

KIT / Symetrix International Symposium

From Tradition to the Future:
Moving towards a post-CMOS era

-CeRAM: Correlated Electron Memory-

25th Thu. - 26th Fri. August 2022

[in Japan., Taiwan]

(24th Wed. - 25th Thu. August 2022 in the U.S.)

Online

Program

| San Francisco | Colorado | Taiwan | Kyoto | min. | Title / Presenter |
|---------------|----------|---------|---------|------|--|
| Day-1 | | | | | |
| 24 Aug. | 24 Aug. | 25 Aug. | 25 Aug. | | |
| 16:30 | 17:30 | 07:30 | 08:30 | 5 | Opening Remarks Masahiro Yoshimoto (Trustee, Vice President of Kyoto Institute of Technology) |
| 16:35 | 17:35 | 07:35 | 08:35 | | |
| 16:35 | 17:35 | 07:35 | 08:35 | 10 | Opening Remarks Yoshio Nishi (Advisor and Project Professor, Kyoto Institute of Technology, Professor Emeritus, Stanford University) |
| 16:45 | 17:45 | 07:45 | 08:45 | | |
| 16:45 | 17:45 | 07:45 | 08:45 | 20 | "From Tradition to the Future -Innovation from Kyoto-" [in Japanese] Sei-ichi Nishimoto (Professor Emeritus, and former Dean of Graduate School of Engineering, Kyoto University; Chairman, ASTEM; Chairman, Kyoto Municipal Institute of Industrial Technology and Culture) |
| 17:05 | 18:05 | 08:05 | 09:05 | | |
| 17:05 | 18:05 | 08:05 | 09:05 | 40 | "From Kyoto to the world -Challenge to cutting-edge materials science-" [in Japanese] Osamu Tsuji (Samco Inc. Chairman and CEO, Samco Foundation Chairman, Specially Appointed Professor of Kyoto Institute of Technology) |
| 17:45 | 18:45 | 08:45 | 09:45 | | |
| | | | | 10 | Break |
| 17:55 | 18:55 | 08:55 | 09:55 | 60 | "T-Era Starts: Tera-Scale Integration Enabled by Optimizing Monolithic and Heterogeneous Integration for Intelligence ^N Applications" Nicky Lu (Member of NAE, IEEE Fellow, Chair/Founder of Etron, Chair of World Semiconductor Council (2014-2015)) |
| 18:55 | 19:55 | 09:55 | 10:55 | | |
| 18:55 | 19:55 | 09:55 | 10:55 | 40 | "In search of post-silicon materials for memory" Shizuo Fujita (Professor Emeritus of Kyoto University) |
| 19:35 | 20:35 | 10:35 | 11:35 | | |
| Day-2 | | | | | |
| 25 Aug. | 25 Aug. | 26 Aug. | 26 Aug. | | |
| 16:10 | 17:10 | 07:10 | 08:10 | 30 | "Development and commercialization of embedded FeRAM" Masamichi Azuma (Symetrix Contract Researcher, Former Chief of Panasonic Corp.) |
| 16:40 | 17:40 | 07:40 | 08:40 | | |
| 16:40 | 17:40 | 07:40 | 08:40 | 40 | "Development & Introduction of Suica as Automatic Fare Collection System and the Spread of it in Social Infrastructure -Deployment of IC ticket with FeRAM-" [in Japanese] Akio Shiibashi (Senior Advisor, Member of the Board of JR East Mechatronics Co., Ltd.) |
| 17:20 | 18:20 | 08:20 | 09:20 | | |
| 17:20 | 18:20 | 08:20 | 09:20 | 60 | "From the invention of CeRAM to the challenge of post-CMOS and post- Neuman era" Carlos Paz de Araujo (Prof. of University of Colorado at Colorado Springs, Chairman and CEO, Symetrix Corporation) |
| 18:20 | 19:20 | 09:20 | 10:20 | | |
| | | | | 10 | Break |
| 18:30 | 19:30 | 09:30 | 10:30 | 40 | "Materials. Processes and Physical characterization of Mott Switching" Jolanta Celinska (Vice President of Research at Symetrix Corporation) |
| 19:10 | 20:10 | 10:10 | 11:10 | | |
| 19:10 | 20:10 | 10:10 | 11:10 | 60 | "Expectation to AI Technologies in the Medical Field -From EBM (Evidence-Based Medicine) to SBM (Science-Based Medicine)-" [in Japanese] Hiromi Wada (Professor Emeritus of Kyoto University, Clinic Director of Karasuma Wada Clinic, Emeritus member of Japan Surgical Society, Honorary chairman of the Japanese Association for Chest Surgery) |
| 20:10 | 21:10 | 11:10 | 12:10 | | |
| 20:10 | 21:10 | 11:10 | 12:10 | 15 | Closing Remarks Gota Kano (Director of Symetrix Corporation, Former Visiting Professor of Kyoto Institute of Technology, Member of Panasonic Fellow Association) |
| 20:25 | 21:25 | 11:25 | 12:25 | | |

Registration : Free admission.

