PROGRAM

17TH SYMPOSIUM ON ULTRA CLEAN PROCESSING OF SEMICONDUCTOR SURFACES

09 - 11 SEPTEMBER 2025

LEUVEN | BELGIUM

UCPSS 2025

PROGRAM OF TUTORIALS PRIOR TO THE SYMPOSIUM ON ULTRA-CLEAN PROCESSING OF SEMICONDUCTOR SURFACES 2025

Location all presentations: KULeuven, Quadrivium, Leuven
Hall plenary presentations: "Rosalind Franklin auditorium"

MONDAY 8 SEPTEMBER 2025

TUTORIAL SESSION 13:30 – 17:40

Chair: Antoine Pacco, Imec.
Co-chair: Paul Mertens, Imec.

13:30 – 14:30 **T1 Basic principles of cleaning**
Paul Mertens
Imec, Leuven, Belgium

14:30 – 15:30 **T2 Prevention of contamination from Silicon Wafer Surfaces: "Ultra-Clean Technology"**
Takeshi Hattori
Hattori Consulting International

15:30 – 16:00 ***Coffee break***

16:00 – 17:00 **T3 Selective Silicon Nitride etching for 3D NAND manufacturing**
Sangwoo Lim
Yonsei Univ.

17:00 – 17:40 **T4 Gas phase selective isotropic etching of semiconductor materials with and without plasma**
Thorsten Lill
Lam Research

SYMPOSIUM ON ULTRA CLEAN PROCESSING OF SEMICONDUCTOR SURFACES 2025 PROGRAM

Location all presentations: KULeuven, Quadrivium, Leuven
Hall plenary presentations: “Rosalind Franklin aula”

TUESDAY 9 SEPTEMBER 2025

SESSION 1 – WELCOME AND CLEANING CHALLENGES — 08:50 – 10:30

Chair: Ian Brown, Screen.
Co-chair: Takeshi Hattori, Hattori consulting.

08:50 – 09:10
Welcome
Paul Mertens
Imec, Leuven, Belgium

09:10 – 09:50
1.1 Future Challenges in Semiconductor Cleaning (invited)
Kuntack Lee
Semiconductor R&D Centre, Samsung Electronics, Ltd

09:50 – 10:30
1.2 Surface Preparation Challenges for Direct bonding in 3D integration (invited)
Emilie Deloffre
[1.] STMicroelectronics 850 rue Jean Monnet, 38920 Crolles, France

10:30 - 11:00 ***COFFEE BREAK***

SESSION 2 - SURFACE CHEMISTRY AND FUNCTIONALISATION — 11:00 – 12:00

Chair: Sangwoo Lim, Yonsei University.
Co-chair: Emilie Deloffre, STM.

11:00 – 11:20
2.1 Hydrochloric Acid Treatment of InP Surfaces in N2-Controlled Atmosphere
(student paper)
Georges Al Hoyek[1,2,a], Victor Lumineau[1], Virginie Loup[1]
and Bernard Pelissier[2]
[1] Univ. Grenoble Alpes, CEA, Leti, F-38000 Grenoble, France
[2] Univ. Grenoble Alpes, CNRS, LTM, MINATEC Campus, F-38054 Grenoble, France

11:20 – 11:40
2.2 Modulating Silane Monolayer Grafting on Nanopatterned Silicon: Insights from ATR-based Air-trapping Monitoring
(student paper)
Qi Wu[1,2,a], Robbe Govaerts[1], Jesse Slootmaeker[1], Stefan De Gendt[1,2],
and XiuMei Xu[2,b]
[1] Chemistry Department, KU Leuven, Celestijnenlaan 200f, 3001 Leuven, Belgium
[2] Interuniversity Microelectronics Centre (imec), Kapeldreef 75, 3001 Leuven, Belgium

11:40 – 12:00
2.3 Self Assemble Monolayer for Area Selective ALD
Tomonori Takahashi[1a], Katsuya Kondo[1], Akihiko Ohtsu[1], Yasuo Sugishima[1],
Shuhei Yamaguchi[2], Naoya Shimoju[2], Haruki Takimoto[2],
Yusuke Ino[3], Yuki Ito[3]

12:00 – 13:20 ***LUNCH***

SESSION 3 - HIGH-ASPECT RATIO FEATURES 13:20 – 15:00

Chair: Gyu Hyun Kim, SK.

Co-chair: Kuntack Lee, Samsung.

