

ICPT

International Conference on Planarization/CMP Technology

2012 Grenoble - France

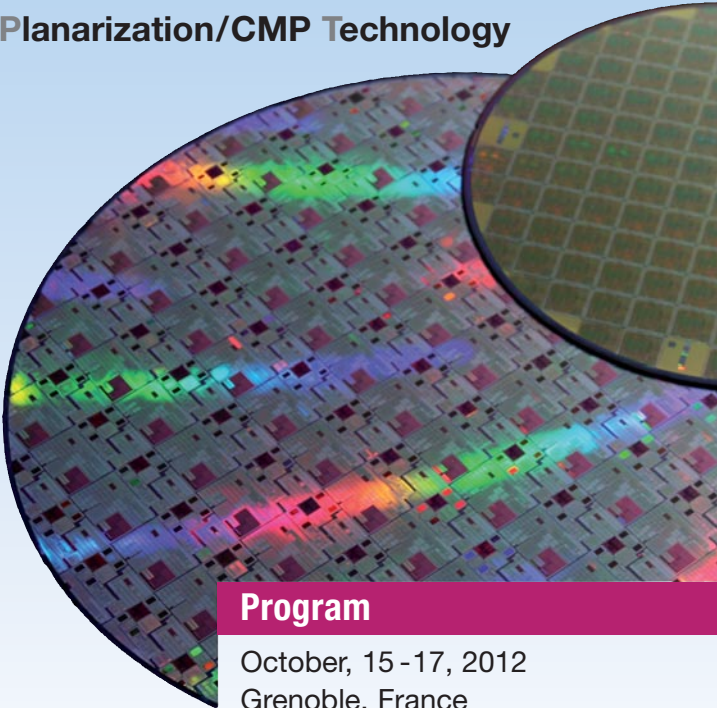


ICPT



2012

International Conference on  
Planarization/CMP Technology



## Program

October, 15 - 17, 2012

Grenoble, France

[www.icpt2012.com](http://www.icpt2012.com)





## Program at a Glance

Time	Monday, October 15	Time	Tuesday, October 16	Time	Wednesday, October 17
07:30	Registration	07:30	Registration	07:30	Registration
08:40	Opening remarks	08:30	Plenary (2)	08:30	Session 7 New CMP Applications
09:10	Plenary (1)	09:00	Session 4 3D, TSV & MEMS (1)		
09:40	Session 1 Front- End Dielectrics (1)				
10:30	Coffee & Poster (1) & Exhibition	10:20	Coffee & Poster (2) & Exhibition	10:40	Coffee Break & Exhibition
11:00	Session 1 Front- End Dielectrics (2)	10:50	Session 4 3D, TSV & MEMS (2)	11:10	Session 8 Consumables
12:00	Session 2 Front-End Metals (1)	11:30	Session 5 Consumables Metrology		
12:50	Lunch & Poster (1) & Exhibition	12:40	Lunch & Poster (2) & Exhibition	12:30	Closing Remarks
14:00	Session 2 Front-End Metals (2)	14:00		Session 6 Fundamentals (1)	12:45
15:00	Poster Session (1)	15:10	Poster Session (2)	13:30	Event 1: Guided tour of the historic city of Grenoble Event 2: Visit of the CEA- Leti showroom
15:51	Coffee Break Exhibition & Poster Session (1)	16:04	Coffee Break Exhibition & Poster Session (2)	15:30	End
16:45	Session 3 Equipment, end- point and Control	16:55	Session 6 Fundamentals (2)		
18:30	Banquet	18:30	Wine & Cheese Degustation		

## Conference Objective

Over the last 20 years, Chemical Mechanical Polishing (CMP) has developed into one of the key technologies in the ULSI fabrication process. CMP has become an enabling technology for manufacturing of state-of-the-art processors, high-density memories, and other advanced microelectronic circuits. Mastering this technology is a prerequisite for printing present chip structures of 22nm and below. Multilevel interconnection, copper metallization, metal replacement gates and other developments of the past years would not have been possible without CMP. Emerging CMP applications include MEMS and nanotechnology, but advancements in CMP also stimulate related areas like polishing of substrates and production of optical surfaces.

As the result of increased co-operation between local CMP users groups in Europe, Japan, Korea, Taiwan, and the United States of America, the International Conference on Planarization/CMP Technology ICPT has been established as the most respected annual gathering on this topic. After a very successful ICPT 2011 in Seoul, this year's conference takes place in Grenoble, France, and will be held at Minatec conference center, located in close neighborhood to CEA-Leti, the renowned French microelectronics R&D center.

The ICPT program 2012 covers the following topical interests

- › front-end dielectrics
- › front-end metals
- › equipment, endpoint and control
- › 3D, TSV & MEMS
- › consumables metrology
- › fundamentals
- › new CMP applications
- › consumables

which will be discussed as oral as well as poster presentations. Keynote speeches by industry and R&D leaders from STMicroelectronics and CEA-Leti as well as invited talks from Intel, Samsung, GlobalFoundries, IMEC, Kyushu Institute of Technology and Fudan University will give overviews on recent CMP-related research and manufacturing subjects.

The organization committee is looking forward to an exciting meeting with many fruitful discussions and warmly welcomes the CMP community in Grenoble.