Registration for the Zoom Webinar will
open in early June 2022.

Language : English and Japanese (No interpreter)

Contact : igreen@kit.ac.jp

Website : <https://officepolaris.co.jp/kit2022/>



Organized by Kyoto Institute of Technology (KIT)

Supported by Symetrix Corporation

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- The Institute of Image Information and Television Engineers
- The Institute of Electronics, Information and Communication Engineers
- The Japan Society of Applied Physics
- IEEE Japan Council





Masahiro Yoshimoto

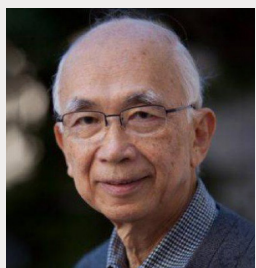
Trustee, Vice President, Kyoto Institute of Technology



Prof. Masahiro Yoshimoto received his Masters and Doctoral degrees of Engineering in electrical engineering from Kyoto University in 1985 and 1988, respectively. He began his academic career in 1988, as an Assistant Professor in the Department of Electronics at Kyoto University where he began his research in semiconductor engineering. During 1994 and 1995, he was attached to University of California, Santa Barbara as a visiting scholar. He returned to Kyoto University in 1996 as a Lecturer. In 1997, he joined the Department of Electronics, at Kyoto Institute of Technology (KIT), where he continued his research in the field of semiconductors and related materials. In 2004, he became a full professor at Cooperative Research Center, at KIT and in 2007, was appointed to the Department of Electronics at KIT as a full professor. He is currently serving as Vice President (2015-) and Trustee (2018-) of KIT. He is in charge of education, research and regional collaboration.

Yoshio Nishi

Advisor and Project Professor, Kyoto Institute of Technology Professor Emeritus, Stanford University



Yoshio Nishi received BS and PhD degrees from Waseda University (Material Science & Engineering) and University of Tokyo (Electronics Engineering), respectively. He had worked in Toshiba R&D, Japan, on semiconductor materials/processes and device physics/technology for Si MOS FETs and VLSI CMOS memories until 1985. He joined HP Labs in Palo Alto, California in 1986 as the director for high performance RISC processor technology research and development. Dr. Nishi moved to Texas Instruments, Dallas, Texas in 1995 as a senior vice president and director of semiconductor R&D, also established Jack Kilby Center. In 2002 he moved to academia as professor of electrical engineering (research) at Stanford University for both research and teaching in nanoelectronic materials and devices, including non-volatile resistance change memory research in collaboration with industries. He retired from Stanford in 2016 becoming Professor Emeritus. Currently he is a project professor and an advisor at Kyoto Institute of Technology. He received many awards, including the IEEE Life Fellow, the Jack Morton Award (1995) and the Robert Noyce Medal (2002) from IEEE, and published more than 400 papers and presentations.

Sei-ichi Nishimoto

Professor Emeritus, and former Dean of Graduate School of Engineering, Kyoto University; Chairman, ASTEM; Chairman, Kyoto Municipal Institute of Industrial Technology and Culture



He graduated in Engineering (Polymer Chemistry) from Kyoto University (KU) in 1970, completed his postgraduate school in 1975, and joined the Department of Hydrocarbon Chemistry, Faculty of Engineering, KU in 1977. He received his D.Eng. from KU in 1978 and was appointed to Professor of Excited-State Hydrocarbon Chemistry, Graduate School of Engineering, KU. Ever since 1998 he has taken a part in the education and researches on photoexcited states in physics, chemistry and chemical biology. During April 2006 to March 2008 he was the Deans of Faculty and of Graduate School of Engineering, KU. After retirement from KU in March 2012, he has been promoting the Academia-Industry-Regional Government Collaborations on Science and Technology.

