

# Recent Invited Presentations

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1. North China Electric Power University, Beijing, China, 03/16/2016  
“Amorphous Metal Oxide Thin Films in MOSFET, Nonvolatile Memory, and Optoelectronic Applications”
2. Chinese Academy of Sciences, Microelectronics Institute, Beijing, China, 03/15/2016  
“Research from Giga to Nano to Optoelectronics with Breakthroughs Along the Path”
3. Symposium of Low-Dimensional Nanoscale Electronic and Photonic Devices 8, ECS 228th Meeting, Phoenix, 10/15/2015.  
“A Metal Oxide Antifuse-Diode Device”
4. International Symposium on Sputtering and Plasma Processes (ISSP 2015), Kyoto, Japan, 07/08/2015  
“SSI-LED Made by Sputtering”
5. Kochi Technical University, Japan, 07/06/2015  
“Interdisciplinary Semiconductor Science and Technology – Past and Future”
6. Plenary speech, 22<sup>th</sup> International Workshop on Active-Matrix Flat Panel Displays and Devices, Kyoto, Japan, 07/01/2015  
“Principles and possible system-on-wafer applications of SSI-LEDs”
7. Symposium Silicon Compatible Materials, Processes, and Technologies for Advanced Integrated Circuits and Emerging Applications 5, ECS 227<sup>th</sup> Meeting, Chicago, 05/27/2015.  
“Temperature Influence on Current Leakage and Hysteresis of Nc-CdSe Embedded Zr-Doped HfO High-*k* Dielectric Nonvolatile Memory”
8. Gordon E. Moore Medal Award for Outstanding Achievement in Solid State Science and Technology Speech, ECS 227<sup>th</sup> Meeting, Chicago, 05/26/2015  
[“Research on Nano and Giga Electronics – Breakthroughs Along the Path”](#)
9. Electrical Engineering Department, King Abdullah University of Science and Technology (KAUST), Jeddah, Saudi Arabia, 04/16/2015  
“Doped Metal Oxide High-*k* Dielectrics and Applications from

- Gate dielectric to Nonvolatile Memories and Solid State Light Emitting Devices”
10. China Semiconductor Technology International Conference (CSTIC), 03/15/2015  
“ECS Past, Present, and Future”
  11. International Electron Device Meeting (IEDM), San Francisco, CA, 12/15/2014  
“A New Type of Solid State Incandescent Light Emitting Device”
  12. ECS Symposium Thin Film Transistors 12, Cancun, Mexico, 10/6-8/2014  
“Thin Film Transistors As Driving Devices for Attached Devices.”
  13. Advanced Display Research Center, Kyung Hee University, July 19, 2014  
“ULSIC vs. TFT - Nano, Giga, and Opto- Electronics”
  14. Nano-KISS (Korean International Summer School on Nanoelectronics), Daejon, Korea, July 17, 2014  
“Thin Film Transistor Technology – From Device Performance to Mass Production of Large-Area Displays”
  15. Electronics and Telecommunications Research Institute (ETRI), Daejeon, Korea, July 14, 2014  
“ULSIC vs. TFT - from Nano to Giga Electronics”
  16. IEEE Electron Devices Society Distinguished Lecture, Guangzhou, China, July 4, 2014  
“Device Performance and Reliability of Nanocrystal Embedded High-k Nonvolatile Memories.”
  17. Infovision Optoelectronics (IVO), Kuanshan, China, July 2, 2014  
“Progress of TFT Large-Area Mass Production Technology and the Future Development”
  18. AKT Applied Materials, San Jose, CA, June 10, 2014  
“TFT Mass Production Technology – from process to materials and devices”
  19. WOFE 2013, San Juan, Puerto Rico, December 17-20, 2013  
“Electroluminescence from Amorphous Metal Oxide Thin Films – a new incandescent-like LED.”
  20. Keynote speech, 7<sup>th</sup> Sino-US Joint Chemical Engineering Conference, Semiconductor Symposium, Beijing, China, October 15, 2013  
“Semiconductor Science and Technology in Nano and Giga Electronics.”
  21. Institute of Photo-electronics, Nankai University, Tianjin, China,

Oct. 14, 2013

“Nano and Giga Electronics- from Nonvolatile Memories to a New Type of LED.”