13:20 – 13:40

3.1 Fluid–Structure Interaction Analysis for Pattern Collapse of Nanostructure

Koki Uonami[1, a], Shota Uchida[1,2, b], Kunio Fujiwara[2, c], Masahiko Shibahara[2, d]
[1] SCREEN Holdings Co., Ltd., 322, Furukawa-cho, Hazukashi, Fushimi-ku, Kyoto 612-8486, Japan
[2] The University of Osaka, 2-1, Yamadaoka, Suita, Osaka 565-0871, Japan

13:40 – 14:00

3.2 Test Vehicle and Metrology for Defectivity Study in Wet Processes

XiuMei Xu[1,a], Mohamed Saib[1], Farid Sebaai[1], Christie Delvaux[1], Murat Pak[1], and Efrain Altamirano Sanchez[1]
[1] Imec, Kapeldreef 75, B-3001 Leuven, Belgium

14:00 – 14:20

3.3 Marangoni Flow Dewetting of Thin Liquid Films on Wafer Surface

Derek Bassett[1,a]
Tokyo Electron America, 2400 Grove Blvd., Austin TX 78741, USA

14:20 – 14:40

3.4 Effect of Nanoslit Width on IPA Evaporation: A Molecular Dynamics Study

Hirofumi Tabe[1;a], Ryuichi Seki[1;b], Naozumi Fujiwara[1;c] and Masayoshi Takayanagi[2;3;d]
[1]SCREEN Semiconductor Solutions Co., Ltd., 480-1, Takamiya,
Hikone, Shiga, 522-0292, Japan
[2]Data Science and AI Innovation Research Promotion Center, Shiga University,
Hikone, Shiga, 522-8522, Japan
[3]Center for Training Professors in Statistics, The Institute of Statistical Mathematics,
10-3 Nidori-cho, Tachikawa, Tokyo, 190-8562, Japan

14:40 – 15:00

3.5 Enhancing Nano-Structure Stability in Sublimation Drying: Practical Insights into Solidified Film Morphology

Y. Hanawa[1,a※], A. Horikoshi[1,b], A. Onuma[1,c], S. Tokisue[1,d], J. Zhang[1,e],
M. Xu[2,f], M. Mohit[3,g], Y. Sasaki[1,h], K. Sawada[1,i], J. Yoshida[1,j],
A. P. Sasmito[3,k], A. Sakuma[4,l]
[1] SCREEN Holdings Co., Ltd., Furukawa-cho 322, Hazukashi,
Fushimi-ku, Kyoto, 612-8486, Japan
[2] University of Toronto, 35 St. George St., Toronto, Ontario, M5S 1A4, Canada
[3] McGill University, 3450 University Street, Montreal, Quebec H3A 0E8, Canada
[4] Kyoto Institute of Technology, Matsugasaki, Sakyo-ku, Kyoto, 606-8585, Japan

15:00 - 15:30 COFFEE BREAK

15:30 – 15:50

3.6 Single Wafer Pattern Collapse Mitigation Solution by PFAS-Free SMT and Sublimation Drying Agent

Kazuki Yoshiura[1, a], Mizuki Tetsumura[1], Daisuke Saruwatari[1], Shuhei Yamada[1], Soichi Kumon[1], Farid Sebaai[2] and XiuMei Xu[2, b]
[1] Central Glass Co., Ltd., 5254-35 Oaza Okiube, Ube-Shi, Yamaguchi 755-0001 Japan
[2] Interuniversity Microelectronics Centre (imec), Kapeldreef 75, B-3001 Leuven, Belgium

15:50 – 16:10

3.7 Single-Wafer Sublimation Drying Process Achieves Damage-Free Results for Ultra-HAR Structures

Tomoya Tanaka[1, a *], XiuMei Xu[2, b *], Hikaru Kawarazaki[1], Teppei Nakano[3], Efrain AltamiranoSanchez[2], Yukifumi Yoshida[3], and Takayoshi Tanaka[3]
[1] SCREEN SPE Germany GmbH, Fraunhoferstraße 7, D-85737 Ismaning, Germany
[2] Imec vzw, Kapeldreef 75, 3001 Leuven, Belgium
[3] SCREEN Semiconductor Solutions Co., Ltd., 480-1, Takamiya, Hikone, Shiga 522-0292, Japan

16:10 – 16:30

3.8 Conformal Silicon Nitride Etching in Superdeep and Narrow Patterns

SangWook Park[1*, a], Yongjae Jeung[1], Woojin Nam[1], Sanghyuk Hong[1],
Jun-Youl Yang[1], and Hyosan Lee[1]
[1]R&D center, Samsung Electronics Co., Giheung, Korea