*Gerfried Zwicker*  
(Conference Chair)  
Fraunhofer ISIT

*Maurice Rivoire*  
(Program Chair)  
STMicroelectronics

*Ronald Schnabel*  
(Conference Organizer)  
VDE-VDI Frankfurt

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Didier Landru, Soitec, Bernin, France  
Marc Peltier, Alpsitech, Grenoble, France  
Ionut Radu, Soitec, Bernin, France  
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Rene-Louis Inglebert, Université J. Fourier, Grenoble, France  
Olivier Joubert, LTM CNRS, Grenoble, France  
Claude Massit, CEA-LETI, Grenoble, France

### Conference Chair

Gerfried Zwicker, Fraunhofer Institute for Silicon Technology ISIT, Itzehoe, Germany

### Program Chair

Maurice Rivoire, STMicroelectronics, Crolles, France

### Organizer

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## Program Overview

### Monday, October 15, 2012

07:30	<b>Registration</b>
08:40 - 09:10	<b>Opening Remarks</b>
09:10 - 09:40	<b>Plenary (1)</b>
09:10	<b>CMOS Technology Evolutions and New Challenges</b> <i>D. Bensahel, STMicroelectronics, Crolles, France</i>
<b>09:40 - 10:30</b>	
<b>Session 1:</b>	<b>FRONT-END Dielectrics (1)</b>
	<i>Chairs: M. Moinpour, X-P. Qu</i>
09:40	<b>Overview of FRONT-END CMP processes for 28nm and Beyond (invited)</b> <i>P. Ong, IMEC, Belgium</i>
10:10	<b>Slurry Selectivity influence on STI and POP processes for RMG application</b> <i>C. Euvrard, A. Seignard CEA-LETI-MINATEC, France; C. Perrot, F. Dettoni, M. Rivoire STMicroelectronics, Crolles, France</i>
10:30 - 11:00	<b>Coffee Break, Posters and Exhibition</b>
<b>11:00 - 12:00</b>	
<b>Session 1:</b>	<b>FRONT-END Dielectrics (2)</b>
11:00	<b>CMP process development for high mobility channel materials</b> <i>P. Ong, L. Leunissen, IMEC, Belgium; C. Gillot, BASF, Belgium; S. Ansar, BASF, Germany, B. Noller, Y. Li, BASF SE, Germany</i>
11:20	<b>Scratch Reduction by using Nano-colloidal Ceria Slurry with Multi-selectivity of SiO<sub>2</sub>/Si<sub>3</sub>N<sub>4</sub>/Poly-Si Films in STI-CMP</b> <i>H. G. Kang, J. D. Koh, S.W.Han, J. W. Lee, B. K. Lee, S. H. Pyi, B. S. Lee, J. W. Kim, SKhynix, Korea; J. D. Jeong, J. Y. Jang, K. S. Choi, Cabot Microelectronics, Korea; B. Resis, C. W. Nam, J. Dysard, D. Woodland, Cabot Microelectronics, USA</i>

11:40 **Performance of a Novel Slurry Injection System on an Ebara FREX200 Polisher for an Silicon Dioxide CMP Application**  
*L. Borucki, Y. Sampurno, A. Philipossian, Araca, Inc., USA; F. Durix, H. Peters, Ebara Precision Machinery Europe GmbH, Germany; Y. Zhuang, Araca, Inc. & University of Arizona, USA; S. Kreutzer, Vishay Siliconix Itzehoe GmbH, Germany*

12:00 - 12:50

**Session 2: FRONT-END Metals (1)**

*Chairs: P. Feeney, O. Kuehn*

12:00 **Challenges in CMP process for 14nm Logic Technology (Invited)**  
*Y. Moon, GlobalFoundries, USA*

12:30 **Buried Tungsten Metal Gate Formation with Chemical Mechanical Polishing Technique and Involved Issues**  
*K. Hwang, H. Kwon, H. Kim, H. Kang, SK Hynix, Korea*

12:50 - 14:00 **Lunch, Posters and Exhibition**

14:00 - 15:00

**Session 2: FRONT-END Metals (2)**

14:00 **Topography Understanding of Tungsten Chemical Mechanical Polishing for Advanced Technology**  
*H. Yu, Y.Moon, L. Huang, GlobalFoundries, USA*

14:20 **Innovative Barrier CMP Process – Benefit of High Selective Approach on Morphological and Electrical Performances**  
*O. Robin, O. Hinsinger, D. Galpin, M. Rivoire, STMicroelectronics, Crolles, France; F. Nemouchi, E. Charrion, CEA-LETI-MINATEC, France*

14:40 **Planarization Efficiency of Copper Protrusion**  
*J. Lin, C. Poutasse, Fujimi Corporation, USA*

15:00 - 15:51

**Poster Session (1)**

*Chairs: V. Balan, K. Gottfried*

15:00 **Direct Polish STI HSS CMP with Improved Planarity and Defect Performance**  
P. 1.1  
*A. Iyer, T. Yang, T. Li, J. Diao, C. Lee, G. Leung, T. Osterheld, Applied Materials, Inc., USA*

15:03 **Chemical Mechanical Planarization (CMP) In-Situ pad groove monitor through Fault Detection and Classification (FDC) system**  
P. 1.2  
*S. Del Monaco, F. Calderone, A. Laurent, M. Fritah, STMicroelectronics, Crolles, France; T. Le Tiec, ESYPE Marne la Vallée, France*

15:06 **Global Thickness Measurement System for Metal Layer on Wafer**  
P. 1.3  
*Q. Yu, H. Li, Z. Qu, Y. Meng, Tsinghua University, Beijing, P.R. China; D. Zhao, Q. Zhao, X. Lu, Tsinghua University, P.R. China*

