S. Acharya, R. Kravec</i> , Stanford University; <i>D. Nordlund, R. Sarangi</i> , SLAC National Accelerator Laboratory; <i>F. Prinz</i> , Stanford University; <i>J. Torgersen</i> , Norwegian University of Science and Technology, Norway; <i>N. Dasgupta</i> , University of Michigan	AA-TuA4 In situ Electrochemical APXPS Analysis of ALD Grown Cu Catalyst for CO ₂ Reduction, <i>H. Ali-Löytty, L. Palmolahti, M. Hannula, Jesse Saari</i> , Tampere University, Finland; <i>K. Lahtonen</i> , Tampere University, Finland; <i>H.-Y. Wang, M. Soldemo, A. Nilsson</i> , Stockholm University, Sweden; <i>M. Valden</i> , Tampere University, Finland
2:30pm	AF-TuA5 Atomic Layer Deposition of Erbium Oxide, Erbium Fluoride and Stoichiometrically-Tunable Erbium Oxyfluoride Films, <i>Neha Mahuli, S.M. George</i> , University of Colorado - Boulder	AA-TuA5 ALD-grown Catalytic Layers on Si Photoelectrodes for Efficient Water Splitting, <i>J. Joe, H. Yang, T.A. Ho, C. Bae, E. Kim, Hyunjung Shin</i> , Sungkyunkwan University, Republic of Korea
2:45pm	AF-TuA6 Atmospheric Pressure Plasma-Enhanced Spatial ALD of SiO ₂ Studied by Gas-Phase Infrared and Optical Emission Spectroscopy, <i>Maria Antonietta Mione, V. Vandalon</i> , Eindhoven University of Technology, Netherlands; <i>A. Mameji, TNO/Holst Center, Netherlands; W.M.M. Kessels</i> , Eindhoven University of Technology, Netherlands; <i>F. Roozeboom, TNO/Holst Center, Netherlands</i>	AA-TuA6 Atomic Layer Deposited Inverse Opals of TiO ₂ /Au-Nanoparticles Composites for Photocatalysis Applications, <i>Pierre Bimal, M.C. Marco de Lucas, L. Imhoff</i> , Université de Bourgogne, France; <i>I. Pochard</i> , Université de Franche-Comté, France; <i>B. Domenichini, V. Potin</i> , Université de Bourgogne, France
3:00pm	INVITED: AF-TuA7 From the Noise: Measuring Atomic Structure in Amorphous Thin Films Grown by Atomic Layer Deposition, <i>Matthias Young</i> , University of Missouri-Columbia; <i>N. Bedford</i> , University of New South Wales, Australia; <i>J.W. Elam, A. Yanguas-Gil, S. Letourneau, M. Coile, D. Mandia, B. Aoun</i> , Argonne National Laboratory; <i>S.M. George, A. Cavanagh</i> , University of Colorado - Boulder; <i>X. He, A. Jasim</i> , University of Missouri-Columbia; <i>Q. Wyatt</i> , University of Missouri-Columbia; <i>N. Paranamana, T. White</i> , University of Missouri-Columbia	AA-TuA7 Bimetallic Nanocomposite Catalysts Fabricated by Selective Atomic Layer Deposition and Applications, <i>J. Cai, Y. Lang, K. Cao, Rong Chen</i> , Huazhong University of Science and Technology, China
3:15pm	Invited talk continues.	AA-TuA8 Atmospheric-Pressure Atomic Layer Deposited Bimetallic MCu/CeO ₂ Catalysts for Enhanced Removal of CO from Fuel-Cell Hydrogen by Preferential Oxidation, <i>E. Farmani Gheshlaghi, A. Irandoust, Fatemeh Gashoul, A.A. Khodadadi, Y. Mortazavi</i> , University of Tehran, Iran
3:30pm	Break & Exhibits	Break & Exhibits
3:45pm	Break & Exhibits	Break & Exhibits
4:00pm	AF-TuA11 The Chemical Evolution of Copper Nucleation on Various Surfaces Probed using In-situ Atomic Layer Deposition/X-ray Absorption Spectroscopy, <i>Anup Dadlani, A. Bin Affj, M. Lid, A. Flaten</i> , Norwegian University of Science and Technology, Norway; <i>O. Trejo</i> , University of Michigan; <i>E. Han, F. Prinz</i> , Stanford University; <i>J. Torgersen</i> , Norwegian University of Science and Technology, Norway	INVITED: AA-TuA11 ALD Fabrication of BN Membranes: Environmental Applications, <i>Catherine Marichy</i> , CNRS, France; <i>W. Hao, C. Journet, V. Salles</i> , Univ Lyon 1, France
4:15pm	AF-TuA12 Anomalous Growth Effects During Supercycle ALD of Al-Doped ZnO using DMAI as Dopant Precursor, <i>Bart Macco, W.M.M. Kessels</i> , Eindhoven University of Technology, Netherlands	Invited talk continues.
4:30pm	AF-TuA13 In situ XPS Investigation of Surface Thermolysis of Nickel Amidinate and Its Implication on the ALD of Nickel Compounds, <i>Xinwei Wang</i> , Peking University, China	AA-TuA13 Unveiling the Origin of Synergistic Effects in Bicomponent Catalysts through Constructing Spatially Separated Catalysts by ALD, <i>Zhe Gao, Y. Qin</i> , Chinese Academy of Sciences, China
4:45pm	AF-TuA14 Effects of Gas Phase Reaction Chemistry on Electronic Conductivity of ALD Grown TiO ₂ Films, <i>Aein Babadi, P. McIntyre</i> , Stanford University	AA-TuA14 Highly Stable and Active Catalyst for Dry Reforming of Methane via Molecular Layer Deposition Approach, <i>Piyush Ingale, C. Guan, R. Kraehnert, R. Naumann d'Alnoncourt, A. Thomas</i> , Technische Universität Berlin, Germany; <i>F. Rosowski</i> , BASF SE, Germany
5:00pm	AF-TuA15 In Situ Reflection High Energy Electron Diffraction in Atomic Layer Deposition for Monitoring the Epitaxial Transformations, <i>Nicholas Strandwitz, A. Howzen</i> , Lehigh University	AA-TuA15 Using ALD to Probe Support and Promoter Effects for Syngas Conversion Catalysts, <i>S. Nathan, A. Asundi</i> , Stanford University; <i>A. Hoffman, A. Boubnov, S. Bare</i> , SLAC National Accelerator Laboratory; <i>Stacey F. Bent</i> , Stanford University
5:15pm	AF-TuA16 In Situ Detection of the Reaction Heat Produced by ALD on High-Surface-Area Substrates, <i>Benjamin Greenberg, K. Anderson, M. Wolak, A. Jacobs, J. Wollmershauser, B. Feigelson</i> , U.S. Naval Research Laboratory	AA-TuA16 Atomic Layer Deposition of Cobalt Phosphate: Process Characterization and Electrocatalytic Performance, <i>V. Di Palma, R. Zhang, W.M.M. Kessels</i> , Eindhoven University of Technology, Netherlands; <i>M. Tsampas</i> , Dutch Institute for Fundamental Energy Research, Netherlands; <i>Mariadriana Creatore</i> , Eindhoven University of Technology, Netherlands

ALD Applications

Room Arveleforum & Pedro de Gante - Session AA-TuP

ALD Applications Poster Session

5:30pm

AA-TuP1 Gas Encapsulating Layer for Stretchable Electronics by Selective Infiltration of Al₂O₃ in Polymer Films, *H.R. Yoon*, Hanyang University, Republic of Korea; *Sangho Cho*, Korea Institute of Science and Technology (KIST), Republic of Korea; *M.M. Sung*, Hanyang University, Republic of Korea

AA-TuP2 A Dry Etch Characteristics of Magnesium Doped Al₂O₃ Thin Films, *J. Choi*, UP Chemical Co., Ltd.; *Eorin Lee*, *J.H. Choi*, *W. Koh*, UP Chemical Co., Ltd., Republic of Korea

AA-TuP3 Optimization of TiN Atomic Layer Deposition for Hydrogen Separative Membranes, *Clemence Badie*, Aix Marseille University, CNRS, CINaM, France; *M. Bechelany*, *M. Weber*, *C. Charmette*, *A. Julbe*, Institut Européen des Membranes, France; *J.-M. Decams*, Annealsys SAS, France; *L. Santinacci*, Aix Marseille University, CNRS, CINaM, France

AA-TuP4 Multilayer Based on Parylene and TiO₂ Deposited by ALD for the Packaging of Medical Devices, *David Grange*, *S. Farine-Brunner*, *L. Jeandupeux*, *T. Journot*, *N. Chatelain*, Haute Ecole Arc (University of Applied Sciences HES-SO), Switzerland

AA-TuP5 Titanicene-Derived TiO₂ Quantum Dots@Carbon Encapsulated ZnO Nanorods Anodes for Stable Lithium Storage, *J.B. Fang*, *Chang Liu*, *A.D. Li*, Nanjing University, China

AA-TuP6 Atomic Layer Deposition of Lead(II) Sulfide and its Application as a Starting Material for Perovskite Solar Cells, *Eunsoo Kim*, *H. Shin*, Sungkyunkwan University, Republic of Korea

AA-TuP7 Broadband Antireflection Coatings on Poly(Methyl Methacrylate) Prepared by Atomic Layer Deposition, *Lukas Gümbel*, *P. Klement*, *J. Schörmann*, *S. Chatterjee*, Justus Liebig University Giessen, Germany

AA-TuP8 Stabilizing Red Fluoride LED Phosphors using Atomic Layer Deposition, *R. Verstraete*, *H. Rijckaert*, *Geert Rampelberg*, Ghent University, Belgium; *E. Coetsee-Hugo*, *M.-M. Duvenhage*, *H. Swart*, University of the Free State, South Africa; *P. Smet*, *C. Detavernier*, *D. Poelman*, Ghent University, Belgium

AA-TuP9 Modulated VO₂ Phase Change Properties by Ge Doping, *Guandong Bai*, *K. Niang*, *J. Robertson*, University of Cambridge, UK