16:30 – 16:50

3.9 CFET RMG dual Work Function Metal patterning with sacrificial layer for Nanosheets pinch-off

Ju-Geng Lai [1, a *], Camila Toledo de Carvalho Cavalcante [1, b], Hiroaki Arimura [1, c], Dmitry Batuk [1, d], Diziana Vangoidsenhoven [1, e], Andrea Mingardi [1, f], Violeta Georgieva [1, g], Steven Demuynck [1, h], Lucas Petersen Barbosa Lima [1, i], Min-Soo Kim [1, j], Naoto Horiguchi [1, k], Naveen Reddy [1, l], and Efrain Altamirano-Sánchez [1, m]
[1] Imec, Kapeldreef 75, 3001 Leuven, Belgium

16:50 – 17:10 **3.10 The Impact of Cleanliness on Finfet Biosensing**

(student paper)

Dimitris Bardas [1,3,a*], Sybren Santermans[2,b], Tijs Smits[3,c], Gabriel Belchior Miranda[2,d], Alexis Franquet[2,e], Rita Tilmann[2,f], Pol van Dorpe[2,3,g], Koen Martens[2,3,h]
[1] IMEC, Leuven, 3001, Belgium
[3] KU Leuven, Leuven, 3000, Belgium

17:10 – 17:40 ***GOLD-SPONSOR SESSION***

Chair: Naveen Reddy, Imec.

Co-chair: Phillippe Garnier, STM.

18:30 ***CONFERENCE DINER: location KULeuven FACULTY CLUB – LEUVEN***
for registered participants only

WEDNESDAY 10 SEPTEMBER 2025

SESSION 4 – SEMICONDUCTOR ETCHING 08:40 – 11:30

Chair: Kuntack Lee, Samsung.
Co-chair: Harald Okorn Schmidt, Imec.

08:40 – 09:00

4.1 Enhanced SiGe/Si Selective Etching by Acetic Acid in HNA Solutions
(student paper)
Kiwon Song1, a and Sangwoo Lim1, b, *
[1]Department of Chemical and Biomolecular Engineering, Yonsei University
50 Yonsei-ro, Seodaemun-gu, Seoul 03722, Republic of Korea

09:00– 09:20

4.2 Si Thinning in Alkaline Solutions for 3DDRAM Applications
Jana Loyo Prado 1, a*, Karine Kenis1,b, Roger Loo1,c, Nouredine Rassoul1,d, Efraín Altamirano Sánchez 1,e, Antoine Pacco1,f
1 imec vzw, Kapeldreef 75, 3001 Heverlee, Belgium Japan

09:20 – 09:40

4.3 Flexible Control of Si Etching and Si/SiGe Selectivity for Advanced 3D Integration
Seungwoo Kim[1, 2, a] and Sangwoo Lim[1, b *]
[1]Department of Chemical and Biomolecular Engineering, Yonsei University
50 Yonsei-ro, Seodaemun-gu, Seoul 03722, Republic of Korea
[2]Foundry Clean Technology Team, Samsung Electronics,
1 Samsungjeonja-ro,Hwaseong-si,Gyeonggi-do 18448, Republic of Korea

09:40 – 10:00

4.4 Analysis of Si/SiGe Intermixing Layer Thickness by Inductively Coupled Plasma – Mass Spectrometry
Alina Arslanova [1, a *], Dennis van Dorp [1, b], Anjani Akula [1, c], Roger Loo [1,2, d], Beatriz Escorcia Ramirez [1, e], Ivonne Saucedo Hernandez [1, f], Pallavi Puttarame Gowda [1, g], Naveen Reddy [1, h] and Efrain Altamirano Sanchez [1, i]
1 Imec, Kapeldreef 75, B-3001 Heverlee, Belgium
2 Ghent University, Dep. of Solid-State Sciences, Krijgslaan 281, B-9000 Ghent, Belgium

10:00 – 10:20

4.5 Enhancing SiOx Protection during SiGe Selective Wet Etch in CFET Integration Using Oxide Surface Functionalization
Farid Sebaai [1, a], Kazuki Yoshiura[2], Hikaru Kawarazaki[3], Dai Ueda[3], Steven Demuynck[1], Naveen Reedy[1], Efrain Altamirano Sanchez[1]
[1] IMEC vzw, Kapeldreef 75, B-3001 Heverlee, Belgium
[2] CENTRAL GLASS Co., Ltd., 7-1, Kanda-Nishikicho 3-Chome, Chiyoda-ku, Tokyo, 101-0054 Japan
[3] SCREEN Semiconductor Solutions Co., Ltd., 480-1, Takamiya, Hikone, Shiga, 522-0292, Japan

10:20 – 11:10 ***COFFEE BREAK***

11:10 – 11:30

4.6 Cyclic Wet Etch Method to Improve Nanoconfined Wet Etching
Sangita Kumari[1, a], Shan Hu[1], Kathikeyan Pillai[1], Osamu Miyahara[1]
[1] TEL Technology Center, America, LLC, 255 Fuller Rd., Suite 214, Albany, NY 12203, U.S.A.