22. 4<sup>th</sup> ULSIC vs. TFT Conference, Grenoble, France, July 8-11, 2013  
“Metal oxide high-K thin films – from gate dielectrics to nonvolatile memories to LEDs.”
23. Memorial plenary speech, 20<sup>th</sup> International Workshop on Active-Matrix Flat Panel Displays and Devices, Kyoto, Japan, July 3, 2013  
“Progress of Thin Film Transistor Technology - Large-Area Mass Production and Beyond.”
24. Tohoku University, Research Institute of Electronic Communication, Sendai, Japan, June 27, 2013  
“On the Possible Generalization of TFT and ULSIC Technologies.”
25. Xian Jiaotong University, Institute of Physical Electronics and Devices, Xian, China, June 20, 2013  
“Large-Area Thin Film Transistor Technology – Past, Present, and Future.”
26. Xian Jiaotong University, Institute of Physical Electronics and Devices, Xian, China, June 24, 2013  
“Thin Film Transistor Materials, Processes, and Devices.”
27. ECS International Symposium on Nanocrystal Embedded Dielectrics For Electronic And Photonic Devices, Toronto. CA, May 12-17, 2013  
“Nanocrystals Embedded High-*k* Nonvolatile Memories – bulk film and nanocrystal material effects”
28. LETI, Grenoble, France, November 26, 2012  
“Nonvolatile Memories Made of Nanocrystals Embedded High-*k* Dielectrics.”
29. ECS Symposium Thin Film Transistors 11, Honolulu, HI, October 8-10, 2014  
“Structure and Material Considerations for Thin Film Transistor Applications beyond LCD Driving.”
30. Fudan University, School of Microelectronics, Shanghai, China, March 20, 2012  
“Nonvolatile Memories in Nano and Giga Electronics.”
31. China Semiconductor Technology International Conference (CSTIC), March 18, 2012  
“Semiconductor Programs in ECS”
32. Tsing Hua University, Chemistry Department, Beijing, China, March 16, 2012

33. “Nonvolatile Memories in Nano and Giga Electronics”  
Xian Jiaotong University, Physical Electronics Department, Xian, China, March 14, 2012
34. “Nonvolatile Memories in Nano and Giga Electronics”  
Xian Jiaotong University, Physical Electronics Department, Xian, China, March 13, 2012
35. “Thin Film Transistor Technology – Past, Present, and Future”  
University of Wisconsin, Electrical Engineering, Madison, WI, Feb. 6, 2012
36. “Nonvolatile Memories from Nano to Giga Electronics”  
National Chiao-Tung University, Department of Photonics and Display Institute, Hsin-Chu, Taiwan, Dec. 15, 2011
37. “Nonvolatile Memories from Nano to Giga Electronics”  
AVS Post-Deposition Processing of Thin Films Symposium, Oct. 30 –Nov. 4, 2011, Nashville, TN
38. “Post Deposition Annealing Effects on Thin Film Material, Process, and Device Properties”  
National Taiwan University, Chemistry Department, June 23, 2011
39. “TFT vs. ULSIC - from Nano to Giga Electronics”  
3<sup>rd</sup> ULSIC vs. TFT Conference, Hong Kong, June 27-July 1, 2011
40. “Nonvolatile Memories for Nano and Giga Electronics Applications”  
ECS Nanotechnology Symposium: Focus on Dielectrics in Nanosystems, Montreal, Canada, May 1-6, 2011
41. “Status Review of Nanocrystals Embedded High-k Nonvolatile Memories”  
IEEE EDS Distinguished Lecturer seminar, University of California, Dan Diego, CA, April 24, 2011
42. “Thin Film Transistor Technology – from Past to Future”  
SEMINATEC 2011 Workshop, Center for Semiconductors, University of Campinas Brazil, March 24-25, 2011
43. “Floating-Gate Nonvolatile Memories for Nano-size CMOS and Ultra-Large TFT Applications”  
7<sup>th</sup> International Thin Film Transistor Conference, Cambridge, UK, March 3-4, 2011
44. “Clockwise and Counterclockwise Hysteresis of Transfer Characteristics of the Floating-Gate a-Si:H TFT”  
Plenary speech, Shanghai Regional TFT Forum, Nov. 25, 2010
45. “Thin Film Transistor Technology – Personal Experience and Vision”