AA-TuP10 Studying the Role of TiO₂ Protective Coatings on High-Voltage Cathode Materials using a Thin-Film Model Platform, *Andrea Pitillas Martinez*, KU Leuven – University of Leuven/IMEC/Ghent University, Belgium; *C. Detavernier*, Ghent University, Belgium; *P.M. Vereecken*, KU Leuven – University of Leuven/IMEC, Belgium

AA-TuP11 Gold-Coated Optical Fibers are Sensors for ALD Deposition and Can be Exploited for Biosensing, *Eden Goodwin*, *D. Mandia*, *S. Barry*, Carleton University, Canada

AA-TuP12 Channel Electron Multiplier Performance Improvement by Alumina Deposition, *Baojun Yan*, Chinese Academy of Sciences, China

AA-TuP13 Influence of Interlayer GeOx Thickness on Band Alignment of Al₂O₃/GeOx/Ge Structure, *Jinjuan Xiang*, *T. Li*, *X. Wang*, *X. Ma*, Institute of Microelectronics of Chinese Academy of Sciences, China; *J. Gao*, *J. Yu*, *C. Zhao*, *W. Wang*, Chinese Academy of Sciences, China

AA-TuP14 Photocatalytic Lithography with Atomic Layer Deposited TiO₂ Films to Tailor Biointerface Properties, *Sofie Vandenbroucke*, Ghent University - IMEC, Belgium; *F. Mattelaer*, Ghent University, Belgium; *K. Jans*, IMEC, Belgium; *C. Detavernier*, Ghent University, Belgium; *T. Stakenborg*, *R. Vos*, IMEC, Belgium

AA-TuP15 Enhanced Activity and Selectivity of Co-Pt/γ-Al₂O₃ Fischer-Tropsch Catalyst by Atomic Layer Deposited Al₂O₃ Overcoat, *Laura Keskiaväli*, *P. Eskelinen*, *N. Heikkinen*, *M. Reinikainen*, VTT Technical Research Centre of Finland, Finland; *M. Putkonen*, University of Helsinki, Finland

AA-TuP16 A Novel Volatile-Memristor-Based True Random Number Generator, *C.S. Hwang*, *Kyung Seok Woo*, Seoul National University, Republic of Korea

AA-TuP17 High Uniform Coverage Optical Coating Technology for Micro Complex Structural Optical Components, *Chien Cheng Kuo*, National Central University, Republic of China

AA-TuP18 Improvement in the Surface Morphology of the Bottom Ru Electrode for DRAM Capacitor by Discrete Feeding Method, *Dae Seon Kwon*, *C.S. Hwang*, Seoul National University, Republic of Korea

AA-TuP19 Atomic Layer Deposition of Tin Selenide(Sn_xSe_{1-x}) Thin Films using Sn^{IV}(Nme₂)₄ and Se(SiMe₃)₂ with NH₃ Co-Reagent, *Jeong Woo Jeon*, *C. Yoo*, *E.-S. Park*, *W. Kim*, *M. Ha*, *Y.K. Lee*, *C.S. Hwang*, Seoul National University, Republic of Korea

AA-TuP20 Surface Properties of SrRuO₃ Deposited by ALD for the Next-Generation DRAM Electrode, *Junil Lim*, *C.S. Hwang*, Seoul National University, Republic of Korea

AA-TuP21 HfN-Based Resistive Random Access Memory Grown by Atomic Layer Deposition, *B.J. Choi*, *Hee Ju Yun*, *H.Y. Lee*, Seoul National University of Science and Technology, Republic of Korea

AA-TuP22 Formation of AlGaN Thin Films by Thermal Atomic Layer Deposition, *B.J. Choi*, *Seok Choi*, *H.J. Yun*, *H.G. Kim*, Seoul National University of Science and Technology, Republic of Korea

AA-TuP23 Ferroelectricity of Ferroelectric Hf_{1-x}Zr_xO₂/Antiferroelectric ZrO₂ Stack Structure Fabricated by Atomic Layer Deposition, *Takashi Onaya*, Meiji University, Japan; *T. Nabatame*, National Institute for Materials Science, Japan; *Y.C. Jung*, University of Texas at Dallas; *H. Hernandez-Arriaga*, The University of Texas at Dallas; *J. Mohan*, University of Texas at Dallas; *H. Kim*, *A. Khosravi*, The University of Texas at Dallas; *N. Sawamoto*, Meiji University, Japan; *C.-Y. Nam*, *E.H.R. Tsai*, Brookhaven National Laboratory; *T. Nagata*, National Institute for Materials Science, Japan; *R.M. Wallace*, The University of Texas at Dallas; *J. Kim*, University of Texas at Dallas; *A. Ogura*, Meiji University, Japan

AA-TuP24 Study on Optical and Electrical Properties of Zn(O,S) Films Deposited by Atomic Layer Deposition (ALD), *Narmatha Koothan*, *Y.-H. Yu*, *C.-C. Kei*, *W.-H. Cho*, *T.-T. Chou*, Taiwan Instrument Research Institute, Republic of China

AA-TuP25 Atomic Layer Deposition of Highly Dispersed Manganese Oxide on Mesoporous Silicon Oxide for Selective Catalytic Reduction of Nitrogen Oxides, *Saeed Saedy*, Delft University of Technology, Netherlands; *D. Urbanas*, *P. Baltrėnas*, Vilnius Gediminas Technical University, Lithuania; *R. van Ommen*, Delft University of Technology, Netherlands

AA-TuP26 Effect of Deposition Temperature on the Crystallinity and Polarization of Ga-doped HfO₂ Films by Atomic Layer Deposition, *Ju-Young Jeong*, *H. Sohn*, *Y. Han*, Yonsei University, Republic of Korea

AA-TuP27 Low Damage Remote Plasma ALD of Dielectric Layers on Graphene, *Michael Powell*, Oxford Instruments Plasma Technology, UK; *B. Canto*, *M. Otto*, *S. Kataria*, AMO GmbH, Germany; *A. O'Mahony*, *O. Thomas*, Oxford Instruments Plasma Technology; *H.C.M. Knoops*, Eindhoven University of Technology, Netherlands; *D. Neumaier*, *M. Lemme*, AMO GmbH, Germany; *R. Sundaram*, Oxford Instruments Plasma Technology

AA-TuP28 Demonstrating Ultra-Thin ZrO₂-Based Dynamic Random Access Memory Capacitor Dielectric by Crystal Structure Improvement using Y₂O₃, *Byung Seok Kim*, *Y.W. Kim*, *A.J. Lee*, Kyung Hee University, Republic of Korea; *J. Bang*, *B.-E. Park*, *H. Kim*, *Y. Kim*, Samsung Advanced Institute of Technology, Republic of Korea; *W. Jeon*, Kyung Hee University, Republic of Korea

AA-TuP29 Chemistry Modulation of Ru by Introducing Pretreatment Process for Adopting as the Electrode of DRAM Capacitor with Rutile-Phased TiO₂ Dielectric, *Eui Young Jung*, *D.H. Han*, Kyung Hee University, Republic of Korea; *J. Bang*, *H. Kim*, *Y. Kim*, Samsung Advanced Institute of Technology, Republic of Korea; *W. Jeon*, Kyung Hee University, Republic of Korea

AA-TuP30 Design of Li-Containing Layers with LiHMDS, *Andreas Werbrouck*, *F. Mattelaer*, *T. Dobbelaere*, *M. Minjauw*, Ghent University, Belgium; *F. Munnik*, *J. Julin*, Helmholtz-Zentrum Dresden-Rossendorf, Germany; *J. Dendooven*, *C. Detavernier*, Ghent University, Belgium

AA-TuP31 ALD Nb₂O₅ as Cathode Coating for All-Solid-State Li-ion Batteries, *Abdessalem Aribia*, *J. Sastre*, *X. Chen*, *A. Tiwari*, *Y. Romanyuk*, Empa, Switzerland

AA-TuP32 Resistive Switching in Titanium-Aluminum-Oxide Thin Films Grown by Atomic Layer Deposition, *Joonas Merisalu*, *T. Arroval*, *A. Kasikov*, *K. Kukli*, *A. Tamm*, *J. Aarik*, University of Tartu, Estonia

AA-TuP33 Studies on ZrO₂/Graphene/ZrO₂ Structures with CVD Grown Graphene, *Tauno Kahro*, University of Tartu, Estonia; *H. Castán*, *S. Dueñas*, University of Valladolid, Spain; *J. Merisalu*, *T. Jägiaas*, *H.-M. Piirsoo*, *H. Mändar*, *K. Kukli*, *A. Tamm*, University of Tartu, Estonia

AA-TuP34 New Hydrazine Based Precursors For Semiconductor Fabrication, *Wolf Schorn*, *O. Briel*, *R. Karch*, Umicore AG & Co. KG, Germany; *W. Stolz*, NASP III/V GmbH, Germany

AA-TuP35 The Role of Atomic Layer Deposited Metal Oxides for High Efficient, Semitransparent, Highly Stable Perovskite Solar Devices, *Valerio Zardetto*, TNO-Solliance, Netherlands; *P. Poedt*, TNO/Holst Center, Netherlands; *M. Creatore*, Eindhoven University of Technology, Netherlands; *T. Aernouts*, IMEC, Belgium; *H. Linden*, *S. Veenstra*, *R. Andriessen*, TNO-Solliance, Netherlands

Tuesday Evening Poster Sessions, June 30, 2020

AA-TuP36 Plasma Enhanced ALD of Doped Hematite (Fe_2O_3) for Photocatalytic Water Splitting, *Natalie Bavis, R. Potter*, University of Liverpool, UK

AA-TuP37 ALD Controlled Doping: A Novel Route to Precise Doping in Photocatalytic Water Splitting Nanopowders, *Ian Coates, P. Chalker, M. Werner*, University of Liverpool, UK

AA-TuP38 ALD Ru Size-Dependent Activity for N_2 Electroreduction, *X. Feng, L. Hu, Corbin Feit, P. Banerjee*, University of Central Florida