POSTER ANNOUNCEMENTS 11:30 – 12:30

Chair: Yoshihiro Ogawa, Kioxia.
Co-chair: Pallavi Puttarame Gowda, Imec.

Each poster presentor is allocated 3 minutes to advertise his/her poster using max. 3 slides.

12:30 – 13:50 ***LUNCH***

SESSION 5 – DIELECTRIC ETCHING 13:50 – 16:00

Chair: Glenn Gale, TEL.

Co-chair: Takeshi Hattori, Hattori consulting.

13:50 – 14:30

5.1 Recent Developments in AI Technology and Its Application to Wet Process Optimization (invited)

Yoshihiro Ogawa [1, a]
[1] Frontier Technology R&D Institute - KIOXIA Corporation Yokohama-shi, Japan

14:30 – 14:50

5.2 Highly Selective Si3N4/SiO2 Etching for 3D NAND Manufacturing with H3PO4- Free Etchant

Sangwoo Lim[1, 2, a]
[1]Department of Chemical and Biomolecular Engineering, Yonsei University
50 Yonsei-ro, Seodaemun-gu, Seoul 03722, Republic of Korea
[2]Chemartech, Mado-myeon, Hwaseong-si, Gyeonggi-do 18543, Republic of Korea

14:50 – 15:10

5.3 Selective Wet Etching of SiO2 Through Fluorine Species Control
(student paper)

Bumsik Kim[a] and Sangwoo Lim[b*]
Department of Chemical and Biomolecular Engineering, Yonsei University
50 Yonsei–ro, Seodaemun–gu, Seoul 03722, Republic of Korea

15:10* – 15:40** ***COFFEE BREAK

15:40 – 16:00

5.4 Wet Processing Development for Novel n-Type Dipole Materials ZrOx and YOx

Dai Ueda [1, a 1], Ju-Geng Lai [2, b *], Hikaru Kawarazaki [1, c], Leo Lukose [2, d],
Hiroaki Arimura [2, e], Stephan Brus [2, f], Naveen Reddy [2, g], Yukifumi Yoshida [3, h], Takayoshi Tanaka [3, i],
Min-Soo Kim [2, j], Naoto Horiguchi [2, k] and Efrain Altamirano-Sanchez [2, l]

SESSION 6 – MECHANICAL PARTICLE REMOVAL FORCES 16:00 – 16:40

Chair: Tae-Gon Kim, Han Yang univeristy.

Co-chair: Naveen Reddy, Imec.

16:00 – 16:20

6.1 Silica Particle Contamination and Cleaning in Molybdenum CMP
(student paper)

Pengzhan Liu[1], Hyeonjeong Lee[1], Donghwan Choi[2], Minha Kim[3], Yunhee Cho[3], Won-Seob Cho[3], Andreas Klipp[4], Taesung Kim[1 2 5 a]
[1]School of Mechanical Engineering, Sungkyunkwan University, Gyeonggi-do 16419, Republic of Korea
[2]Department of Semiconductor Convergence Engineering (SCE), Sungkyunkwan University, Suwon 16419, Republic of Korea.
[3]BASF Company Ltd., Suwon 16419, Republic of Korea
[4]BASF SE, G-EDM/SA J534 Office 541, Germany
[5]SKKU Advanced Institute of Nanotechnology (SAINT), Sungkyunkwan University, Gyeonggi-do 16419, Republic of Korea

16:20 – 16:40

6.2 Non-Visible Materials' Degradation by Physical Cleans

Philippe Garnier, Hugo Galbes
STMicroelectronics, 850 rue J. Monnet, 38921 Crolles, France

P01 **In-situ Visualization of Marangoni Convection in the Meniscus during Rotagoni Drying**
Tomoatsu Ishibashi[1,a], and Naoki Ono[2,b],
[1] Ebara Corporation, 4-2-1 Honfujisawa, Fujisawa, Kanagawa 251-8502, Japan
[2] Department of Engineering Science and Mechanics, Shibaura Institute of Technology, 3-7-5 Toyosu, Koto-ku, Tokyo, 135-8548, Japan