Osamu Tsuji

Samco Inc. Chairman and CEO, Samco Foundation Chairman, Specially Appointed Professor of Kyoto Institute of Technology



He was born in Kyoto, Japan. After working as a researcher at NASA Ames Research Center in the U.S., he established Samco International Research Institute, Inc. in 1979.

In May 2001, Samco International Research Institute, Inc. listed its shares on the Japan Association of Securities Dealers Automatic Quotations (JASDAQ), and in December 2004, changed its name to Samco Inc. In July 2013, Samco Inc. listed with 2nd section of the Tokyo Stock Exchange, then listed 1st section of the Tokyo Stock Exchange next year. In 2016, he established the Samco Foundation, which awards grants to award-winning young researchers every year. In April 2022, he started an endowed course, "Advanced Materials Science," at the Kyoto Institute of Technology (KIT) and was appointed as a Specially Appointed Professor of KIT.



Nicky Lu

Member of NAE, IEEE Fellow, Chair/Founder of Etron, Chair of World Semiconductor Council (2014-2015)



Dr. Lu, Chairman and Founder of Etron Technology, is an inventor of several key IC designs/technologies and serial founder of several companies, from start-ups to publicly listed ones including Etron, Ardentec and Global Unichip. He has dedicated 43 years of his career to worldwide IC design and the semiconductor industry. Dr. Lu is a Member of National Academy of Engineering (NAE) of USA and an IEEE Fellow. He received Ph.D. in EE from Stanford University and worked for IBM with an honor of an IBM Corporate Award. In early 1990s, Dr. Lu was a co-architect/leader creating Taiwan's 8-inch-wafer and advanced Logic/SRAM/DRAM technologies to equip Taiwan semiconductor industry with leading-edge technology capabilities, which has thus enabled and shaped Taiwan semiconductor and integrated circuits industries to today's prominent position for worldwide economics. Moreover, Dr. Lu coined and realized several inventions which have continuously generated impacts on semiconductor technology advancements, such as creating Known Good Bare-Die DRAM/SRAM without packaging, which thus has heralded a Heterogeneous Integration Era of Semiconductor technologies in parallel to Moore's Law Integration since 2000. He was the Chair of WSC (World Semiconductor Council, 2014-15) and Chair of TSIA (Taiwan Semiconductor Industry Association, 2013-17). Dr. Lu holds over 46 US patents and has published more than 60 technical papers.

Shizuo Fujita

Professor Emeritus of Kyoto University



Prof. Shizuo Fujita received B.S and M.S degrees from Kyoto University in 1978 and 1980, respectively. Then he worked in Kyoto University as a Research Associate and received a Ph.D degree in 1990. He was promoted to Associate Professor and Professor of Kyoto University in 1990 and 2001, respectively. His research area has focused on evolution of novel growth technology of new semiconductors and functional materials, including III-V, III-N, II-VI, and oxides. For oxide thin film growth, he has developed the "mist CVD" technology, with which a variety of films and multilayers have successfully grown at low temperature and low cost. He retired the Professor job in 2021, received the title of Professor Emeritus, and now joins to Office of Society-Academia Collaboration for Innovation (SACI) of Kyoto University to explore social implementation of advanced devices.

Masamichi Azuma

Symetrix Contract Researcher, Former Chief of Panasonic Corp.



Masamichi Azuma received his B.S. degree in physics from Science University of Tokyo in 1982 and M.S. degree in science and engineering from Tsukuba University in Ibaraki, Japan, in 1987. He joined Matsushita Electronics Corporation, Osaka, Japan in 1987. He has been engaged in the research and development of ferroelectric thin films for semiconductor devices. Since then, he promoted the marketing and commercialization of FeRAM. In 2019, he was received the Ichimura Prize in Industry for Excellent Achievement in "Development and practical application of low power consumption ferroelectric memory widely used for transportation IC cards". Currently, he left Nuvoton Technology Corporation Japan which was renamed from Panasonic Semiconductor Solutions Co., Ltd. in 2019 by M&A, and he is now working as Symetrix Contract Researcher, and his interest are secure memory computing for edge and end point devices.

Mr. Azuma is a member of the Japan Society of Applied Physics.

Akio Shiibashi

Senior Advisor and Member of the Board of the company, JR East Mechatronics Co., Ltd.