AA-TuP39 The Use of ALD Layers for Hermetic Encapsulation in the Development of a Flexible Implantable Micro Electrode for Neural Recording and Stimulation, *David Schaubroeck*, IMEC - Ghent University, Belgium; *C. Li*, Ghent University - IMEC, Belgium; *R. Verplancke, D. Cuypers, M. Cauwe, M. Op de Beeck*, IMEC - Ghent University, Belgium

AA-TuP40 Investigation of (Al_2O_3 , ZnO , AZO)/Chitosan Hybrid Interfaces Formed by Low-Temperature Atomic Layer Deposition, *Elena Maznitsyna, K. Maksimova, A. Goikhman*, IKBFU, REC "Functional Nanomaterials", Russian Federation

AA-TuP41 The Effect of Electrode Material and Doping Concentration on Physical and Electrical Properties by Using Thermal and Plasma-Assisted Atomic Layer Deposition in Ferroelectric Zr-doped HfO_2 Dielectrics, *P.-C. Juan*, Ming Chi University of Technology, Republic of China; *Wen-Hao Cho*, Taiwan Instrument Research Institute, Republic of China; *C.-L. Chen*, National Applied Research Laboratories, Republic of China; *C.-C. Kei*, Taiwan Instrument Research Institute, Republic of China

AA-TuP42 PbI_2 Growth for Solution ALD for PV Application, *Maïssa K. S. Barr, S. Nadiri, C. Asker*, Friedrich-Alexander University of Erlangen-Nürnberg, Germany; *K. Forberich*, Friedrich-Alexander University of Erlangen-Nürnberg, i-MEET, Germany; *F. Hoga, T. Stubhan, H. Egelhaaf*, ZAE Bayern - Erneuerbare Energien, Germany; *C. Brabec*, Friedrich-Alexander University of Erlangen-Nürnberg, i-MEET, Germany; *J. Bachmann*, Friedrich-Alexander-University Erlangen-Nürnberg, Germany

AA-TuP43 A Combinatorial Approach to the Ferroelectric Properties in $\text{Hf}_x\text{Zr}_{1-x}\text{O}_2$ Deposited by Atomic Layer Deposition, *J. Mohan*, University of Texas at Dallas; *S.J. Kim*, Kangwon National University, Republic of Korea; *H. Hernandez-Arriga*, The University of Texas at Dallas; *Yang Chan Jung*, University of Texas at Dallas; *T. Onaya*, Meiji University, Japan; *H. Kim, N. Kim, K. Kim*, The University of Texas at Dallas; *A. Ogura*, Meiji University, Japan; *R. Choi*, Inha University, South Korea; *M.M. Sung*, Hanyang University, Republic of Korea; *J. Kim*, University of Texas at Dallas

AA-TuP44 Progress on the Development of Astronomical UV Mirror Coatings by ALD, *John Hennessy, A. Jewell, S. Nikzad*, Jet Propulsion Laboratory

AA-TuP45 Towards Hydroxyapatite From Calcium Formamidinate, *Ritwik Bhatia*, Veeco

AA-TuP46 Structure, Morphology and Mechanical Behavior of ALD TiSiN films, *Hae Young Kim, S. Chugh, A. Dhamdhare, B. Nie, S. Rathi, N. Mukherjee*, Eugenius, Inc.

AA-TuP47 The Effect of Carrier Suppressor Dopants in Indium-Oxide Based Semiconductor Using Plasma-Enhanced Atomic Layer Deposition, *Seung-Hee Lee, J.-B. Ko, S.-H. Ko Park*, KAIST, Republic of Korea

AA-TuP48 Toward Promotion of Redox and Electronic Properties of Catalysts Using Atomic Layer Deposition (ALD) Method for CO_2 Assisted Dehydrogenation of Propane Over Cr/SiO_2 Catalysts, *Fatemeh Gashoul Daresibi, Y. Mortazavi, A.A. Khodadadi*, University of Tehran, Iran

AA-TuP49 Ultrathin and High-Conductivity Mn-N-O Barriers Against Copper Diffusion, *Yong-Ping Wang, X. Wu, S.-J. Ding*, Fudan University, China

AA-TuP50 Anomalous Increase in Toughness and Electrochemical Performance of Carbonized Cotton, *Seung-Mo Lee, D.V. Lam, J.H. Kim*, Korea Institute of Machinery and Materials, Republic of Korea

AA-TuP51 Layer-by-Layer Deposited Superhydrophobic Nano-Coatings, *Jeff Chinn, C. Hung, J. Prindle, Z. Hasan, W. Kumler*, Integrated Surface Technologies

AA-TuP52 Transparent Thin Film Transistors of HfO_2/ZnO Superlattices Grown by Atomic Layer Deposition, *T.H. Liu, Tsong-Sheng Lay*, National Chung Hsing University, Republic of China

AA-TuP53 Nickel Catalyst with Atomically-Thin Meshed Coating for Improved Durability in Dry Reforming of Methane, *Kun Cao, M. Gong, J. Yang, R. Chen*, Huazhong University of Science and Technology, China

AA-TuP54 Remote Plasma Pulsed CVD of SiN_x at Extremely Low Temperatures for Flexible Substrates Applications, *Chad Brick*, Gelest, Inc.; *A. Kaloyeros*, BFD Innovation; *J. Goff, B. Arkles*, Gelest, Inc.

AA-TuP55 Single-Pulse Pulsed CVD Cobalt for Emerging ULSI BEOL Applications, *Li Yang, B. Arkles, J. Goff*, Gelest, Inc.; *A. Kaloyeros*, BFD Innovation

AA-TuP56 Hole Trap, Charge Transfer and Photoelectrochemical Water Oxidation of ALD Controlled TiO_2 Anatase Thin Film, *Hyunwoo Yang, H. Shin*, Sungkyunkwan University, Republic of Korea

AA-TuP57 Flexible Neuromorphic $\text{Al}_2\text{O}_3/\text{Al}$ -based Hydroquinone Hybrid Bilayer-Structure Memristors by Atomic/Molecular Layer Deposition, *Chang Liu, J. Lei*, Nanjing University, China; *Y.-Q. Cao*, Nanjing University of Science & Technology, China; *A.D. Li*, Nanjing University, China

AA-TuP58 Residual Stress Study of SiO_2 Thin Films Prepared by Low-Temperature Plasma-Enhanced Atomic Layer Deposition, *Zhen Zhu*, Beneq Oy, Finland; *O.M.E. Ylivaara*, VTT Technical Research Centre of Finland Ltd, Finland; *K. Mizohata*, University of Helsinki, Finland

AA-TuP59 Near-Zero Temperature Coefficient of Resistivity (n_z -TCR) of ALD $\text{Ti}_x\text{Si}_y\text{N}_z$ Films, *S. Chugh*, Eugenius, Inc.; *Corbin Feit*, University of Central Florida; *H.Y. Kim, B. Nie, A. Dhamdhare, S. Rathi, N. Mukherjee*, Eugenius, Inc.; *P. Banerjee*, University of Central Florida

AA-TuP60 Low Temperature Plasma Enhanced Atomic Layer Deposition of AlN Thin Films on GaN Substrates: The Role of Deposition Parameters on Structural and Electrical Properties, *Raffaella Lo Nigro*, CNR, Italy; *E. Schilirò, F. Giannazzo, F. Roccaforte*, CNR-IMM Headquarter of Catania, Italy; *M. Leszczyński*, TopGaN, Poland; *B. Pecs*, Mta-Has, Hungary; *H. Gargouri*, SENTECH Instruments GmbH, Germany

AA-TuP61 The Influence of ALD-ZnSnO Buffer Layer Process Conditions on the Characteristics of Tin Sulfide Thin Film Solar Cells, *Jae Yu Cho, J. Heo*, Chonnam National University, Republic of Korea

AA-TuP62 Atomic Layer Deposition of Cerium Oxide for High Performance Polymer Electrolyte Membrane Fuel Cell Cathode, *Junmo Koo, J.S. Park, H. Jeong, K.H. Kim, B.G. Seo, J.H. Shim*, Korea University, Republic of Korea

AA-TuP63 Atomic Layer Deposition of Co-Pt Bimetallic Nanoparticles as Electrocatalysts for Hydrogen Evaluation Reaction, *Yan-Qiang Cao*, Nanjing University of Science & Technology, China; *C. Liu, A.D. Li*, Nanjing University, China

AA-TuP64 Innovative ALD Industrial Services, *Joël Matthey, P.-A. Steinmann, L. Steinmann, B. Steinmann*, Positive Coating SA, Switzerland

AA-TuP65 Chemical, Structural and Piezoelectric Characterization of AlN Grown by PEALD with Ultra-Low Oxygen Content, *Nicholas Strnad*, General Technical Services, LLC; *G.B. Rayner*, Kurt J. Lesker Company; *A. Payne*, North Carolina State University; *N. O'Toole*, Kurt J. Lesker Company; *R. Burke*, General Technical Services, LLC; *D. Potrepka, J. Pulskamp*, CCDC ARL

AA-TuP66 Antireflection Coating on PMMA Substrates by Atomic Layer Deposition (ALD), *Pallabi Paul*, Friedrich Schiller University, Germany; *K. Pfeiffer*, Fraunhofer Institute for Applied Optics and Precision Engineering IOF, Germany; *A. Szeghalmi*, Friedrich Schiller University, Germany

AA-TuP67 Highly Efficient and Stable Organic - Inorganic Halide Perovskite Solar Cells with ALD-Grown Charge Transport Layers, *Hyunjung Shin*, Sungkyunkwan University, Republic of Korea

AA-TuP68 Effect of Thermal Stability of Precursor on Electrical Properties of $\text{TiN}/\text{ZrO}_2/\text{TiN}$ Capacitor, *Younsoo Kim, S.-M. Ryu, Y.-J. Cho*, Samsung Electronics Co., Inc., Republic of Korea; *N. Yamada*, ADEKA Corporation, Japan; *J.H. Choi, H. Lim*, Samsung Electronics Co., Inc., Republic of Korea

AA-TuP69 Significant Enhancement in Dielectric Properties of High-K Thin Films by Atomic Layer Bombardment, *Teng-Jan Chang*, National Taiwan University, Republic of China, Taiwan, Republic of China; *W.-H. Lee*, National Taiwan University, Republic of China; *C.-I. Wang, S.-H. Yi, Y.-T. Yin, M.J. Chen*, National Taiwan University, Republic of China, Taiwan, Republic of China