P02 **Analysis of IGZO Surface Morphology Following Wet Etching**
Kazuki Oshima[1,a], Tomoki Hirano[1], Kenya Nishio[1], Suguru Saito[1] and Yoshiya Hagimoto[1]
[1] Sony Semiconductor Solutions, Research Div.2
4-14-1 Asahi-cho, Atsugi-shi, Kanagawa 243-0014, Japan

P03 **Si Etchants for Si Thinning for 3D DRAM Application**
Ryo Nishida [1, a *], Haru Sendo[2, b], Naoko Kuwabara[1, c], Tatsushi Baba[1, d], Kan Takeshita[1, e], Antoine Pacco[3, f], Jana Loyo Prado[3, g], Efrain Altamirano Sanchez[3, h]
[1]Mitsubishi Chemical Corporation, 1000 Kamoshida-cho, Aoba-ku, Yokohama, Kanagawa, 227-8502, Japan
[2]Mitsubishi Chemical Taiwan, 5F-1, No.18 Taiyuan St., Zhubei City, Hsinchu County, Taiwan
[3]imec, Kapeldreef 75, B-3001 Leuven, Belgium

P04 **Uniformity Enhancement in 3D NAND Etch Processes via N_2 Bubbling: Si_3N_4 Removal and Poly-Si Etch-Back**
Yu Li[1, a], Lixun Gu[2, b], Mengyong Liu[2, c], Zihao Li[1, d], Haibo Hu[1, e], Yazhou Li[1, f], Jian Wang[1, g]
[1]ACM Research (Shanghai), Inc. Building B4, No.999, Dan Gui Road, Pudong New District, Shanghai, China
[2]Yangtze Memory Technologies Co. Ltd., No.88, Weilai 3rd Road,
East Lake High-Tech Development Zone, Wuhan, Hubei, China

P05 **Phosphoric Acid Reuse for High-Selectivity Silicon Nitride/Silicon Dioxide Wet Etching via Fixed Automated Process Control in Memory Devices**
Byungsu Kim[1, 2, a, *], Duri Shin[2, b], Modong Kang[2, c], Sangwook Kwon[2, d], Dongkyu Lee[2, e], Taesung Kim[1, f]
[1]Department of Semiconductor Convergence Engineering (SCE), Sungkyunkwan University, Suwon 16419, Republic of Korea
[2]Samsung Electronics, Hwaseong 18448, Republic of Korea

P06 **Dissolution and Removal of Ceria Particles by Post-CMP Cleaner**
Hiroaki Iwamoto[1,a], Kohei Endo[1], Kenta Natsukawa[1], and Shota Yoshioka[2]
[1] Organic Material Div., Material Integration Laboratory, AGC Inc.
1-1, Suehiro-cho, Tsurumi-ku, Yokohama, Kanagawa, 230-0051 Japan
[2] Product Adaptation, Performance Chemicals General Div., Chemicals Company, AGC Inc.
1-5-1, Marunouchi, Chiyoda-ku, Tokyo 100-8405 Japan

P07 **Synergistic Effects of Surfactants on Ceria Removal Efficiency during SC1-based Post-CMP Cleaning**
Injun Heo[1, 3, a], Ju Yong Lee[1, b], Chulwoo Bae[2, c], Taesung Kim[1, 2, d, *]
[1] School of Mechanical Engineering, Sungkyunkwan University, Suwon-si, Gyeonggi-do, South Korea
[2] SKKU Advanced Institute of Nanotechnology, Sungkyunkwan University, Suwon-si, Gyeonggi-do, South Korea
[3] Samsung Electronics Company, Pyeongtaek-si, Gyeonggi-do, South Korea
Corresponding author *: Taesung Kim

P08 **Effect of Pad Pore Size and Applied Pressure on Environmentally Friendly Buff Cleaning Using Gas-Dissolved Water for Ceria Nanoparticle Removal**
Yoojin Son[1,2,a], Pengzhan Liu[3,b], Yuna Nam[4,c], Sanghuck Jeon[4,d], Taesung Kim[3,5,6,7,*]
[1] Department of Semiconductor Convergence Engineering (SCE), Sungkyunkwan University, Suwon 16419, Republic of Korea
[2]Samsung Electronics Foundry division, Yongin 17113, Republic of Korea
[3]School of Mechanical Engineering, Sungkyunkwan University, Suwon 16419, Republic of Korea.
[4]Semiconductor R&D Center, Samsung Electronics, Hwaseong 18448, Republic of Korea
[5]SKKU Advanced Institute of Nanotechnology (SAINT), Sungkyunkwan University, Suwon 16419, Republic of Korea
[6]*Department of Nano Science and Technology, Sungkyunkwan University, Suwon 16419, Republic of Korea*
[7]*Department of Nano Engineering, Sungkyunkwan University, Suwon 16419, Republic of Korea*