15:09 **Haze used as wafer, die and local indirect characterization technique for advanced CMP processes on patterned wafers**  
P. 1.4  
*F. Dettoni, Y. Morand, S. Gaillard, O. Hinsinger, M. Rivoire, STMicroelectronics, Crolles, France; C. Beitia, C. Euvrard, F. Bertin CEA-LETI-MINATEC, France; G. Bast, N. Ulea, V. Aristov, G. Simpson, KLA-Tencor, France*

15:12 **Feature analysis and simulation of optical endpoint in tungsten CMP**  
P. 1.5  
*G. Mazzone, G. Bano, STMicroelectronics, Italy; D. M. Gianni, L. Castelletti, S. Borsari, Micron, Italy*

15:15 **Cu Layer thickness monitoring in CMP process by using eddy current sensor**  
P. 1.6  
*Z. Qu, Q. Yu, H. Li, Y. Meng, Q. Zhao, D. Zhao, X. Lu, Tsinghua University, Beijing, P.R. China*

15:18 P. 1.7	<b>STI CMP stop in Silicon Nitride controlled by FullVision™ endpoint</b> <i>C. Perrot, S. Del Medico, S. Gaillard, O. Hinsinger, STMicroelectronics, Crolles, France; F. Pitard, Applied Materials, France; S. Cui, G. Lam, Applied Materials, USA</i>	15:39 P. 1.14	<b>The Synergetic Effect of Polishing Debris Cleaning in Real-time</b> <i>H. Kim, M. Kim, H. Qin, H. Choi, T. Kim, Sungkyunkwan University, Korea; J. C. Yang, D. Lim, SAMSUNG Electronics, Korea</i>
15:21 P. 1.8	<b>In Situ Profile Control with Titan Edge™ Heads for Dielectric Planarization of Advanced CMOS Devices</b> <i>S. Dhandapani, J. Qian, B. J. Cherian, G. Menk, C. Garretson, H. Lee, D. Bennett T. Osterheld, Applied Materials, USA</i>	15:42 P. 1.15	<b>Development of new copper post-CMP cleaning solutions that allow direct bonding</b> <i>A. Ouerd, H. Dulphy, Air Liquide Electronics Systems, France; V. Lelièvre, Air Liquide Balasz, France; L. Di Cioccio, CEA-DRT/Leti, France; M. Rivoire, STMicroelectronics, Crolles, France</i>
15:24 P. 1.9	<b>Reduction of edge exclusion by EPC ring in CMP process</b> <i>Y. Park, Y. Lee, Pusan National University, Korea; M. Yuh, G&amp;P Technology, Korea; H. Jeong, Pusan National University and G&amp;P Technology, Korea</i>	15:45 P. 1.16	<b>Post-CMP Cleaning Formulations Compatible With Advanced Interconnects</b> <i>P. Bernatis, A. Kuroda, A. Otake, C. Shang, F. Coder, V. Wang, DuPont Electronics &amp; Communications, EKC Technology, USA</i>
15:27 P. 1.10	<b>Development of linear roll CMP system for large area micropatterns</b> <i>S. Kim, J. Kim, H. Jeong, Pusan National University, Korea; H. Jeong, Pusan National University and G&amp;P Technology, Korea</i>	15:48 P. 1.17	<b>Study of Frictional Forces Generated by Novel Post-CMP Clean Brush Nodule Geometries During pCMP Cleaning</b> <i>B. Wood, C. Patel, P. Magoon, Entegris Inc., USA</i>
15:30 P. 1.11	<b>Smart pad dressing for double side polishing</b> <i>J. Kanzow, S. Werth, G. Moersch, Peter Wolters GmbH, Germany</i>	15:51 - 16:45	<b>Coffee Break, Posters and Exhibition</b>
15:33 P. 1.12	<b>Effect of process parameter on particle removal efficiency in brush scrubber cleaning</b> <i>H. Mei, X. Lu, J. Wang, Tsinghua University, P.R. China</i>		
15:36 P. 1.13	<b>Particle Reduction in W-CMP Process through Optimizing Post Cleaner</b> <i>N. Kim, K. B. Kim, Y. S. Jang, J. C. Lee, J. S. Hong, K. H. Beak, H. S. Kim, H. K. Cho, Samsung Electronics Co,Ltd, Korea</i>		

16:45 - 18:05

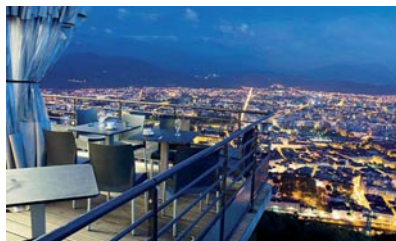
**Session 3: Equipment, Endpoint and Control**

