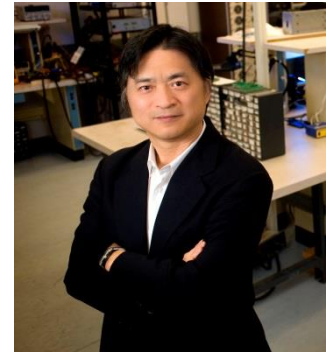


Jih-Sheng (Jason) Lai, Ph.D.

James S. Tucker Chair Professor, Virginia Polytechnic Institute and State University, USA

International Chair Professor, National Taipei University of Technology, Taiwan

Visiting Professorship, Nanyang Technological University, Singapore



Brief Bio

Jih-Sheng (Jason) Lai graduated from National Taiwan Normal University and received M.S. and Ph.D. degrees in electrical engineering from the University of Tennessee, Knoxville, in 1985 and 1989, respectively. In 1989, he joined the Electric Power Research Institute (EPRI), where he managed EPRI-sponsored power electronics research projects. From 1993, he worked with the Oak Ridge National Laboratory as the Power Electronics Lead Scientist, where he initiated a high power electronics program and developed several novel high power converters including multilevel converters and auxiliary resonant snubber based soft-switching inverters. He joined Virginia Tech in 1996. Currently he is James. S. Tucker Endowed Chair Professor and the Director of Future Energy Electronics Center (FEEC). He has published more than 400 refereed technical papers and 2 books. He holds 25 U.S. patents in the area of high power electronics and their applications. He received several distinctive awards including Technical Achievement Award in Lockheed Martin Award Night and 11 Best Paper Awards from IEEE conferences and journals. His student teams won the First Prize Award in Texas Instruments Analog Design Competition in 2011, the Grand Prize Award from International Future Energy Challenge in 2013, and the Top Three Award from the Google Little Box Challenge in 2016.

Dr. Lai is an IEEE Fellow and the recipient of 2016 IEEE Industry Applications Society Gerald Kliman Innovation Award. He is the Founding Chairs of Asian Conference on Energy, Power and Transportation Electrification (ACEPT-2016) and IEEE Future Energy Challenge (IFEC-2001), General Chairs of IEEE Workshop on Computers in Power Electronics (COMPEL 2000) and IEEE Applied Power Electronics Conference (APEC 2005). Currently he serves as the Publications Chair for IEEE Transportation Electrification Community, Editor for IEEE Journal of Emerging and Selected Topics in Power Electronics, and Academic Editor for Energies – an MDPI Journal.

榮譽及勳獎(Honor and Awards)

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| 2016 | IEEE IAS Gerald Kliman Innovation Award, Milwaukee, WI |
| 2016 | Third Place Winner, Google Little Box Challenge, out of 2000 teams, Washington, DC |
| 2016 | Best Paper Award from IEEE ACEPT Conference, Singapore |
| 2015 | Second Prize Transactions Paper Award, IEEE Trans. on Power Electronics, Montreal, Canada. |
| 2014 | First Prize Paper Award, IEEE Industrial Electronics Conference, Dallas, TX. |
| 2013 | First Prize Paper Award, IEEE IAS Transportation Systems Committee, Denver, CO. |
| 2011 | Journal Prize Paper Award, Journal of Power Electronics, Seoul, Korea. |
| 2011 | Grand Prize Award, IEEE International Future Energy Challenge, Dearborn, MI. |
| 2010 | Virginia Tech Dean's Award on Research Excellence, Blacksburg, VA. |
| 2009 | First Place Award, TI Engibous Prize Analog Design Competition, Dallas, TX. |
| 2007 | Best Paper Award, IEEE IAS Industrial Automation and Control Committee, New Orleans, LA. |
| 2007 | Best Paper Award, Power Conversion Conference, Nagoya, Japan, April 2007. |
| 2005 | First Prize Paper Award, International Power Electronics Conference, Niigata, Japan. |
| 2004 | Prize Poster Paper Award, Fuel Cell Seminar, San Antonio, TX. 2003 Best Paper Presentation Award, IEEE Industrial Electronics Conference, Roanoke, VA. |
| 2003 | Best Presentation Award, International Future Energy Challenge, Morgantown, WV. |
| 2001 | Best Performance Award, DOE Future Energy Challenge Inverter Competition, Morgantown, WV |
| 2000 | Best Paper Award, International Power Electronics Conference, Tokyo, Japan |
| 1997 | Best Paper Award, IEEE IAS Industrial Electronics Annual Conference, New Orleans, LA. |
| 1996 | First Prize Paper Award, IEEE IAS Industrial Power Converter Committee, San Diego, CA. |
| 1995 | Second Prize Paper Award, IEEE IAS Industrial Power Converter Committee, Orlando, FL. |
| 1995 | Lockheed Martin Energy Systems Awards Night for Technical Achievement and Leadership in Power Electronics. |

22nd National Conference on Vehicle Engineering (車輛工程研討會)

Title: Wide Bandgap Power Electronics Impact to Vehicular Technologies

Abstract:

With fast development of wide bandgap (WBG) semiconductor devices and their promise on superior conducting and switching features that allow ultrahigh-efficiency power electronics design. The impact with WBG devices is not just in electric vehicles (EVs), but also in the conventional vehicles. The most obvious non-EV application is the bidirectional charger for 12-V and 48-V power conversion. Vehicular LED lighting can be driven by WBG devices with high efficiency power conversion and highly regulated current. Another energy efficiency improvement type application is synchronous rectification for the alternator output rectifier or the use of thermal electric generator to replace the alternator. For traction motor drive and starter/alternator applications, WBG devices allows ultrahigh switching frequency that minimize the current ripple and related losses while maintaining high efficiency to reduce or eliminate the cooling requirement. Overall, the major impacts to vehicular technologies with WBG power electronics are energy efficiency, size reduction, and cooling system reduction that lead to cost reduction.