P09 **TiN Digital Etch for CFET Replacement Metal Gate Module**
Alina Arslanova [1, a *], Camila Toledo de Carvalho Cavalcante [1, b], Beatriz Escorcia Ramirez [1, c], Luca Braile [1, d], Ju-Geng Lai [1, e], Hiroaki Arimura [1, f], Naveen Reddy [1, g], Steven Demuynck [1, h], Naoto Horiguchi [1, i], and Efrain Altamirano Sanchez [1, j]
[1] Imec, Kapeldreef 75, B-3001 Heverlee, Belgium

P10 **Selective Alkaline Wet Etching of Al and AlCu Using a Phosphoric and Nitric Acid Free Formulation**
Rogelio J. Gomez-Pineiro,[1,a *] Zouhir Mehrez,[2,b] Virginie Loup,[2,c] Philippe Garnier,[3,d] Marine Audouin,[1,e] and Jérôme Daviot[1,f]
[1] Technic France, 15 rue de la Montjoie, 93200 Saint-Denis, France
[2] Univ. Grenoble Alpes, CEA, Leti, F38000, Grenoble, France
[3] STMicroelectronics, 850 Rue Jean Monnet, 38920 Crolles, France

P11 **Bridging the Gaps to Achieve Ultra-Clean Processing and Surface Preparation of Germanium Wafers**
Eric M.M. Tan [1, a*], Priyanka Proost[1,b], Patrick Dekort[1,c], Niels Elsen[1,d], Guillaume Courtois[1,e], Robin Vanuytven[1,f], Gwen Vervecken[1,g], Jinyoun Cho[1,h] and Kristof Dessein[1,i]
[1] Umicore, Watertorenstraat 33, 2250 Olen, Belgium

P12 **Optimization of Bevel Clean in Back End of Line Passivation Module**
(student paper)
Yang Han[1], Jie Chen[1], Ingrid Demonie[1], Jason Reifsnider[1], Efrain Altamirano Sanchez[1] and Naveen Reddy[1, a]
[1] Imec, Kapeldreef 75, 3001 Leuven, Belgium

P13 **Assessment of Stripping Efficiency of Non-TMAH Based Solvents on Photoresist and Temporary Bonding Materials**
Amaia Diaz De Zerio[1, a*], Ivonne Saucedo[1,b], Mariacristina Colantuono [1,2,c], Salem Nasraoui[3,d], Ronny Tepper[3,e], Celin Richter[3,f], Ehsan Shafahian[1,g], Efrain Altamirano[1,h] and Naveen Reddy[1,i]
[1] imec vzw, Kapeldreef 75, 3001 Heverlee, Belgium
[2]University of Naples Federico II
Piazzale Vincenzo Tecchio 80 – 80125 Napoli (NA), Italy
[3] Intelligent Fluids GmbH, Karl-Heine-Straße 99, 04229 Leipzig, Germany

P14 **High-Performance and Safe Wet Stripper for 50 to 400 µm-Thick Negative Photoresists and Laminated Films in Wafer Level Packaging**
Diane Bijou[1,a*], Loriana Céleste[1,b], Jérôme Daviot[1,c]
[1] Technic France, 15, rue de la Montjoie 93210 Saint-Denis, France

P15 **Naphta-Free, Organic, Acid-Based Stripper for Highly Hydrophobic Polymers Removal**
Harold Le Tulzo[1], Hélène Kou[1],and Jérôme Daviot[1]
[1] Technic France, 15 rue de la Montjoie, BP 79, 93212 Saint-Denis La Plaine, France

P16 **Environmental Impact Assessment of Eco-Friendly Wet Chemistry Used in Microelectronics Industry**
Isabelle Servin[1, a], Marine Audouin[2], Gabriel Rouvet[1]
Franck Henry[1], Yohann Chevalier[2], Sandrine Parent[3], Martin Vandenbossche[1,3], Mathieu Stigliani[1], and Jérôme Daviot[2]
[1] Univ. Grenoble Alpes, CEA, LETI, Grenoble F-38000, F3rance
[2] TECHNIC France, 37 route du Ruisset, 38360 Noyarey, France
[3] STMicroelectronics, 850 rue Jean Monnet, 38926 Crolles cedex, France

SESSION 7 – FLUID DYNAMICS 08:50 – 10:10

Chair: Naser Belmiloud, Screen.
Co-chair: Tomoatsu Ishibashi, Ebara.