45. National TFT Engineering Center, Shanghai Jiaotong University, Nov. 23, 2010  
“Nonvolatile Memories for Nano and Giga Electronics”
46. Shanghai University, Nov. 22, 2010  
“Nonvolatile Memories for Nano and Giga Electronics”
47. Hong Kong Polytechnic University, Applied Physics Department, Nov. 24, 2010  
“Nonvolatile Memories for Nano and Giga Electronics”
48. ECS Symposium High Dielectric Constant Materials and Gate Stacks 8, Las Vegas, NV, Oct. 10-15, 2010  
“Performance and Reliability of Nanocrystals Embedded High-k Nonvolatile Memories”
49. ECS Symposium Thin Film Transistors 10, Las Vegas, NV, October 10-15, 2010  
“Mechanism and Performance of Floating-Gate a-Si:H TFT Nonvolatile Memory Devices”
50. MRS Symposium Amorphous and Polycrystalline Thin Film Silicon Science and Technology, San Francisco, CA, April 5-9, 2010  
“Influence of Embedded a-Si:H Layer Location on Floating-Gate a-Si:H TFT Memory Functions”
51. Keynote speech, SEMI and ECS China Semiconductor Technology International Conference, Shanghai, China, March 18, 2010  
“Comparison of ULSI and TFT Technology Development.”
52. National Engineering Lab of TFT-LCD Materials and Technologies, Shanghai JiaoTong University, Shanghai, China, Dec. 27, 2009  
“From Nano to Giga Electronics - ULSI and TFT Examples.”
53. IEEE EDS Distinguished Lecture, University of Waterloo, Canada, Nov. 6, 2009  
“Mechanical Bending Effects on a-Si:H TFT and Floating-Gate a-Si:H TFT Nonvolatile Memories for Flexible Electronics.”
54. IEEE Distinguished Lecture, Institute of Electronic Engineering, Beijing University, Beijing, China, July 14, 2009  
“ULSIC vs. TFT – From Nano to Giga Electronics.”
55. Institute of Photo-electronic, Nankai University, Tianjin, China, July 14, 2009  
“ULSIC vs. TFT – From Nano to Giga Electronics.”