AA-TuP70 Mechanism of Leakage Variation with Aspect Ratio in ALD High-k ZrO_2 and HZO Dielectrics, *Martin McBriarty, R. Clarke, S. Barabash, K. Littau*, Intermolecular

AA-TuP71 Enhanced Activity of Hydrogen-Evolution and Oxygen-Evolution Electrocatalyst by ALD of CoN , *Zhixin Wan, D. Guo, B. Xi*, Sun Yat-sen University, China

AA-TuP72 Highly Stable Zn Metal Anode Enabled By Atomic Layer Deposited Coating for Aqueous Zinc-Ion Batteries, *Jian Liu*, University of British Columbia, Canada

AA-TuP73 Atomic Layer Deposition Zinc-Doped Alumina and Alucone at Room Temperature for Flexible and Transparent Gas Permeation Barriers, *Shiv Bhudia, S. Wack, N. Adjeroud, J. Guillot*, Luxembourg Institute of Science and Technology, Luxembourg; *D. Blondin*, Met-Lux S.a.; *R. Leturcq*, Luxembourg Institute of Science and Technology, Luxembourg

Tuesday Evening Poster Sessions, June 30, 2020

AA-TuP74 ALD Encapsulation of QD-Polymer Composite Films for Luminescent Applications, *Natalia Zawacka, R. Petit, J. Kuhs, P. Smet, C. Detavernier, Z. Hens*, Ghent University, Belgium

AA-TuP75 Crystalline RuO₂ Based on Atomic Layer Deposition for Oxygen Evolution Catalyst, *Donghyun Kim, S. Lee, J.S. Park, H. Kim*, Yonsei University, Republic of Korea

AA-TuP76 Magnetic and Electric Properties of Atomic Layer Deposited ZrO₂-Based Thin Films, *Kristjan Kalam, H. Seemen, P. Ritslaid, A. Tamm, K. Kukli, M. Mikkor, R. Stern*, University of Tartu, Estonia; *S. Dueñas, H. Castán*, University of Valladolid, Spain

AA-TuP77 Doubly Clamped Stress-Free Nanomechanical Resonator Based on Ultrathin ALD Al₂O₃, *Liliana Stan*, Argonne National Laboratory; *N. Moldovan*, Alcorix Co.; *J. Zhou, H. Cai, D. Czaplewski, D. Lopez*, Argonne National Laboratory

AA-TuP78 ALD-Grown Aluminum Oxide Coatings for Nuclear Applications, *Boris Paladino, M. Vanazzi*, Italian Institute of Technology, Italy; *S. Bassini, M. Utili*, ENEA (Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile), Italy; *F. Di Fonzo*, Italian Institute of Technology, Italy

AA-TuP79 Atomic Layer Deposited Nitrogen Incorporated MoO_x Films: Electrical and Electrochemical Properties, *Arpan Dhara*, Ghent University, Belgium; *D. Saha, S. Mitra, S. Sarkar*, Indian Institute of Technology Bombay, India

AA-TuP80 Surface Encapsulation and Hydrophilicity Control by ALD, *Bin Zhang, Y. Qin*, Chinese Academy of Sciences, China

AA-TuP81 Fracture Properties of Atomic Layer Deposited Oxide Thin Films and Nanolaminates on Flexible Polymer Substrates, *M. Ruoho, J.-P. Niemelä, C. Guerra-Nunez, B. Putz*, Empa, Switzerland; *A. Taylor*, University of California Santa Barbara; *X. Maeder, N. Tarasiuk, G. Robertson*, Empa, Switzerland; *C. Kapusta*, University of Science and Technology, Poland; *J. Michler, Ivo Utke*, Empa, Switzerland

AA-TuP82 Improvement of Thin-Film Transistor Performance in Atomic Layer Deposited SnO Film by Thermal Annealing Process, *Jung-Hoon Lee, S.H. Choi*, Hanyang University, Republic of Korea; *B.H. Park*, EM Index, Republic of Korea; *J. Sheng, J.-S. Park*, Hanyang University, Republic of Korea

AA-TuP83 All-ALD TiO₂-Sb₂S₃-V₂O₅ Heterojunctions for Scalable and Versatile Solar Energy Conversion, *Pascal Büttner, I. Minguez-Bacho, J. Bachmann*, Friedrich-Alexander-University Erlangen-Nürnberg, Germany

AA-TuP84 Nanoindentation of Al₂O₃ Doped ZrO₂ Pyramids Deposited on Soda-Lime Glass using Atomic Layer Deposition, *Taivo Jõgiaas, H.-M. Piirsoo, A. Tamm*, University of Tartu, Estonia

AA-TuP85 Mo-Based Thin-Films Prepared by Plasma Enhanced Atomic Layer Deposition as a Potential Conductor Metal and Diffusion Barrier, *S.-H. Kim, Na-Yeon Park, Y.-H. Joo, D.K. Nandi, R. Ramesh*, Yeungnam University, Republic of Korea

AA-TuP86 Paraelectric/Antiferroelectric Phase Transformation of ZrO₂ by an As-deposited TiN Capping Layer Prepared by Plasma-Enhanced Atomic Layer Deposition, *Chun-Yuan Wang, C.-I. Wang, S.-H. Yi, T.-J. Chang, C.Y. Chou, Y.-T. Yin, M.J. Chen*, National Taiwan University, Taiwan, Republic of China

AA-TuP87 Atomic Layer Deposition Platform in Luxembourg – Review of Emerging Applications for Sensors, MEMS, Energy Harvesters, Transparent Electronics and Coated Powder for Composites, *Noureddine Adjeroud*, Luxembourg Institute of Science and Technology, Luxembourg

AA-TuP88 Optical Characterization Of Aluminium Nitride Deposited By Plasma- Enhanced Atomic Layer Deposition (Pe-Ald), *Nikhar Khanna, M. El Hachemi*, Luxembourg Institute of Science and Technology, Luxembourg

AA-TuP89 Atomic Layer Deposited Films for Solar Cells Application, *Karol Frohlich*, CEMEA/Institute of Electrical Engineering, SAS, Slovakia; *M. Mikolášek*, Institute of Electronics and Photonics, SUT, Slovakia; *R. Subair, V. Nadáždý*, Institute of Physics, SAS, Slovakia; *A. Rosová, E. Dobročka, M. Precner*, Institute of Electrical Engineering, SAS, Slovakia; *M. Jergel, E. Majková*, Institute of Physics, SAS, Slovakia

AA-TuP90 Atomic Layer Deposited ZnMgO Buffer Layer in Co-Evaporated CIGS Solar Cells, *Ramis Hertwig, S. Nishiwaki, A. Tiwari, R. Carron*, Empa, Switzerland

AA-TuP91 Thermal Barrier/Oxidation Resistance Improvement of Carbon Fiber Fabrics by Using ALD Titanium Dioxide Coatings, *V. Dias, F. Miranda, A. Petraconi, N. Galvão*, Instituto Tecnológico de Aeronáutica, Brazil; *J. Machado*, Instituto Nacional de Pesquisas Espaciais, Brazil; *W. Chiappim*, Universidade de Aveiro, Portugal; *A. da Silva Sobrinho, G. Petraconi*, Instituto Tecnológico de Aeronáutica, Brazil; *H. Maciel*, Universidade Brasil, Brazil; *Rodrigo Pessoa*, Instituto Tecnológico de Aeronáutica, Brazil

AA-TuP92 Effect of Ageing on ALD Oxide's Surface and its Hydrophobic Properties, *E. Rimpilä, Jesse Kalliomäki, A. He, J. Hämäläinen, M. Kääriä, T. Sarnet*, Picosun Oy, Finland

AA-TuP93 Investigations on the Composition, Structure, Optical and Electrical Properties of ALD Grown AZO Thin Films, *Prasanna Sankaran*, PSG College of Technology, India; *D. McIlroy, E. Echeverria, P. Waghle, P. Mainali, A. Justin*, Oklahoma State University

AA-TuP94 High-Throughput and Continuous Powder ALD for Energy Application, *Sebastien Moitzheim*, Delft IMP B.V., Netherlands

AA-TuP95 Biocompatibility of ALD Coatings on Nano- and Microstructures: Cell Viability Studies of Murine and Human Induced Stem Cell-Derived Neurons, *Robert Zierold, J. Harberts, C. Fendler, M. Siegmund, M. Schnelle, R. Blick*, Universität Hamburg, Germany

AA-TuP96 Low-Temperature PEALD of Ga₂O₃ Using TMGa and O₂ Plasma, *Ali Mahmoodinezhad, C. Janowitz*, BTU Cottbus-Senftenberg, Germany; *F. Naumann, P. Plate, H. Gargouri*, SENTECH Instruments GmbH, Germany; *K. Henkel, J.I. Flege*, BTU Cottbus-Senftenberg, Germany

AA-TuP97 ALD Coatings on Ni-Rich NMC Cathode Materials for Long Lasting, High Energy Density Batteries, *Jaime DuMont, D. Lewis, M. Martinez, M. Herbert-Walters, S. Moulton, B. Hughes, A. Dameron*, Forge Nano

AA-TuP98 Lifetime, Selectivity, Stability, and Hydrothermal Improvements with ALD Overcoating for Hydrogenation and Dehydrogenation Catalysts, *Staci Moulton, A. Dameron, T. Procelli, R. Tracy*, Forge Nano

AA-TuP99 ALD-Al₂O₃ Surface Passivation of Type II Superlattice Infrared Focal Plane Arrays Compared to Other Passivation Techniques, *R. Jones*, L3Harris Space & Sensors; *Adam Bertuch*, Veeco ALD; *S. Allen, S. Styonovich*, L3Harris Space & Sensors; *G. Sundaram*, Veeco ALD

AA-TuP100 Efficient and Flexible Dielectrics at Elevated Temperatures from Polymers Sandwiched with Wide Bandgap Inorganic Films Grown via Atomic Layer Deposition, *Ali Kemal Okyay*, Stanford University; *S. Ilhom, C. Wu, A. Mohammad, D. Shukla, Y. Cao, N. Biyikli*, University of Connecticut