*Chairs: H. Kim, A. Chen*

- 16:45 **Interferometry: a direct die level characterization technique**  
*F. Dettoni, Y. Morand, S. Gaillard, O. Hinsinger, M. Rivoire, STMicroelectronics, Crolles, France; C. Beitia, F. Bertin, C. Euvrard, V. Balan, CEA-LETI-MINATEC, France; J. Peak, T. Johnson, Nanometrics, France*
- 17:05 **FullVision™ Endpoint for CMP of SiGe Fin Structures**  
*G. Menk, S. Dhandapani, Y. C. Huang, B. Wood, J. Qian, B. J. Cherian, C. Garretson, Applied Materials, USA; T. Osterheld, Applied Materials, Inc, USA*
- 17:25 **CMP Defect Monitoring in HKMG Loop on Monitor Wafers**  
*C. Prasad Palamadai Subramanian, KLA-TENCOR SOFTWARE INDIA PVT LTD, India; T. Wang, E. Huang, D. Hu, KLA-Tencor Corporation, Taiwan; R. Peng, W. Lin, C. W. Hsu, D. Hsieh, United Microelectronics Corporation, Taiwan; P. Sapre, T. Chang, KLA-Tencor Corporation, USA*
- 17:45 **Improvements in Profile Control using ISPC during the stop-in-oxide CMP step in the RMG Process Flow on IBM 20nm Short-Loop Wafers**  
*P. Komarenko, J. Qian, J. Salfelder, Applied Materials, USA; D. Levedakis, L. Economikos, IBM, USA*
- 18:05 **Transfer by Tram & Bubbles to Dinner “à la Bastille”**  
*Tram leaving in front of Minatec*

18:30 - 22:00

**Banquet  
“à la Bastille”**



**Tuesday, October 16, 2012**

- 08:20 **Opening Remarks**
- 08:30 - 9:00 **Plenary (2)**
- 08:30 **Disruptive Planar & 3D Solutions for Energy Efficiency**  
*L. Malier, CEA-LETI, MINATEC, France*
- 09:00 - 10:20**
- Session 4: 3D, TSV & MEMS (1)**
- Chairs: X. Lu, A. Isobe*
- 09:00 **CMP Process Optimization for Bonding Applications**  
*V. Balan, A. Seignard, L. Di Cioccio, CEA-DRT/LETI-MINATEC, France; D. Scevola, J. F. Lugand, M. Rivoire, STMicroelectronics, Crolles, France*
- 09:20 **Process Optimization of Grinding and CMP for Thinning of Si**  
*P. Feeney, Axus Technology, USA*
- 09:40 **Influence of different anneal processes on copper surfaces pre- and post-CMP**  
*S. Dobritz, C. Rudolph, S. Dobritz, J. Grafe, H. Wachsmuth, I. Bartussek, J. Wolf, Fraunhofer Institute, Germany*
- 10:00 **TSV CMP Process Development and Pitting Defect Reduction**  
*P. C. Lin, P. Li, Semiconductor Manufacturing International Corp. (SMIC), Shanghai, P.R. China; X. Jinhai, Y. Ding, Z. Ma, C. Xing, Semiconductor Manufacturing International Corporation & SMIC, P.R. China; J. Jing, Anji, Y. Wang, Microelectronics Technology Co., Ltd, P.R. China*
- 10:20 - 10:50 **Coffee Break, Posters and Exhibition**

10:50 - 11:30

**Session 4: 3D, TSV & MEMS (2)**

*Chairs: X. Lu, A. Isobe*

10:50 **Advances in CMP for TSV Reveal**  
*R. L. Rhoades, Entrepix, Inc., USA; D. Malta, RTI, Inc., USA*

11:10 **Application of an Abrasive-Free Cu Slurry for MEMS Devices**  
*B. Steible, M. Stoldt, M. Tack, G. Zwicker, Fraunhofer ISIT, Germany*

11:30 - 12:40

**Session 5: Consumables Metrology**

*Chairs: S. Kurokawa, H. Morinaga*

11:30 **Relationship between Spatial Wavelength Pad Surface Profile and Pattern Step-height Reduction with 28nm Ceria Particle Slurry (Invited)**  
*J. Moon, Samsung Electronics. Co., Ltd. & Hanyang University, Korea; J. Y. Bae, U. Paik, WCU Department of Energy Engineering, Korea; K. H. Oh, R&D Dept., Korea*

12:00 **Challenges of CMP consumables metrology**  
*A. Tregub, Intel Corporation, USA*

12:20 **Identification of nonlinear viscoelasticity of polishing pad using an on-machine compression tester**  
*N. Suzuki, M. Asaba, Y. Hashimoto, E. Shamoto, Nagoya University, Japan*

12:40 - 14:00 **Lunch, Posters and Exhibition**

14:00 - 15:10

**Session 6: Fundamentals (1)**

*Chairs: J. G. Park, Y. Moon*

14:00 **Additive/Abrasive Interactions in Solution: Investigation of the Surface Chemistry and Adsorption Behavior of CMP Abrasives (Invited)**  
*M. Moinpour, A. Rawat, Intel Corporation, USA; E. Remsen, A. England, Bradley University, USA*

14:30 **Experimental Studies on Interfacial Fluid Lubrication and Wafer Status during Chemical Mechanical Polishing of 12-inch Wafer**  
*D. Zhao, T. Wang, Y. He, X. Lu, Tsinghua University, P.R. China*

14:50 **Effect of Slurry Chemistry on W CMP Performance**  
*M. Kang, J. Park, T. Jung, H. Park, H. Kim, H. Kang, SK Hynix, Inc., Korea*



15:10 - 16:04

Poster Session (2)