56. Department of Electronic Engineering, Xi'an Jiaotong University, Xi'an, China  
"ULSIC vs. TFT – From Nano to Giga Electronics."
57. 2<sup>nd</sup> ECI International Conference on Semiconductor Technology of Ultra Large Scale Integrated Circuits and Thin Film Transistors, accepted, Xi'an, China, July 5-10, 2009  
"A-Si:H TFT Nonvolatile Memories and Copper Interconnect for Rigid and Flexible Electronics."
58. 16<sup>th</sup> International Workshop on Active-Matrix Flat Panel Displays and Devices, Nara, Japan, July 1, 2009  
"Plasma-Based Copper Etch Process for TFT and IC Fabrication - History and Status."
59. Department of Applied Physics, Hong Kong Polytechnic University, June 12, 2009  
"ULSIC vs. TFT – nano to giga electronics."
60. ECS Symposium on Novel Plasma Techniques for Low Temperature Processing of Thin Films for Flexible Electronics, Sand Francisco, CA, 05/28/09  
"PECVD Thin Films for Flexible Electronics and Device Reliability."
61. ECS Symposium on Nanocrystal Embedded Dielectrics for Electronic and Photonic Devices, Sand Francisco, CA, 05/27/09 (with C.-H. Lin)  
"Single and Dual nc-ITO and nc-ZnO Embedded ZrHfO High-k Nonvolatile Memories."
62. Department of Materials Science and Engineering, National Tsing Hua University, Taiwan, 07/29/08  
"TFT and ULSIC - competition or collaboration?"
63. Department of Chemistry, Tsing Hua University, Beijing, China, 06/03/08.  
"TFT and ULSIC - competition or collaboration?"
64. International Reliability Physics Symposium (IRPS) Nanoelectronic Device Reliability, 04/27-05/01/08, Phoenix, AZ  
"Failure Process of the Nanocrystals Embedded High-k Film for Nonvolatile Memories."
65. Plenary speech, International Flexible Electronics Conference, Tarragona, Spain, 04/07/08  
"Low Temperature Prepared a-Si:H Memory Devices for Flexible Substrates."

66. MRS Symposium on Amorphous and Polycrystalline Thin Film Silicon Science and Technology, San Francisco, CA, 03/26/08  
“Floating Gate a-Si:H TFT Nonvolatile Memories.”
67. Advanced Display Research Center, Kyung Hee University, Seoul, Korea, 01/26/08  
“a-Si:H TFTs.”
68. 4<sup>th</sup> International TFT Conference – ITC '08, Seoul, Korea, 01/25/08  
“Charge and Discharge of Floating-Gate a-Si:H TFT Nonvolatile Memories.”
69. LG Philips LCD R&D Center, Angyang, Korea, 01/24/08  
“TFT and ULSIC – Competition or Complimentary?”
70. Electrical Engineering Department and Physics Department, National Dr. Sun Yet-Shen University, Kaoshung, Taiwan, 12/11/07  
“Research from Nano to Microelectronics.”
71. ECI International Conference on Semiconductor Technology of ULSIC and TFT, 07/31-08/03/07, Barga, Italy  
“ULSIC vs. TFT - What Can They Learn from Each Other?”
72. Keynote speech, 14<sup>th</sup> International Workshop on Active Matrix Flat Panel Displays and Devices (AM-FPD 07), Hyogo, Japan, 07/11-13/07  
“TFT Technology as a Competitor or Collaborator of IC.”
73. 14<sup>th</sup> International Workshop on Active Matrix Flat Panel Displays and Devices (AM-FPD 07), Hyogo, Japan, 07/11-13/07  
“Review of ECS TFT 8 Symposium on New Technology Developments.”
74. International Display Manufacturing Conference, SID Taipei, Taiwan 07/05/07  
“TFTs Beyond LCD Pixel Driving and Experience for 450 mm ULSIC Process Development.”
75. National Chiao Tung University, Display Institute, 07/06/07  
“TFTs Beyond LCD Pixel Driving and Experience for 450 mm ULSIC Process Development.”
76. Award seminar in 211<sup>th</sup> Electrochemical Society Meeting, Electronics and Photonics Division award, Chicago, IL 05/06-11/07  
“Thin Film Transistor and ULSIC Technologies - Parallel or Crossing?”
77. University of Tennessee, Department of Chemical Engineering, Knoxville, TN, 11/30/06