08:50 – 09:10

7.1 Volume of Fluid Modeling of a Rotating Disk Edge Wetting with Backside Dispenser

Alberto Ceschin[1, a*], Naser Belmiloud[1, b], Karim Huet[1, c], Masanobu Sato[2, d]

[1] SCREEN SPE Germany GmbH, Fraunhoferstr. 7, 85737 Ismaning, Germany
[2] SCREEN Semiconductor Solutions Co., Ltd, 480-1, Takamiya-cho, Hikone, Shiga 522-0292, Japan

09:10 – 09:30

7.2 Modeling Liquid Splash for Defect Reduction in Single Wafer Cleaning Process

Rencheng Dong[1,a*], Ihsan Simms[1], Derek Bassett[1], Antonio Rotondaro[1]
Tokyo Electron America, Inc., 401 S 1st St, Suite 900, Austin, TX 78704 U.S.A.

09:30 – 09:50

7.3 Correlation between Flying Droplet Characteristics and Surface Potential of SiO_2 Wafers during Two-Fluid Spray Cleaning

(student paper)

Yoshiyuki Seike[1, 2, a], Kousei Ito[1,b], Yusuke Ichino[1,c],
Noriyuki Taoka[1,d], Tatsuo Mori[1,e]

[1] Aichi Institute of Technology, 1247 Yachigusa, Yakusa-cho, Toyota, Aichi, 470-0392, Japan.
[2] la quaLab LLC., 1247 Yachigusa, Yakusa-cho, Toyota, Aichi, 470-0392, Japan.

09:50 – 10:10

7.4 In situ Monitoring for Wet Rinse Process Using Electrochemical Impedance Spectroscopy on Sensing Wafers

Mai Nagase[1, a *], Kensuke Shinohara[1, b], and Takahiro Yamaguchi[2]

[1] SCREEN Semiconductor Solutions Co., Ltd., 480-1, Takamiya, Hikone, Shiga, 522-0292, Japan
[2] SCREEN Holdings Co., Ltd., Furukawa-cho 322, Hazukashi, Fushimi-ku, Kyoto, 612-8486, Japan

10:10 – 10:40 ***COFFEE BREAK***

SESSION 8 – METAL ETCHING 10:40 – 12:00

Chair: Antoine Pacco, Imec.
Co-chair: Francesco Pippia, STM.

10:40 – 11:00

8.1 Corrosion-Free Copper Pad Recess Enabled by Wet Acid Etching and Functional Water Rinse for Hybrid Bonding Applications

(student paper)

Yang Han[1*], Yoichi Tanaka[2*], Yusuke Okazaki[2], Koji Nakata[2], Nobuko Gan[2], Iino Hideaki[2], Ryo Takigawa[3], Alain Moussa[1], Sven Dewilde[1], Soon Aik Chew[1], Nancy Heylen[1], Joeri De Vos[1], Eric Byene[1], Efrain Altamirano Sanchez[1] and Naveen Reddy[1, a]

[1] Imec, Kapeldreef 75, 3001 Leuven, Belgium
[2] Kurita Water Industries, LTD, 1-4-1 Daikanyama, Akishima-shi, Tokyo 196-0005 Japan
[3] Graduate School and Faculty of Science and Electrical Engineering, Kyushu University, 744 Moto-oka, Nishi-ku, Fukuoka 819-0395, Japan

11:00 – 11:20

8.2 Effect of Azole-Free Inhibitors on Cu Dissolution in H2O2 Based Wet Etching Solutions During Metal Hard Mask Removal: Experimental and Theoritical study

(student paper)

Sumit Kumar[1,a*], Muskan[1,b*], Soonmin Lee[1,c], Byung Hyun Kim[2,d], Dong Gyu Kim[3,e], Hyemin Lee[3,f], Bong Kyun Kang[3,g], Tae-Gon Kim[4,h], and Jin-Goo Park[1,i **]

[1] Department of Materials Science and Chemical Engineering, Hanyang University ERICA, Ansan, Republic of Korea, 15588