AA-TuP101 On the Atomic Layer Deposition of Catalysts for Dehydrogenation of Propane with CO₂: The Study of Reaction Performance and Coke Formation, *Fatemeh Gashoul Daresibi, Y. Mortazavi, A.A. Khodadadi*, University of Tehran, Iran

Area Selective ALD

Room Arteveldeforum & Pedro de Gante - Session AS-TuP

Area Selective ALD Poster Session

5:30pm

AS-TuP1 A Novel Cobalt Precursor for Area-Selective Deposition, *Hiroyuki Oike, Y. Yamamoto, T. Hayakawa, T. Furukawa, K. Tokudome*, TOSOH Corporation, Japan; *K. Tada*, Sagami Chemical Research Institute, Japan

AS-TuP2 Area-Selective Atomic Layer Deposition of Molybdenum Oxide, *Julie Kvalvik, J. Borgersen, P.-A. Hansen, O. Nilsen*, University of Oslo, Norway

AS-TuP3 Thermally Assisted Area Selective Atomic Layer Deposition, *Bart de Braaf, K. Storm*, Eindhoven University of Technology, The Netherlands

AS-TuP4 Photo-Assisted Atomic Layer Deposition and Patterning of Gallium Oxide Thin Films, *Paul Chalker, M. Werner, R. Potter*, University of Liverpool, UK

AS-TuP5 Simple Fabrication of Patterned MOF Thin Films via Area Selective Deposition of ZnO by Spatial ALD, *Chiara Crivello, D. Muñoz-Rojas*, LMGP Grenoble INP/CNRS, France; *V.H. Nguyen*, Phenikaa University, Vietnam; *O.S.E. Hassan*, Grenoble INP/CNRS, France

AS-TuP6 Surface Diffusion-Assisted Growth in Area-Selective Atomic Layer Deposition, *P. Klement, Daniel Anders, L. Gumbel, J. Schörmann, C. Heiliger, S. Chatterjee*, Justus Liebig University Giessen, Germany

AS-TuP7 Topographic Area Selective Deposition: A Comparison Between PEALD/ALE and PEALD/Sputtering Approaches, *Moustapha Jaffal, T. Yeghoyan, V. Pesce, A. Chaker, D. Sylvain, G. Lefevre*, LTM-UGA, France; *R. Gassilloud, N. Posseme*, CEA-Leti, France; *M. Bonvalot*, LTM-UGA, France; *C. Vallée*, CNRS LTM, France

AS-TuP8 Tunable Physical Properties of HfO₂ Thin Films Grown by Plasma Enhanced Atomic Layer Deposition Combined with Intercalated Physical Sputtering Steps: An Original Route to Area Selective Deposition, *Marceline Bonvalot, T. Yeghoyan, M. Jaffal*, LTM-UGA, France; *S. Belahcen, A. Bsiesy, C. Vallée*, Cnrs Ltm, France

AS-TuP9 Vapor-Phase Surface Anchoring of Cu and Co for Area-Selective Atomic Layer Deposition using Anhydrous N₂H₄, *Jin-Hyun Kim, S.W. Kim*, The University of Texas at Dallas; *S.M. Hwang*, University of Texas at Dallas; *H. Kim*, The University of Texas at Dallas; *Y.C. Jung*, University of Texas at Dallas; *L.F. Peña, K. Tan, J.-F. Veyan*, The University of Texas at Dallas; *R. Choi*, Inha University, South Korea; *D. Alvarez, J. Spiegelman*, RASIRC; *J. Kim*, University of Texas at Dallas

AS-TuP10 Molecular Rearrangement of a MLD Thin Film by Electron Beam Irradiation, *GeonHo Baek, S. Lee, J.-H. Lee, J.-S. Park*, Hanyang University, Republic of Korea

AS-TuP11 Inherent Area-Selective Atomic Layer Deposition of Ruthenium Thin Film with Novel Ru Precursor, *Hye-Mi Kim, J.-H. Lee, S. Lee*, Hanyang University, Republic of Korea; *R. Harada, T. Shigetomi, S. Lee*, Tanaka Kikinzoku Kogyo K.K., Japan; *B. Shong*, Hongik University, Republic of Korea; *J.-S. Park*, Hanyang University, Republic of Korea; *T. Tsugawa*, Tanaka Kikinzoku Kogyo K.K., Japan

AS-TuP12 Selective Atomic Layer Deposition of Nickel on the Molybdenum Oxide Supported on γ -Al₂O₃ for Enhanced Hydrodesulphurization of Dibenzothiophene at Lower Temperatures and Pressures, *A.A. Khodadadi, Samaneh Bahrani, Y. Mortazavi*, University of Tehran, Iran

AS-TuP13 Area Selective Atomic Layer Deposition of Molybdenum Films on Nanoscale Metal and Metal Nitride Patterns, *Se-Won Lee, M.-S. Kim*, Versum Materials Korea, Republic of Korea

Nanostructure Synthesis and Fabrication Room Arteveldeforum & Pedro de Gante - Session NS-TuP Nanostructures Synthesis and Fabrication Poster Session 5:30pm

NS-TuP1 Iron Oxide Nanostructures with Tunable Porosity and High-index Facets for Catalysis, *Zhoucheng Wang*, Xiamen University, China

NS-TuP2 A Novel Layered Materials Exfoliation Technique Based on Atomic Layer Deposition for Preparation of Nanocomposite Materials, *T.-Q. Zi, X.-R. Zhao, J.B. Fang*, Nanjing University, China; *Yan-Qiang Cao*, Nanjing University of Science & Technology, China; *D. Wu, A.D. Li*, Nanjing University, China

NS-TuP3 Tunable Orientations of Metal Oxide Nanowires by Atomic Layer Deposition Seeding, *Susanta Bera, S.-H. Kwon*, Pusan National University, Republic of Korea

NS-TuP4 Formation of Copper Aluminates by Heating Atomic Layer Deposited Copper Oxide and Aluminum Oxide Laminates – A High Temperature XRD and XRR Study, *Mikko Heikkilä, M. Ritala*, University of Helsinki, Finland

NS-TuP5 Stability Improvements of OER Electrodes Based on Nanostructured Titanium Substrates with ALD-Coated Iridium Thin Films, *André Hofer, S. Wachter, S. Bochmann, Z. Fu, C. Körner, J. Bachmann*, Friedrich-Alexander-University Erlangen-Nürnberg, Germany

NS-TuP6 Diffusion Kinetics of Trimethylaluminum (TMA) Infiltrated into Poly(Methyl Methacrylate) (PMMA) Thin Films by Means of In-situ Dynamic Spectroscopic Ellipsometry, *Gabriele Seguíni, A. Motta, F.E. Caligiore, C. Wiemer, M. Perego, E. Cianci*, CNR-IMM Unit of Agrate Brianza, Italy

NS-TuP7 In situ Thermal Annealing of ALD Fabricated Pt Nanoparticles and Their Stabilization via Al₂O₃ Overcoating, *E. Solano*, NCD-SWEET beamline, ALBA Synchrotron Light Source, Spain; *J. Dendooven, J.-Y. Feng*, Ghent University, Belgium; *P. Brüner*, IONTOF GmbH, Germany; *Matthias Minjauw, R.K. Ramachandran, M. Van Daele, K. Van de Kerckhove, T. Dobbelaere*, Ghent University, Belgium; *A. Coati*, Synchrotron SOLEIL, France; *D. Hermida-Merino*, ESRF European Synchrotron Radiation Facility, France; *C. Detavernier*, Ghent University, Belgium

NS-TuP8 MOS Capacitance Measurements for Plasma-Enhanced Atomic Layer Deposited TiO₂ Films Grown Under Different Conditions and the Impact of Al₂O₃ Partial-Monolayer Insertion, *W. Chiappini*, Universidade de Aveiro, Portugal; *M. Watanabe*, Universidade de São Paulo, Brazil; *V. Dias, G. Testoni*, Instituto Tecnológico de Aeronáutica, Brazil; *R. Rangel*, Universidade de São Paulo, Brazil; *M. Fraga*, Universidade Federal de São Paulo, Brazil; *H. Maciel*, Universidade Brasil, Brazil; *S. dos Santos Filho*, Universidade de São Paulo, Brazil; *Rodrigo Pessoa*, Instituto Tecnológico de Aeronáutica, Brazil

NS-TuP9 Metal Oxide Nanorods via Spatially Controlled Atomic Layer Deposition Growth within Block Copolymer Films, *Rotem Azoulay, N. Shomrat, I. Weisbord, G. Atiya, T. Segal-Peretz*, Technion - Israel Institute of Technology, Israel

NS-TuP10 Surface Functionalization and Atomic Layer Deposition of Metal Oxides on MoS₂ Surfaces, *Theodosia Gougousi, J. Kropp, C. Ataca*, University of Maryland, Baltimore County

NS-TuP11 Comparison of Growth Characteristics and Nanoparticle Formation by O₂ or H₂ Reactant Gas in Pt ALD, *Tatsuya Nakazawa, D. Kim, T. Nam, J.S. Park, H. Kim*, Yonsei University, Republic of Korea

NS-TuP12 On the Growth of Lamellar Vanadium Sulphide: From the ALD of VO₂ to VS₂, Deposition, *Rémy Gassilloud*, CEA-Leti, France; *M. Fraccaroli, S. Cadot, F. Martin*, CEA Leti, France; *C. Vallée*, CNRS LTM, France; *A. Sylvestre*, G2ELAB, France

NS-TuP13 ALD and MLD Based Nanomembranes for the Enhancement of Gas Sensing Devices Performance, *Mikhael Bechelany*, Institut Européen des Membranes, France

NS-TuP14 ALD-CVD Hybrid Process for the Development of CNT-Metal Oxide Nanocomposite Coatings, *Naoufal Bahlawane, V.P. Prasad, H.J. Basheer, K. Baba*, Luxembourg Institute of Science and Technology, Luxembourg