- “ Microelectronics Research – from Nano Science to Giga Engineering.”
78. 4<sup>th</sup> International Symp. on High Dielectric Constant Gate Stacks, Electrochemical Society, Cancun, Mexico 10/31-11/2/06  
“Mixed Oxide High-k Gate Dielectrics - Interface Layer Structure, Breakdown Mechanism, and Memories.”
  79. University of Michigan, Department of Chemical Engineering, Ann Arbor, MI, 09/28/06  
“From Nano to Giga Electronics Research - Our Approach.”
  80. 2006 Lester Eastman Conf. High Performance Devices, Cornell University, Ithaca, NY 08/02-04/06  
“High Performance High-k Gate Dielectrics Based on Mixed Oxides.”
  81. 2006 Lester Eastman Conf. On High Performance Devices, Cornell University, Ithaca, NY 08/02-04/06 (coauthors T. Yuan, et al.)  
“Charge Trapping and Dielectric Relaxation in Connection with Breakdown of High-k Gate Dielectric Stacks.”
  82. Components and Enabling Technologies for High Image Quality Smart Panels, Ministry of Economic Affairs, Hsin-Chu, Taiwan, 07/06  
“TFT Applications beyond LCDs.”
  83. Active Matrix Flat Panel Displays (AMFPD) Conference, Tokyo, Japan, 07/5-7/06  
“TFT Sensors and New Applications.”
  84. Hitachi Central Research Laboratory, Tokyo, Japan, 07/04/06  
“Non-LCD TFT Applications.”
  85. International Symp. on Dielectrics for Nanosystems: Materials Science, Processing, Reliability, and Manufacturing, Electrochem. Soc./IEEE, Denver, CO, 05/7-12/06  
“Mixed Oxide High-k Gate Dielectrics.”
  86. 6<sup>th</sup> International Conference on Reactive Plasmas (ICRP-6), Sendai, Japan, 01/24/06-01/27/06  
“Room Temperature Plasma Etching of Copper for ULSIC and TFTs.”
  87. Osaka University, Center for Atomic and Molecular Technologies, 01/23/06  
“Plasma Thin Film Processes- fundamentals and applications”
  88. National Science Council and TSMC sponsored Seminar, National Tsing Hua University, Chemical Engineering Dept., 12/14/05



- “Thin Film Technology for Transistor Fabrication - from nano MOSFETs to Giga TFT Arrays.”
89. National Science Council and TSMC sponsored Seminar, National Cheng Kung University, Materials Sci. and Eng. Dept., 12/16/05
- “Thin Film Technology for Transistor Fabrication - from nano MOSFETs to Giga TFT Arrays.”
90. Jilin University, College of Electronics Science and Engineering, ChangChun, China, 10/10/05
- “Amorphous Silicon TFTs – Fundamental and Applications.”
91. Chinese Academy of Sciences, ChangChun Institute of Applied Chemistry, China, 10/11/05
- “Nano and Giga Electronics Research.”
92. Nankai University, Optoelectronics Institute, Tianjin, China, 10/15/05
- “Amorphous Silicon TFTs – Fundamental and Applications.”
93. US, China, and Japan Joint Chemical Engineering Conference '05, Keynote speech, Microelectronics Section, 10/05.
- “Multidisciplinary Nano and Microelectronics: current status and future development.”
95. Nara Institute of Science and Technology, Materials Science Department, Nara, Japan 06/07/05
- “a-Si:H TFTs Fundamentals and New Applications.”
96. National Taiwan University, Chemical Engineering Department, Taipei, 05/02/05
- “From Nano to Giga Electronics Research.”
97. 2005 Symposium on Nano Device Technology (SNDT), Keynote Speech, Hsin-Chu, Taiwan, 05/04/05.
- “Doping of High-k Dielectric Thin Films for Future Nano MOSFETs.”
98. 2005 Symposium on Nano Device Technology (SNDT), Short course tutorial lecture, 05/03/05.
- “High-k gate dielectrics - urgent nano issues in ULSIC.”
99. University of Tennessee, Materials Science and Engineering Department, 04/05.
- “Challenges in Sub 0.1 mm Era Materials Processing.”
100. International TFT Conference '05, KyungHee University, Seoul, Korea, 03/14-15/05.
- “P- and n-channel a-Si:H TFTs.”

101. SEMATECH, Autsin, TX, 01/07/05.  
“Doping of HfO<sub>2</sub> Gate Dielectric.”

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