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[4] Department of Smart Convergence Engineering, Hanyang University ERICA, Ansan, Republic of Korea, 15588

*Authors contributed equally
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11:20 – 11:40

8.3 Unique pH Effects on TiN Etching in Nano Confinement with dilute H_2O_2 Solutions

Dai Ueda [1, a,] and Akiko Harumoto [2]

[1] SCREEN SPE Germany GmbH, Fraunhoferstraße 7, D-85737 Ismaning, Germany
[2] SCREEN Holdings Co., Ltd., Furukawa-cho 322, Hazukashi, Fushimi-ku, Kyoto 612-8486, Japan

11:40 – 12:00	**8.4 Investigate an Alternative to Aqua Regia for Backside Metal Contamination Removal**	

Laurence Gabette[1, a], Marie-Claire Pignié[2], Marine Audouin[2], Martin Vandenbossche[1, 3], Sara Kachtouli[1] and Jérôme Daviot[2]
[1] Univ. Grenoble Alpes, CEA, Leti, F-38000 Grenoble, France
[2] Technic France, 15 rue de la Montjoie 93200 Saint-Denis, France
[3] STMicroelectronics, 850 Rue Jean Monnet, 38920 Crolles, France

12:00 – 13:40 ***LUNCH***

13:40 – 14:00 **8.5 A Novel RMG pWFM Molybdenum Patterning for sub-10nm DRAM Periphery FinFET Platform**

Ju-Geng Lai [1, a *], Jishnu Ganguly [1, b], Hiroaki Arimura [1, c], Stephan Brus[1, d], Ritam Sarkar [1, e], Harsh Vardhan Bana [2, f], Jan Willem Maes [2, g], Elena Capogreco [1, h], Naoto Horiguchi [1, i], Naveen Reddy [1, j], and Efrain Altamirano-Sánchez [1, k]
[1] imec, Kapeldreef 75, 3001 Leuven, Belgium
[2] ASM, Kapeldreef 75, 3001 Leuven, Belgium

SESSION 9 – CONTAMINATION CONTROL 14:00 – 15:20

Chair: Philippe Garnier, STM.

Co-chair: Paul Mertens, Imec.

14:00 – 14:40 **9.1 Metallic contamination control in CMOS image sensor processing (invited)**

Koichiro Saga [1, a]
[1] Sony Semiconductor Solutions Corporation, 4-14-1, Asahi-cho, Atsugi 243, Japan

14:40 – 15:00 **9.2 A Model for Estimating Metal Concentration on Si Wafer in IPA Drying**

Hao Chen [a *], Kenjiro Takahashi [b], Kuniko Teraki [c],
Eri Fujita [d], Ayumi Higuchi [e]
SCREEN Semiconductor Solutions Co., Ltd., 480-1, Takamiya, Hikone, Shiga,
522-0292, Japan

15:00 – 15:20 **9.3 Direct Analysis of Metallic Contamination on Si Wafer Surface, Edge and Bevel Apex by LA-GED-MSAG-ICP-MS**

Akira Nishi, Tatsu Ichinose, and Katsu Kawabata [a]
IAS Inc., 2-2-1 Hinohonmachi, Hino, Tokyo, 191-0011, Japan

15:20 – 15:50 ***COFFEE BREAK***

SESSION 10 – PHOTORRESIST REMOVAL 15:50 – 16:30

Chair: Francesco Pippia, STM

Co-chair: Harald Kraus, LAM Research

15:50 – 16:10 **10.1 A Novel Approach using Green Technologies in Wet Processing Tools**

Gustavo Castillo-Hernandez[1, a], Davide Dattilo[1], Markus Foltin[1], Yasuaki Amano[1], Walter Hofer[1], Alexander Max Breul[1] and Samuel Scheller[1]
[1] SUSS MicroTec Solutions, Ferdinand-von-Steinbeis-Ring 10, 75447 Sternenfels, Germany

16:10 – 16:30 **10.2 Efficient wet stripping of Photo Resist by UV Flood-Exposure**

Naveen Reddy[1, a*], Ivonne Saucedo Hernandez[1,b], Amaia Diaz De Zerio[1,c], John Taddei[2,d], Phillip Tyler[2,e], Efrain Altamirano-Sanchez[1,f]
[1] imec vzw, Kapeldreef 75, 3001 Heverlee, Belgium Japan
[2] Veeco, 185 Gibraltar Road, Horsham, PA, USA, 19044

16:30 – 17:00 ***STUDENTS AWARDS CEREMONY & CLOSING REMARKS***

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