NS-TuP15 Responsive Black VO₂-CNT Nanocomposite Coatings Based on Morphology, *N. Bahlawane, Vasu Prasad Prasad*, Luxembourg Institute of Science and Technology, Luxembourg

NS-TuP16 Morphological and Electrical Investigation of Al₂O₃ Nucleation in the Early Stages of the Direct Atomic Layer Deposition onto Epitaxial Graphene, *Emanuela Schilirò, R. Lo Nigro, F. Roccaforte*, CNR-IMM, Italy; *A. Armano*, University of Palermo, Italy; *S.E. Panasci*, University of Catania, Italy; *S.P. Agnello*, University of Palermo, Italy; *B. Pecz*, Centre for Energy Research, Hungary; *I.G. Ivanov, R. Yakimova*, Linköping University, Sweden; *S. Di Franco, F. Giannazzo*, CNR-IMM, Italy

NS-TuP17 Evidence of Two Growth Regimes of Alumina Inside PMMA Films During Sequential Infiltration Synthesis by In-situ Spectroscopic Ellipsometry, *Elena Cianci, G. Seguíni, F.E. Caligiore, D. Nazzari, C. Wiemer, M. Perego*, CNR-IMM Unit of Agrate Brianza, Italy

NS-TuP18 On the Theory of the Energetic Spectrum of Lateral Superlattices (Lsl) on Vicinal Planes: The Role of Crystal Potential, *Victor Petrov*, Russian Academy of Sciences, Russian Federation

NS-TuP19 Sensing Response of High Surface-to-Volume Nested Coaxial ZnO Nanotube Gas Sensors Synthesized on Porous Substrate by Atomic Layer Deposition, *P. Lin, K. Zhang, Helmut Baumgart*, Old Dominion University

NS-TuP20 Low Density Foams by ALD Templating of Polymer Structures, *Monika Biener*, Lawrence Livermore National Laboratory

Atomic Layer Etching Room Arteveldeforum & Pedro de Gante - Session ALE-MoP Atomic Layer Etching Poster Session 5:45pm

ALE-MoP1 Wafer-Scale HF-Free Thermal ALE of SiO_x, *Martin McBriarty, J. McWilliams, K. Littau*, Intermolecular

ALE-MoP2 Atomic Layer Etching of Silicon Oxide with CF₃I and O₂ Plasma, *Seon Yong Kim, T. Lee, I.-S. Park, J. Ahn*, Hanyang University, Republic of Korea

ALE-MoP3 Density Functional Theory Study on the Reactions of Fluorine-Containing Molecules on Silicon Nitride Surface, *Tanzia Chowdhury, R. Hidayat, H.-L. Kim*, Sejong University, Republic of Korea; *T.R. Mayangsari*, Universitas Pertamina, Indonesia; *S. Park*, Wonik IPS, Republic of Korea; *J. Jung, W.-J. Lee*, Sejong University, Republic of Korea

ALE-MoP4 Atomic Layer Etching (ALE) of Silicon Nitride Passivation Layers for AlGaIn Based Transistors, *Matthew Loveday*, Oxford Instruments Plasma Technology, UK

ALE-MoP5 Opportunity of Process Time Optimization with Plasma Diagnostics of a QALE Process for Low-k Dielectrics, *Sebastian Oehler, A. Vatsal, M. Rudolph, V. Brackmann*, Fraunhofer Institute for Photonic Microsystems, Germany; *B. Sass*, GLOBALFOUNDRIES Dresden, Germany; *T. Mikolajick*, Technische Universität Dresden, Germany

ALE-MoP6 Investigation of Plasma-Surface Reactions in a Large Scale Very-High-Frequency(162MHz) CCP for Atomic Layer Processing of SiO₂, *Cleo Harvey, A. Ellingboe*, Dublin City University, Ireland

ALE-MoP7 Conformal and Damage-Free Atomic Layer Etching of Silicon, *Yu-Tung Yin*, National Taiwan University, Republic of China, Taiwan, Republic of China; *P.-H. Cheng, C.-H. Ling*, National Taiwan University, Republic of China; *C.-I. Wang, M.J. Chen*, National Taiwan University, Republic of China, Taiwan, Republic of China

ALE-MoP8 Atomic Layer Processing: Evolution and Distinctness of ALD and ALE as Research Areas, *Elsa Alvaro*, Northwestern University; *A. Yanguas-Gil*, Argonne National Laboratory

Anticipated Schedule Wednesday, July 1, 2020

Anticipated Schedule Wednesday Morning, July 1

8:30 AM	_____
8:45 AM	_____
9:00 AM	_____
9:15 AM	_____
9:30 AM	_____
9:45 AM	_____
10:00 AM	_____
10:15 AM	_____
10:30 AM	_____
10:45 AM	_____
11:00 AM	_____
11:15 AM	_____
11:30 AM	_____
11:45 AM	_____
12:00 PM	_____

Anticipated Schedule Wednesday Lunch, July 1

When	_____
Where	_____
With	_____

Anticipated Schedule Wednesday Afternoon, July 1

1:00 PM	_____
1:15 PM	_____
1:30 PM	_____
1:45 PM	_____
2:00 PM	_____
2:15 PM	_____
2:30 PM	_____
2:45 PM	_____
3:00 PM	_____
3:15 PM	_____
3:30 PM	_____
3:45 PM	_____
4:00 PM	_____
4:15 PM	_____

Wednesday Morning, July 1, 2020

Plenary Session Room Auditorium - Session PS3-WeM Highlighted ALD Contributed Talks Moderators: Jolien Dendooven, Ghent University, Christophe Detavernier, Ghent University, Paul Poedt, TNO/Holst Center	
8:30am	PS3-WeM1 Mixing It Up: Tuning Atomic Ordering in 2-D Mo1-xWxS2 Alloys by ALD, Jeff Schulp , <i>W.M.M. Kessels, V. Vandalon, A. Bol</i> , Eindhoven University of Technology, Netherlands
8:45am	PS3-WeM2 Resistless Lithography Based on Local Surface Modification of Halogenated Amorphous Carbon, Mikhail Krishtab , KU Leuven/Imec, Belgium; <i>T. Kulmala, E. Cagin</i> , Heidelberg Instruments Nano, Switzerland; <i>S. Armini</i> , Imec, Belgium; <i>S. De Gendt</i> , KU Leuven/Imec, Belgium; <i>R. Ameloot</i> , KU Leuven, Belgium
9:00am	PS3-WeM3 Process Optimization in Atomic Layer Deposition Using Machine Learning, <i>A. Yanguas-Gil, S. Letourneau, A. Mane, N. Paulson, A. Lancaster, Jeffrey W. Elam</i> , Argonne National Laboratory
9:15am	PS3-WeM4 Super-Conformal ALD of Metallic Mo Films by Simultaneous Deposition and Etch, Jean-Sebastien Lehn , EMD Performance Materials; <i>C. Dezelah</i> , ASM, Finland; <i>J. Woodruff, R. Kanjolia, D. Moser, T. Polson</i> , EMD Performance Materials
9:30am	PS3-WeM5 Deposition of Conductive PEDOT Thin Films with EDOT and ReCl ₅ Precursors, Saba Ghafourisaleh , <i>G. Popov, M. Leskelä, M. Putkonen, M. Ritala</i> , University of Helsinki, Finland
9:45am	PS3-WeM6 Mimicking Chitin and Chitosan Type of Functionality with Novel Thin Films Grown by Molecular Layer Deposition, Karina Ashurbekova , <i>M. Knez</i> , CIC nanoGUNE BRTA, Spain
10:00am	BREAK
10:15am	BREAK
10:30am	BREAK

Wednesday Morning, July 1, 2020

	ALD Applications Room Van Rysselberghe - Session AA-WeM ALD for Semiconductor Applications I Moderators: Adrien LaVoie, Lam Research Corp., Mike McSwiney, Intel	Area Selective ALD Room Baekeland - Session AS-WeM Selective ALD I Moderators: Dennis Hausmann, Lam Research Corp., Hanjin Lim, Samsung Electronics Co., Inc.
10:45am	INVITED: AA-WeM1 Thermal and Plasma ALD Processes of Silicon Based Dielectric Thin Films, <i>Vijjami Pore</i> , ASM Microchemistry Ltd., Finland	AS-WeM1 Promixity Effect of Selective Co ALD on the Nanoscale, <i>Michael Breeden, S. Wolf, A. Anurag, V. Wang</i> , University of California San Diego; <i>D. Moser, R. Kanjolia, M. Moinpour, J. Woodruff</i> , EMD Performance Materials; <i>A. Kummel</i> , University of California San Diego; <i>M.J. Li, M. Bakir</i> , Georgia Institute of Technology
11:00am	Invited talk continues.	AS-WeM2 Cobalt Electron-Enhanced Atomic Layer Deposition (EE-ALD) Using High Electron Flux Hollow Cathode Plasma Electron Source (HC-PES): Rapid Growth and Bottom-Up Fill, <i>Zachary Sobell, A. Cavanagh</i> , University of Colorado - Boulder; <i>S.M. George</i> , University of Colorado - Boulder
11:15am	AA-WeM3 Atomic Layer Epitaxy of GaN Directly on 4H-SiC using Ga-N Bonded Precursors, <i>Polla Rouf, N.J. O'Brien, R. Samii, H. Pedersen</i> , Linköping University, Sweden	AS-WeM3 Probing the Selectivity of Area-Selective Spatial ALD + Etch-Back Supercycles for SiO ₂ by Low Energy Ion Scattering, <i>Alfredo Mameli</i> , TNO/Holst Center, Netherlands; <i>P. Brüner</i> , IONTOF GmbH, Germany; <i>F. Roozeboom</i> , TNO/Holst Center, Netherlands; <i>T. Grehl</i> , IONTOF GmbH, Germany; <i>P. Poedt</i> , TNO/Holst Center, Netherlands
11:30am	AA-WeM4 Atomic Layer Deposition of Tungsten using a New Fluorine-Free W Precursor and Several Reactants Selected by Density Functional Theory Calculation, <i>Jin-Hyeok Lee, D.K. Nandi</i> , Yeungnam University, Republic of Korea; <i>R. Hidayat, W.-J. Lee</i> , Sejong University, Republic of Korea; <i>S.-H. Kim</i> , Yeungnam University, Republic of Korea	INVITED: AS-WeM4 Selective and Atomic Scale Processes to Enable Future Nano-Electronics, <i>Robert Clark</i> , TEL Technology Center, America, LLC
11:45am	AA-WeM5 Study of the Impact of Deposition and Annealing Conditions on the Crystal Phase of Doped Hafnium Oxide: Application for FeFET Memories, <i>Ivane Bottala-Gambetta, J. Ferrand</i> , STMicroelectronics; <i>A. Mantoux</i> , SIMAP; <i>N. Vaxelaire</i> , CEA-Leti, France; <i>E. Blanquet</i> , SIMAP, France; <i>A. Crisci</i> , SIMaP, France; <i>S. Coindeau</i> , CMTc, France; <i>M. Juhel</i> , STMicroelectronics	Invited talk continues.