Chairs: P. Ong, E. Jacquinet

- 15:10  
P. 2.1      **Microreplicated Pad Conditioner for Copper Barrier CMP Applications**  
*J. Zabasajja, D. Le-huu, C. Gould, 3M Company, USA*
- 15:13  
P. 2.2      **CVD Diamond-Coated CMP Polishing Pad Conditioner With Asperity Height Variation**  
*J. H. Choi, Y. B. Lee, B. K. Kim, S. K. Kim, Shinhan Diamond Ind.Co, Korea*
- 15:16  
P. 2.3      **Chemical Mechanical Polishing Slurry for Aluminum Substrate**  
*L. Wang, Chinese Academy of Sciences, P.R. China; W. Liu, Z. Song, Shanghai Institute of Microsystem and Information Technology, P.R. China*
- 15:19  
P. 2.4      **Surface adsorption mechanism of water-soluble polymer in polishing slurry**  
*K. Tsuchiya, S. Takahashi, M. Kubo, H. Morinaga, Fujimi Incorporated, Japan*
- 15:22  
P. 2.5      **Oxide Rate and Selectivity as a Function of Pad Chemistry**  
*P. Renteln, InnoPad Company, USA*
- 15:25  
P. 2.6      **Slurry Development for Copper/Barrier CMP**  
*B. Zhang, Y. Liu, Hebei University of Technology, P.R. China*
- 15:28  
P. 2.7      **CMP Evaluation of Reusable Polishing Pads using Auxiliary Plate**  
*N. Davenport, AMAT, France; S. Del Monaco, M. Rivoire, STMicroelectronics, Crolles, France; T. Suzuki, Toho Engineering Co, Ltd, Japan; V. Balan, CEA/Leti Minatec, France*
- 15:31  
P. 2.8      **Role of Abrasive Type and Media Surface Energy on Nanoparticle Adsorption**  
*J. Kaiser, J. Keleher, Lewis Univerisity, USA; P. Connor, P. Levy, Pall Microelectronics, USA*

15:34

P. 2.9

**The Synthesis of PS-inorganic Oxide Nanoparticle for CMP Slurry**

*H. Qin, H. Kim, H. Choi, M. Kim, T. Kim, Sungkyunkwan University, Korea*

15:37

P. 2.10

**The study of POU filters performance and life-time in the CMP slurry supply system**

*S. Jang, T. Kim, H. Kim, Sungkyunkwan University, Korea; D. Lim, SAMSUNG Electronics, Korea; M. Nam, Woongjin Chemical, Korea; J. C. Yang, SAMSUNG Semiconductor, Korea*

15:40

P. 2.11

**Adsorption Mechanism of Benzotriazole on Copper Surface in CMP Based Slurries Containing Peroxide and Glycine**

*J. Li, X. Lu, J. Ou, J. Cheng, Tsinghua University, P.R. China*

15:43

P. 2.12

**The Study to Minimize the Variation of Polishing Time According to the Pad Used Time**

*J. C. Yang, W. M. Jang, J. H. Won, Samsung Electronics, Korea*

15:46

P. 2.13

**Determination of adhesion force of particles on substrate surface using atomic force microscopy**

*W. Shin, J. An, G&P Technology, Korea; J. Kim, Pusan National University, Korea; H. Jeong, H. Lee, Pusan National University & GnP Technology, Korea*

15:49

P. 2.14

**Investigation on Analysis and Design of Pad Conditioning Process in Double Side Polishing**

*S. Lee, H. Kim, Korea Institute of Industrial Technology, Korea; H. Lee, H. Jeong, Pusan National University & GnP Technology, Korea*

15:52

P. 2.15

**A Novel Evaluation Method of Polishing Slurry Flow Using Digital Image Processing – Mechanical Polishing for Sapphire using Diamond Slurry –**

*M. Uneda, Y. Fukuta, K. I. Ishikawa Kanazawa Institute of Technology, Japan; K. Hotta, H. Sugiyama, H. Morinaga, Fujimi Incorporated, Japan*

15:55  
P. 2.16 **Research on the controlling technology of deliquescent action in polishing of KDP crystals based on deliquescent action**  
*S. Guo, Tsinghua University, P.R. China;  
F. Zhang, Y. Zhang, Harbin Institute of Technology, P.R. China*

15:58  
P. 2.17 **Processing Properties of Strong Oxidizing Slurry and Effect of Processing Atmosphere in SiC-CMP**  
*T. Yin, S. Kurokawa, T. Yamazaki, Z. Wang, Zhe Tan, T. Doi, Kyushu University, Japan;  
O. Ohnishi, University of Miyazaki, Japan*

16:01  
P. 2.18 **A Study on the Damaged Layer Characteristic of Initial Wafer by using Chemical-Mechanical Polishing**  
*C. J. Park, Korea Institute of Industrial Technology & Inje University, Korea;  
M. Jeon, Inje University, Korea; S. Lee, T. Lee, H. Kim, D. Kim, Korea Institute of Industrial Technology, Korea*

16:04 - 16:55 **Coffee Break, Posters and Exhibition**

16:55 - 18:05

**Session 6: Fundamentals (2)**

*Chairs: J.-G. Park, Y. Moon*

16:55 **Study on fine particles behavior in slurry flow between wafer and polishing pad as a material removal process in CMP (Invited)**  
*K. Kimura, K. Suzuki, P. Khajornrungruang, Kyushu Institute of Technology, Japan;  
Y. Idei, Ebara Corporation*

17:25 **Slurry Particle Agglomeration Experimentation & Modeling for Chemical Mechanical Planarization (CMP)**  
*J. Johnson, D. Boning, Massachusetts Institute of Technology, USA; G. S. Kim, K. Knutson, P. Safier, Intel Corporation, USA*

17:45 **Tribological, Thermal, and Kinetic Attributes of 300 vs. 450 mm Chemical Mechanical Planarization Processes**  
*Y. Jiao, X. Liao, C. Wu, A. Philipossian, University of Arizona, USA; Y. Zhuang, Araca, Inc. & University of Arizona, USA; S. Theng, Y. Sampurno, Araca, Inc., USA; M. Goldstein, Intel Corporation, USA*