Shiibashi graduated Saitama University, Faculty of Engineering, Department of Mechanical Engineering in 1976. In the same year, he joined Japanese National Railways. In 1987, he joined East Japan Railway Company. In 1994, he was involved in the research and development of IC card ticketing system. In 1998, he engaged in the project for the promotion of Suica system. In 2006, he received the degree of Ph.D in Engineering from Tokyo Institute of Technology. In 2013, he was appointed President and CEO of JR EAST MECHATRONICS CO., LTD. and was appointed Chairman of the Board in June 2019. Since June 2021, he has been appointed Senior Advisor and Member of the Board of the company.

Carlos Paz de Araujo

Prof. of University of Colorado at Colorado Springs, Chairman and CEO, Symetrix Corporation



Carlos A. Paz de Araújo was born in Natal, Brazil. He received his Bachelor, Master and Ph. D. degrees from the University of Notre Dame in Notre Dame, Indiana in the USA. He has been a Professor of Electrical Engineering at the University of Colorado, Colorado Springs since 1982. He has authored and co-authored over 150 articles and has over 300 US patents and more than 300 International Patents. He is also the Chairman of the board of the Symetrix Group of companies which includes Symetrix Research Inc. and Algemetric Corporation. He is a Full Professor, IEEE Fellow and a recipient of the IEEE Daniel Noble award. In 2019, He was granted the title of the Honorary Members of The Institute of Image Information and Television Engineers. His interest are in Nonvolatile memories, Neuromorphic Computing and Novel applications of Abstract Algebra in a variety of computer applications including Homomorphic Encryption and IoT. His work covers devices based on Interactive Electrons as switches and novel devices based on the strongly correlated electrons for nonvolatile and switching synapses or connectomes in non-Von Neumann Architectures.

Jolanta Celinska

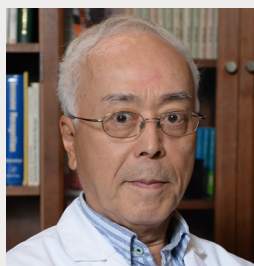
Vice President of Research at Symetrix Corporation



Jolanta Celinska is Vice President of Research at Symetrix Corporation. She obtained her M.S. degree in Applied Physics from the University of Silesia in Katowice, Poland in 1982. Ms. Celinska joined Symetrix Corporation in 1996 and now leads the Research Team that conducts CeRAM material and process development, including wafer processing and device physical and electrical characterization. Ms. Celinska has significant experience in semiconductor processing techniques, ultra-thin film layered heterostructures deposition, low temperature processing, material design, synthesis and characterization, device physics, engineering, integration and testing. Ms. Celinska is co-author of the book Emerging Non-Volatile Memories, has published 16 peer-reviewed articles and holds 18 patents. She has served on several technical and advisory committees and has spoken at numerous international conferences.

Hiromi Wada

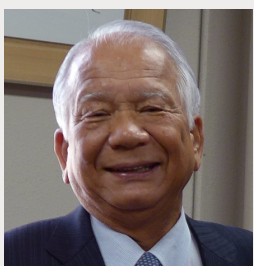
Professor Emeritus of Kyoto University, Clinic Director of Karasuma Wada Clinic, Emeritus member of Japan Surgical Society, Honorary chairman of the Japanese Association for Chest Surgery



Hiromi Wada obtained his M.D. and Ph.D. degrees from Kyoto University. After graduating from Kyoto University, he worked as a surgical lecturer and an assistant professor at the Chest Disease Research Institute of Kyoto University. He became a professor in the Department of Thoracic Surgery, Faculty of Medicine, Kyoto University Hospital in 1999. Emeritus Professor of Kyoto University since 2007. Currently, he is a clinic director of Karasuma Wada Clinic, also a representative director of WIKOM Research Institute Co., president of Japan Multinational Clinical Organization (JMTO) and ACCP Regent Representative of the Japanese Branch of the American College of Chest Disease.

Gota Kano

Director of Symetrix Corporation, Former Visiting Professor of Kyoto Institute of Technology, Member of Panasonic Fellow Association



Since he received B.S (1961) and Ph.D. (1970) from Osaka University, his major works were served at Panasonic Corporation where he became a Member of Board of MEC, Managing Director in charge of the Electronics Research Laboratory. Afterwards, he experienced Professors at several universities in Japan as well as in the US and China, and Consultants at several Companies and Institutions in Japan and in the US.

He is a Professor Emeritus of Kochi University of Technology and a Life Fellow of IEEE.