Wednesday Morning, July 1, 2020

Emerging Materials Room Jan & Hubert Van Eyck - Session EM-WeM Organic and Organic-Inorganic Hybrid Materials I Moderators: Steven M. George, University of Colorado - Boulder, Mato Knez, CIC nanoGUNE BRTA		Nanostructure Synthesis and Fabrication Room Auditorium - Session NS-WeM 2D Nanomaterials by ALD I Moderators: Tae Joo Park, Hanyang University, Virginia Wheeler, U.S. Naval Research Laboratory	
10:45am	EM-WeM1 Growth of ZIF-8 Thin Films as a Sensitive Layer in Micro-Devices, <i>Virginie Perrot</i> , CEA Leti, France; <i>A. Roussey</i> , CEA Liten, France; <i>P. Gergaud</i> , <i>F. Ricoul</i> , CEA Leti, France; <i>E.A. Quadrelli</i> , Université Lyon, France; <i>V. Jousseau</i> , CEA Leti, France	INVITED: NS-WeM1 Exploring ALD 2D Chalcogenides Beyond MoS ₂ , <i>Miika Mattinen</i> , University of Helsinki, Finland	
11:00am	EM-WeM2 Vapor-Phase Synthesis and Surface Area Analysis of ZIF-8 Metal Organic Framework (MOF) on Fibrous Substrates via Atomic Layer Deposition, <i>R.A. Nye</i> , <i>S.E. Smith</i> , <i>N.M. Carroll</i> , Gregory N. Parsons , North Carolina State University	Invited talk continues.	
11:15am	EM-WeM3 Direct Molecular Layer Deposition of Metal-Organic Frameworks Enabling MOF-on-MOF Heterostructures for Electronic Device Integration, Alexander John Cruz , <i>J. Smets</i> , <i>D. Kravchenko</i> , <i>R. Ameloot</i> , KU Leuven, Belgium	NS-WeM3 Synthesis of Crystalline Tungsten Disulfide Using Atomic Layer Deposition and Post-Deposition Sulfur Annealing, <i>K. Mullapudi</i> , <i>R. Addou</i> , Oregon State University; <i>D. Moser</i> , <i>R. Kanjolia</i> , <i>J. Woodruff</i> , EMD Performance Materials; <i>C. Dezelah</i> , ASM, Finland; John F. Conley, Jr. , Oregon State University	
11:30am	INVITED: EM-WeM4 Vapor Phase Infiltration for Transforming Polymers into Hybrid Materials: Mechanisms of Inorganic Entrapment and Structure-Property Implications, Mark Losego , Georgia Institute of Technology	NS-WeM4 Growth of Wafer-Scale Monolayer MoS ₂ using Adsorbate-Controlled Atomic Layer Deposition, <i>D.H. Kim</i> , Jae Chan Park , <i>W. Kim</i> , Hanyang University, Republic of Korea; <i>J. Park</i> , <i>B. Shong</i> , Hongik University, Republic of Korea; <i>J.-H. Ahn</i> , <i>T.J. Park</i> , Hanyang University, Republic of Korea	
11:45am	Invited talk continues.	NS-WeM5 Nucleation Studies for Optimizing Growth Conditions of Atomic Layer Deposited MoS ₂ Films, Matthew Bloodgood , <i>W.M.M. Kessels</i> , <i>M. Verheijen</i> , <i>A. Bol</i> , Eindhoven University of Technology, Netherlands	

Wednesday Afternoon, July 1, 2020

Room Auditorium		
1:30pm	INVITED: NS1-WeA1 Atomistic Simulation of ALD of 2D Transition-Metal Dichalcogenides, <i>Mahdi Shirazi, W.M.M. Kessels, A. Bol</i> , Eindhoven University of Technology, Netherlands	Nanostructure Synthesis and Fabrication Session NS1-WeA 2D Nanomaterials by ALD II Moderators: Jeffrey W. Elam, Argonne National Laboratory, Hyungjun Kim, Yonsei University
1:45pm	Invited talk continues.	
2:00pm	NS1-WeA3 Phase-Controlled Atomic Layer Deposition of Niobium Di- and Tri-Sulfide for Metal-Semiconductor Vertical Heterostructure Fabrication, <i>Saravana Balaji Basuvalingam, Y. Zhang, M. Bloodgood, J. Hofmann, M. Verheijen, W.M.M. Kessels, A. Bol</i> , Eindhoven University of Technology, Netherlands	
2:15pm	NS1-WeA4 ALD of MoSe ₂ using New Precursors, <i>Raul Zazpe</i> , University of Pardubice, Czech Republic; <i>R. Krumpolec</i> , Brno University of Technology, Czech Republic; <i>J. Charvot, L. Hromadko, H. Shapa, M. Motola, M. Krbal, F. Bures, J. Macak</i> , University of Pardubice, Czech Republic	
2:30pm	NS1-WeA5 Low Temperature Creation of Layered-MoS ₂ Thin Films on Large Area High Aspect Ratio Substrates, <i>Anil Mane, D. Choudhury, S. Letourneau, J.W. Elam</i> , Argonne National Laboratory	
2:45pm	NS1-WeA6 Gas Sensing Characteristics of Mo _x W _{1-x} S ₂ Synthesized by Atomic Layer Deposition, <i>Inkyu Sohn, Y. Kim, M. Lee, J.S. Park, H. Kim</i> , Yonsei University, Republic of Korea	
3:00pm	Break	
3:15pm	Break	
3:30pm	NS2-WeA9 Visualizing the Nucleation of ALD on Polymers, <i>Laura Astoreca</i> , Ghent University - IMEC, Belgium; <i>P.S. Esbah Tabaei</i> , Ghent University, Belgium; <i>D. Schaubroeck, M. Oop de Beeck</i> , Ghent University - IMEC, Belgium; <i>R. Morent</i> , Ghent University, Belgium; <i>H. De Smet</i> , Ghent University - IMEC, Belgium; <i>N. De Geyter</i> , Ghent University, Belgium	
3:45pm	NS2-WeA10 Infiltration and Overcoating 3D Printed Scaffolds by ALD Can Improve Material Properties, <i>A. Varga, S. Barry, Peter Gordon</i> , Carleton University, Canada	
4:00pm	NS2-WeA11 Pt-Doped In ₂ O ₃ Thin Films: Control of the Chemical State and Structure via ALD, <i>Ranjith K. Ramachandran, M. Filez</i> , Ghent University, Belgium; <i>E. Solano</i> , Ghent University, Belgium, Spain; <i>H. Poelman, M. Minjauw, M. Van Daele, J.-Y. Feng</i> , Ghent University, Belgium; <i>A. La Porta, T. Altantzis</i> , University of Antwerp, Belgium; <i>E. Fonda</i> , Synchrotron SOLEIL, SAMBA Beamline, France; <i>A. Coati, Y. Garreau</i> , Synchrotron SOLEIL, France; <i>S. Bals</i> , University of Antwerp, Belgium; <i>G. Marin, C. Detavernier, J. Dendooven</i> , Ghent University, Belgium	
4:15pm	NS2-WeA12 Study of Tuning Size, Coverage and Shape of Pd Nanoparticles Using Atomic Layer Deposition Through X-ray Based In-situ Characterization, <i>Ji-Yu Feng</i> , Ghent University, Belgium; <i>E. Solano</i> , NCD-SWEET beamline, ALBA Synchrotron Light Source, Spain; <i>R.K. Ramachandran, M. Minjauw, M. Van Daele</i> , Ghent University, Belgium; <i>D. Hermida-Merino</i> , ESRF European Synchrotron Radiation Facility, France; <i>A. Coati</i> , Synchrotron SOLEIL, France; <i>C. Detavernier, J. Dendooven</i> , Ghent University, Belgium	