18:30 - 22:00

**Wine and Cheese Degustation**



08:30 - 10:20

### Session 7: New CMP Applications

*Chairs: T.-S. Kim, K. Kimura*

08:30

#### Chemical mechanical polishing for Co and Mo Based Metal Film (Invited)

*X. P. Qu, Fudan University, P.R. China*

09:00

#### Development of chemical mechanical polishing process for carbon nanotube interconnects on 300 mm wafer

*B. Ito, D. Nishide, T. Matsumoto, M. Katagiri, T. Saito, M. Wada, M. Watanabe, N. Sakuma, A. Kajita, T. Sakai, Low-power Electronics Association & Project (LEAP), Japan*

09:20

#### Chemical-Mechanical Planarization of Aluminum Damascene Structures

*U. Künzelmann, Dresden University of Technology & Faculty of Electrical and Computer Engineering, Germany; M. Müller, F. Schütte, Intelligente Mikrosysteme (IMS) TU Dortmund, Germany; K. Kallis, Technical University of Dortmund, Germany; I. Petrov, Ruhr-Universität Bochum, Germany; J. Fong, C. A. Lin, J. Dysard, Cabot Microelectronics Corporation, USA; J. W. Bartha, Dresden University of Technology, Germany; J. Knoch, RWTH Aachen, Germany*

09:40

#### The effect of H<sub>2</sub>O<sub>2</sub> and Ammonia sulfate on the CMP of Molybdenum

*F. Chen, J. B. Xu, H.S. Lu, X. Zeng, X. P. Qu, Fudan University, P.R. China*

10:00

#### Study on Polishing Properties for Phase Change Memory

*W. Lee, J. Bae, S. Park, J. D. Lee, I. Hwang, S. W. Nam, Samsung Electronics CO., LTD, Korea*

10:20

#### Biomedical Applications of CMP

*G. Bahar Basim, Z. Özdemir, Özyeğin University, Turkey; O. Mutlu, Marmara University, Turkey*

10:40 - 11:10 **Coffee Break**

11:10 - 12:30

### Session 8: Consumables

*Chairs: R. Rhoades, J. Moon*

11:10

#### Correlation of Polishing Pad Property and Pad debris on Scratch Formation during CMP

*T. Y. Kwon, B. J. Cho, P. Venkatesh, J. G. Park, Hanyang University, Korea*

11:30

#### Development of Innovative Tunable Polishing Formulations for Chemical Mechanical Planarization of Silicon Nitride, Silicon Carbide, and Silicon Oxide Materials

*J. Schlueter, S. Stoeva, M. Graham, T. Shi, DA Nanomaterials, an Air Products Company, USA*

11:50

#### Low Surface Roughness Epic™ D2xx soft pads for CMP Applications

*J. Nair, J. Page, G. Gaudet, Cabot Microelectronics, USA; G. Bigoin, Cabot Microelectronics, France*

12:10

#### Evaluation of Glass Lapping Using Fixed Abrasive Pad

*H. M. Kim, R. Manivannan, T. Y. Kwon, J. H. Noh, D. J. Moon, J. G. Park, Hanyang University, Korea*

12:30 - 12:45 **Closing Remarks**

12:45

**Lunch**

13:30 - 15:30

**Event 1: Guided tour of the historic city of Grenoble (pls. see page 22)**

13:30 - 15:30

**Event 2: Visit of the CEA-Leti showroom (pls. see page 23)**

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## Social Events

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**Sunday afternoon, October 14, 2012**

**Time: 14:00 - 18:00, buses starting from MINATEC**

*Visit of the Château de Vizille*



The Château de Vizille is a castle in the French town of Vizille near Grenoble. It is one of the most prestigious and important castles of the Dauphiné Region. The Dauphiné has traditionally been the homeland of the inheritor of the French throne since the 14th century. The former castle was held during the French Wars of Religion by the Catholics. With the peace settlement in 1593, the property was bought by the leader of the Protestant Army, François de Bonne, Duc de Lesdiguières.

Today the Château de Vizille houses the Musée de la Révolution française de Vizille. The park was classified as a historic monument on 23 August 1991.

If you are interested in visiting the castle, please do not forget to register for it along with your conference registration.

**Wednesday afternoon, October 17, 2012**

**Time for both events: 13:30 - 15:30, starting from MINATEC**

*Event 1: Tour of the historic city of Grenoble*

Grenoble is a city of great age and name changes. Originally its celtic name was Cularo, and then under the Romans, "Gratianopolis". In the French revolution the name even became "Grelibre". But now it's well known as a thriving university town (one



of the oldest universities in Europe – 1339) with a strong cultural, technology, literal, economic base – that makes it an exciting place to live.

May we invite you to take part in a guided city-tour of the "historic Grenoble"? Please do not forget to register for this tour. You can do this on the conference's registration form.

*Event 2: Visit of the CEA-Leti showroom*

A showcase for CEA-Leti's many achievements, the 800m<sup>2</sup> showroom at MINATEC, is not only intended for industrial and institutional partners, but also for the general public. The CEA-Leti tour aims at spotlighting the activities of Leti. If you are interested in learning more about CEA-Leti, please register for the tour along with your conference registration.