Wednesday Afternoon, July 1, 2020

	Area Selective ALD Room Baekeland - Session AS-WeA Selective ALD II & III Moderators: Adrie Mackus, Eindhoven University of Technology, Christophe Vallée, CNRS LTM	Emerging Materials Room Jan & Hubert Van Eyck - Session EM-WeA Organic and Organic-Inorganic Hybrid Materials II & III Moderators: Tero Pilvi, Picosun Oy, Ganesh Sundaram, Veeco ALD
1:30pm	AS-WeA1 Area-Selective Atomic Layer Deposition of 2D WS ₂ Nanolayers using Inhibitor Molecules, <i>Shashank Balasubramanyam</i> , <i>M. Merckx</i> , Eindhoven University of Technology, Netherlands; <i>M. Verheijen</i> , Eurofins Materials Science Netherlands B.V., Netherlands; <i>W.M.M. Kessels</i> , <i>A. Mackus</i> , <i>A. Bol</i> , Eindhoven University of Technology, Netherlands	EM-WeA1 Flexible ϵ -Fe ₂ O ₃ -Terephthalate Thin-Film Magnets through ALD/MLD, <i>Anish Philip</i> , Aalto University, Finland; <i>J.-P. Niemelä</i> , Empa, Switzerland; <i>G. Tewari</i> , Aalto University, Finland; <i>I. Utke</i> , Empa, Switzerland; <i>M. Karppinen</i> , Aalto University, Finland
1:45pm	AS-WeA2 Kinetic Modeling of Ru Area-Selective Atomic Layer Deposition on Nanopatterns, <i>Jan-Willem Jonathan Clerix</i> , KU Leuven, Imec, Belgium; <i>E. Alonso Marques</i> , KU Leuven, Imec, TU Delft; <i>J. Soethoudt</i> , KU Leuven, Imec, Belgium; <i>F. Grillo</i> , ETH Zurich, Switzerland; <i>G. Pourtois</i> , Imec, Belgium; <i>R. van Ommen</i> , Delft University of Technology, Netherlands; <i>A. Delabie</i> , Imec, Belgium	EM-WeA2 Enhanced Stretchability in Inorganic-Organic Alucone Thin Films Deposited from Long-Chain Organic Precursors, <i>Janne-Petteri Niemelä</i> , <i>N. Rohbeck</i> , <i>J. Michler</i> , <i>I. Utke</i> , Empa, Switzerland
2:00pm	AS-WeA3 Area-Selective Atomic Layer Deposition on Chemically Similar Materials, <i>Tzu-Ling Liu</i> , <i>S.F. Bent</i> , Stanford University	EM-WeA3 Instilling monovalent selectivity in membranes for water treatment by molecular layer deposition, <i>Eran Edri</i> , <i>O. Nir</i> , <i>E. Merary-Wormser</i> , <i>S. Chaudhury</i> , Ben-Gurion University of the Negev, Israel
2:15pm	AS-WeA4 Area-Selective Atomic Layer Deposition Al ₂ O ₃ using a Small Thiol Inhibitor and Effects of Precursor Size, <i>H.B.R. Lee</i> , <i>Bonwook Gu</i> , Incheon National University, Republic of Korea	EM-WeA4 Self-Terminating Molecular Layer Deposition of Polyurea and Growth Rejuvenation via Precursor Linking Group Selection, <i>Rachel A. Nye</i> , <i>G.N. Parsons</i> , North Carolina State University
2:30pm	INVITED: AS-WeA5 Monolayer Lithography: Exploiting Inhibition Contrast from the Extreme Ultraviolet Irradiation of Organic Monolayers for Area Selective Depositions, <i>Rudy Wojtecki</i> , IBM Research - Almaden	INVITED: EM-WeA5 Complementary Organic-Inorganic Hybrid Superlattices, <i>Myung Mo Sung</i> , Hanyang University, Republic of Korea
2:45pm	Invited talk continues.	Invited talk continues.
3:00pm	Break	Break
3:15pm	Break	Break
3:30pm	AS-WeA9 Blocking Precursor Adsorption During ALD of Al ₂ O ₃ using Small Inhibitor Molecules: The Influence of Precursor Chemistry, <i>Marc Merckx</i> , <i>A. Angelidis</i> , <i>J. Li</i> , Eindhoven University of Technology, Netherlands; <i>D. Hausmann</i> , Lam Research Corp.; <i>W.M.M. Kessels</i> , <i>A. Mackus</i> , Eindhoven University of Technology, Netherlands	EM-WeA9 Vapor-Phase Infiltration Synthesis of Organic-Inorganic Hybrid Nanocomposite Resists for Next-Generation Nanolithography, <i>N. Tiwale</i> , Brookhaven National Laboratory; <i>A. Subramanian</i> , Stony Brook University; <i>K. Kisslinger</i> , <i>G. Freychet</i> , <i>M. Lu</i> , Brookhaven National Laboratory; <i>J. Kim</i> , University of Texas at Dallas; <i>A. Stein</i> , Chang-Yong Nam , Brookhaven National Laboratory
3:45pm	AS-WeA10 Effect of Copper Surface Condition on Passivation Characteristics for Applications to Area Selective Atomic Layer Deposition, <i>Su Min Hwang</i> , University of Texas at Dallas; <i>H. Kim</i> , <i>J.H. Kim</i> , The University of Texas at Dallas; <i>Y.C. Jung</i> , University of Texas at Dallas; <i>L.F. Pena</i> , <i>K. Tan</i> , <i>J.-F. Veyan</i> , The University of Texas at Dallas; <i>D. Alvarez</i> , <i>J. Spiegelman</i> , RASIRC; <i>K. Sharma</i> , <i>P. Lemaire</i> , <i>D. Hausmann</i> , Lam Research Corp.; <i>J. Kim</i> , University of Texas at Dallas	EM-WeA10 Organic-Component Dependent Structural and Electrical Properties in ALD/MLD Grown ZnO-Organic Superlattices, <i>Ramin Ghiyasi</i> , <i>G. Tewari</i> , <i>M. Karppinen</i> , Aalto University, Finland
4:00pm	AS-WeA11 Top and Bottom Ta ₂ O ₅ Topographical Selective Deposition on 3D structures by Plasma Enhanced Atomic Layer Deposition, <i>Taguhi Yeghoyan</i> , <i>V. Pesce</i> , <i>M. Jaffal</i> , LTM-UGA, France; <i>R. Gassilloud</i> , <i>N. Posseme</i> , CEA-Leti, France; <i>M. Bonvalot</i> , <i>C. Vallée</i> , LTM-UGA, France	EM-WeA11 Molecular Layer Deposition of Polyetherketoneketones using New Vacuum-Compatible Solvent Approach, <i>Jingwei Shi</i> , <i>S.F. Bent</i> , Stanford University
4:15pm	AS-WeA12 Improving the Selectivity of Area-Selective ALD Using Selective Etching: Insights from Nucleation Studies, <i>H. Chen</i> , <i>M. Vos</i> , <i>M. Verheijen</i> , <i>W.M.M. Kessels</i> , Adrie Mackus , Eindhoven University of Technology, Netherlands	EM-WeA12 Synthesis of SiAlCO Polymer Derived Ceramics (PDC) Thin Films using Molecular Layer Deposition, <i>Kristina Ashurbekova</i> , Dagestan State University, Russian Federation; <i>E. Modin</i> , <i>A. Chuvilin</i> , <i>M. Knez</i> , CIC nanoGUNE BRTA, Spain; <i>I. Abdulagatov</i> , Dagestan State University, Russian Federation

Wednesday Afternoon, July 1, 2020

Room Van Rysselberghe		ALD Applications Session AA-WeA ALD for Semiconductor Applications II & III Moderators: Scott B. Clendenning, Intel Corp., Charles Dezelah, ASM
1:30pm	INVITED: AA-WeA1 Study of ALD HfO ₂ -Based High-k for GaN Power Devices and Ferroelectric Devices, Toshihide Nabatame , National Institute for Materials Science, Japan; T. Onaya , Meiji University, Japan; E. Maeda, M. Hirose , Shibaura Institute of Technology, Japan; Y. Irokawa , National Institute for Materials Science, Japan; K. Shiozaki , Nagoya University, Japan; Y. Koide , National Institute for Materials Science, Japan	
1:45pm	Invited talk continues.	
2:00pm	AA-WeA3 The Effect of Oxygen Source on Ferroelectricity of Atomic Layer Deposited Hf _{0.5} Zr _{0.5} O ₂ Thin Film, Yong Chan Jung, J. Mohan , University of Texas at Dallas; H. Kim, H. Hernandez-Arriga , The University of Texas at Dallas; T. Onaya , Meiji University, Japan; K. Kim, N. Kim , The University of Texas at Dallas; S.J. Kim , Kangwon National University, Republic of Korea; A. Ogura , Meiji University, Japan; R. Choi , Inha University, South Korea; J. Ahn , Hanyang University, Republic of Korea; J. Kim , University of Texas at Dallas	
2:15pm	AA-WeA4 Deposition of Inherently Ferroelectric Films by ALD Using ZrD ₂ O ₄ and HfD ₂ O ₄ , Vijay K. Narasimhan , Intermolecular, Inc.; J.-S. Lehn , EMD Performance Materials; K. Littau , Intermolecular; J. Woodruff, R. Kanjolia , EMD Performance Materials	
2:30pm	AA-WeA5 Ferroelectricity of 300°C Low Temperature Fabricated Hf _x Zr _{1-x} O ₂ Thin Films by Plasma-Enhanced Atomic Layer Deposition using Hf/Zr Cocktail Precursor, Takashi Onaya , Meiji University, Japan; T. Nabatame , National Institute for Materials Science, Japan; Y.C. Jung , University of Texas at Dallas; H. Hernandez-Arriaga , The University of Texas at Dallas; J. Mohan , University of Texas at Dallas; H. Kim, A. Khosravi , The University of Texas at Dallas; N. Sawamoto , Meiji University, Japan; C.-Y. Nam, E.H.R. Tsai , Brookhaven National Laboratory; T. Nagata , National Institute for Materials Science, Japan; R.M. Wallace , The University of Texas at Dallas; J. Kim , University of Texas at Dallas; A. Ogura , Meiji University, Japan	
2:45pm	AA-WeA6 Atomic Layer Deposition of GeS Film for 3D Cross-Point Memory Scaling, Myoungsub Kim, Y. Kim, I. Sohn, H. Kim , Yonsei University, Republic of Korea	
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3:30pm	INVITED: AA-WeA9 Atomic Layer Annealing of AlN to Template The Growth of High Thermal Conductivity Heat Spreader Films, S. Ueda, A. McLeod , University of California, San Diego; M. Chen, C. Perez, E. Pop , Stanford University; D. Alvarez , RASIRC; Andrew Kummel , University of California, San Diego	
3:45pm	Invited talk continues.	
4:00pm	AA-WeA11 Precision Defect Engineering of Metal/Insulator/Metal (MIM) Diodes Using Localized ALD Transition Metal Impurities, Konner Holden, Y. Qi, J.F. Conley, Jr. , Oregon State University	
4:15pm	AA-WeA12 Two-Dimensional Electron Gas at the Interface of an Atomic-Layer-Deposited Binary Oxides Ultrathin (< 5 nm) Film Heterostructures, T.J. Park, Ji Hyeon Choi, T.J. Seok, Y. Liu , Hanyang University, Republic of Korea; J.H. Jang , Korea Basic Science Institute, Republic of Korea; S.W. Lee , Ajou University, Republic of Korea; D.Y. Cho , Chonbuk National University, Republic of Korea	

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