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## Conference Information

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### Conference Hours

Monday, October 15, 2012	08:40 h to 18:30 h
Tuesday, October 16, 2012	08:30 h to 18:05 h
Wednesday, October 17, 2012	08:30 h to 12:45 h

### Registration Hours

Monday, October 15, 2012	07:30 h to 18:00 h
Tuesday, October 16, 2012	07.30 h to 18:00 h
Wednesday, October 17, 2012	07:30 h to 15:30 h

### Exhibition

The two-day tabletop exhibition is an integral part of the ICPT 2012 conference and takes place at an exhibition area close to the conference lecture room which can be visited during all coffee and lunch breaks.

Exhibition space of 4 m<sup>2</sup> or 6 m<sup>2</sup> (40 sqft or 60 sqft) with table, two chairs and poster board are available. Registration for the exhibition includes two full access badges, two copies of the proceedings and a company name listing in all promotional materials.

For further information on the exhibition, please contact

VDE/VDI-Society Microelectronics, Microsystems and Precision Engineering (GMM)

Dr. Ronald Schnabel

Stresemannallee 15

D-60596 Frankfurt am Main, Germany

Phone: +49-69-6308-330

Fax: +49-69-6308-9828

E-Mail: gmm@vde.com

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### Information for Authors

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#### Manuscripts and Proceedings

Manuscripts should be uploaded electronically by **August 24, 2012**. Together with their notification of acceptance, authors will be informed about the uploading process, as well as the time frame and the formatting guidelines of their papers. The "Instructions for paper preparation" will also be available at the conference's website under

[www.ICPT2012.com](http://www.ICPT2012.com).

The conference proceedings and CD-ROM will be published by the VDE/VDI Society Microelectronics, Microsystems and Precision Engineering and will be delivered to the conference participants at the registration desk.

**Please note that late submissions may not be considered in the conference proceedings.**

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### General Information

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#### ICPT 2012 Secretariat

For detailed Information please contact:

VDE/VDI-Society Microelectronics, Microsystems and Precision Engineering (GMM)

Dr. Ronald Schnabel

Stresemannallee 15

D-60596 Frankfurt am Main, Germany

Phone: +49 69 6308-227

Fax: +49 69 6308-9828

E-Mail: gmm@vde.com

During the conference:

Phone: +49 171 4695 118

#### Conference Fees

	until Sept. 14, 2012	after Sept. 14, 2012
Non-Members	€ 380,00	€ 560,00
Students*	€ 200,00	€ 270,00

\*A photocopy of the student card must be included.

The conference fee includes admission to all sessions as well as to the daily coffee-breaks and lunches, one copy of the proceedings including a CD-ROM, conference dinner.

#### Conference Registration

To subscribe to ICPT 2012, please fill in the registration form which you can find at the conference's website [www.icpt2012.com](http://www.icpt2012.com) under "Registration".

Would you please return this form to VDE Conference Services, Stresemannallee 15, 60596 Frankfurt, Germany by fax (+49 69 6308 144) or e-mail ([vde-conferences@vde.com](mailto:vde-conferences@vde.com)).

To benefit from the "early-bird-discount", VDE Conference Services must receive the form before September 14, 2012.

#### Online Registration

Registrations for the conference may be done online on the conference homepage [www.icpt2012.com](http://www.icpt2012.com)

## Payment to the VDE/VDI Society

Payment for registration, including bank charges and processing fees, must be made in Euro. The conference fee has to be fully paid in advance. Your registration can only be confirmed if VDE-Conference Service has recorded receipt of your full payment.

The following methods of payment are accepted:

- Payment by credit card authorisation as per registration form. The 16 digit card number, expiry date, security No. (last 3 digits on rear side of credit card) and holder's name must be indicated on the registration form. Signature of the card holder is mandatory.
- Cash payment on-site in EURO (€). Presenting authors have to register and pay the fees in advance.

## Cancellation

In case of cancellation, provided that written notice has been given to the VDE-Conference Services before Sept. 14, 2012, the registration fee will be fully refunded less a handling fee of EURO 80,00. After Sept. 14, 2012, no refund will be made. Proceedings and CD-ROM will then be sent to the registrant after the conference.

## Proceedings

All papers accepted for presentation at the conference will be published with the proceedings and a CD-ROM. The proceedings will be handed on-site to all delegates attending the event.

Additional proceedings and CD-ROM are on sale during the conference (upon availability) at EURO 60,00

## Conference Venue

Minatec Conference Center, Parvis Louis Néel, F-38054 Grenoble Cedex 9, France.

## Transport

*Arriving by plane:*

For the conference attendees coming from overseas we recommend to fly to Paris:

- Airport Paris: [www.aeroportsdeparis.fr](http://www.aeroportsdeparis.fr)  
From Airport Paris take the railway TGV. Some trains start directly from the airport to Grenoble railway station. As others leave from Paris, "Gare de Lyon", you then would

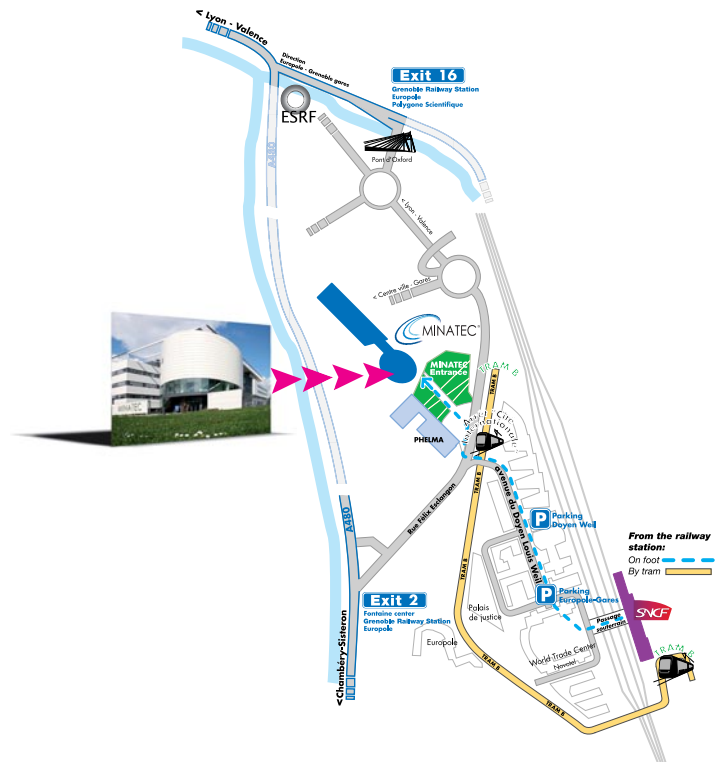
first have to take the RER subway at the Paris airport to "Gare de Lyon" station in order to catch the TGV to Grenoble.

- Airport Lyon-St. Exupéry: [airport www.lyon.aeroport.fr](http://airport.www.lyon.aeroport.fr)  
1 hour drive by car, Taxi costs: approx. 140 € ,  
Tel +33 (0)687 97 4790

Airport shuttle: Please note that the French word for "shuttle" is "navette" or simply "bus". It starts from 7:30 am to 23:59 pm from Lyon St Exupery to Grenoble and from 4:00 am to 21:00 pm from Grenoble to Lyon St Exupery. Would you please also consider that in case you travel via bus or train you would have to underpass the train station to join the Minatec center or a couple of near-by hotels.

*Arriving by train:*

- High Speed Train (TGV) Grenoble-Paris 3 hours  
7 trains every day (other TGV from Lille, Nantes,...)
- Grenoble Gare SNCF: Tel : + 33 (0)8 92 35 35 35 (registration) – [www.sncf.fr](http://www.sncf.fr)



## Hotel Reservation

A block of rooms has been reserved for ICPT 2012 participants for the nights from October 14 to October 17, 2012 (3 nights).

### **Mercure Grenoble Centre Alpotel**

12 Boulevard Maréchal Joffre  
38000 Grenoble, France

Contact: Pascal Joubert  
Phone: 0033 4 7687 8841  
Fax: 0033 4 7647 5852  
E-mail: H0652-rd@accor.com

Room rate	129.00 €
Buffet breakfast	17.50 €
Visitors' tax	0.99 €

40 rooms have been blocked until August 15, 2012  
Pre-payment is required. Payment via credit-card.

Additional information: The Mercure Grenoble Centre Alpotel is situated in the city center of Grenoble.

### **Mercure Grenoble Président**

11 rue Général Mangin  
38100 Grenoble, France

Contact: Christophe Foretti  
Phone: 0033 4 7656 2656  
Fax: 0033 4 7656 2682  
E-mail: h2947-fo@accor.com

Room rate	139.00 €
Buffet breakfast	17.50 €
Visitors' tax	0.99 €

40 rooms have been blocked until September 15, 2012.  
Pre-payment is required. Payment via credit-card.

Mercure Grenoble Président Hotel is situated in the city center of Grenoble.

Would you please use the reservation form for your bookings which you can find at the conference's homepage at [www.icpt2012.com](http://www.icpt2012.com)

## **Novotel Grenoble Centre**

7 place Robert Schuman  
38000 Grenoble, France

Contact: Isabelle Foriel  
Phone: 0033 4 7670 8484  
Fax: 0033 4 76 70 2493  
E-mail: H1624-FO@accor.com

Room rate	142.00 €
Breakfast	15.00 €
Visitors' tax	0.99 €

40 rooms have been blocked until September 15, 2012.

The Novotel Grenoble Centre is within walking distance from the railroad station. You need about 10 minutes' drive to reach the MINATEC center.

## **Hotel Europole**

29, Rue Pierre-Sémard  
F-3800 Grenoble

Contact: Alexandra Parizot  
Phone: 0033 4 7649 5152  
Fax: 0033 4 7621 9900  
E-mail: resa@hoteleuropole.com

Room rate	70.00 € for the night from Oct. 14 to Oct. 15
Room rate	110.00 € for the night from Oct. 15 to Oct. 16
Breakfast	13.50 €
Visitor's tax	0.99 €

20 rooms have been blocked until September 10, 2012.

The Hotel Europole is situated within walking distance to the MINATEC Center and the railroad station.

## **Insurance**

The organisers may not be held responsible for any injury to participants or damage, theft and loss of personal belongings.

## **Passport and Visa Requirements**

Foreign visitors entering France have to present a valid Identity Card or Passport. Delegates who need a visa should contact the French consular offices or embassies in their home countries. Please note that neither the VDE-Conference Services nor the VDE/VDI-Society Microelectronics, Microsystems- and Precision Engineering (GMM) or the supporting bodies are able to extend any "Invitation" for application of visa.

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## **List of Exhibitors**

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So far, the following companies have registered as exhibitors:

- **Alpsitec, France**
- **Araca Incorporated, USA**
- **Cabot Microelectronics, USA**
- **Euris Sarl, France**
- **Levitronix GmbH, Switzerland**
- **Malema Sensors, USA**
- **Morgan Technical, USA**
- **S3 Alliance GmbH, Germany**
- **TOHO Engineering Co., Ltd, Japan**



The IPCT 2012 Organizing Committee would like to express its sincere appreciation to the following companies for their support:

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