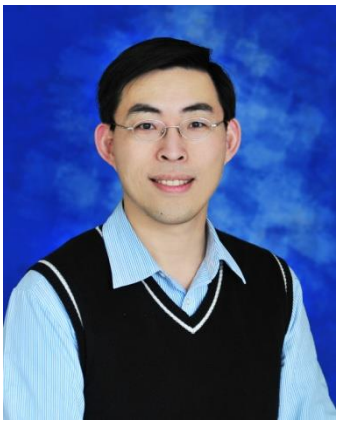
Curriculum Vitae

PERSONAL PROFILE



Name: Kea-Tiong (Samuel) Tang
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Address: Department of Electrical Engineering
National Tsing Hua University
No. 101, Sec. 2, Kuang-Fu Road, Hsinchu, 30013, Taiwan
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Dr. Kea-Tiong (Samuel) Tang received the B.S. degree in electrical engineering from National Taiwan University, Taipei, Taiwan in 1996, and received the M.S. and Ph.D. degrees in electrical engineering from California Institute of Technology, Pasadena, CA, USA, in 1998 and 2001, respectively.

During 2001–-2006, Dr. Tang was a Senior Electrical Engineer with Second Sight Medical Products, Inc., Sylmar, CA, USA. He designed mixed signal ASIC for the Argus® II Retinal Prosthesis System, which became the first FDA approved device for retinal prosthesis. Since 2006, he joined the Electrical Engineering Faculty at National Tsing Hua University, Hsinchu, Taiwan, and is currently a full Professor. His research interests include **bio-inspired learning chip**, **miniature electronic system**, **and biomedical implantable prosthetic device**. He has actively collaborated with researchers in Nanoengineering and Microsystems, Chemistry, Computer Science, Electrical Engineering, Life Science, and Medical doctors, and has published more than 140 peer-reviewed journal and conference papers in these research areas. He has led the largest electronic nose team in Taiwan to develop a system that can early detect and rapid diagnose ventilator-associated pneumonia. In 2017, Dr. Tang's team has joined the Dynamical Biomarkers Group to win for 2nd place of the $10 million Qualcomm Tricorder XPRIZE, the global competition to revolutionize digital healthcare.

Dr. Tang is a senior member of IEEE. He is member of IEEE solid state circuit society (SSCS), circuits and systems society (CAS), electron device society (EDS), and Engineering in medicine and biology society (EMBS). He is also TC member of IEEE Biomedical and Life Science Circuits Systems Technical Committee (BioCAS), currently serves as TC Chair. He is an Associate Editor for IEEE Transactions on Biomedical Circuits and Systems (TBioCAS) and Guest Editor for IEEE Journal on Emerging and Selected Topics in Circuits and Systems (JETCAS). He is TPC member of ISCAS, BioCAS, and IEDM. He was IEEE CAS Chapter Chair of Taipei Section (2017-2018). He is now Vice President of IEEE Taipei Section.

EDUCATION

- 1998.09~2001.06: Ph.D, Department of Electrical Engineering, California Institute of Technology, Pasadena, CA, USA.
- 1996.09~1998.06: M.S., Department of Electrical Engineering, California Institute of Technology, Pasadena, CA, USA.
- 1992.09~1996.06: B.S., Department of Electrical Engineering, National Taiwan University, Taipei, Taiwan.

WORK EXPERIENCES

- 2015.08~now: Professor, Department of Electrical Engineering, National Tsing Hua University, Hsinchu, Taiwan.
- 2017.05~now: Technical director, Division for Biomedical & Industrial IC Technology, Information and Communications Research Laboratories, Industrial Technology Research Institute, Zhudong, Taiwan.
- 2011.08~2015.07: Associate professor, Department of Electrical Engineering, National Tsing Hua University, Hsinchu, Taiwan.
- 2006.08~2011.07: Assistant professor, Department of Electrical Engineering, National Tsing Hua University, Hsinchu, Taiwan.
- 2006.04: Consultant, Second Sight Medical Products, Inc., Sylmar, CA, USA.
- 2010.01~2012.12: Consultant, Material and Chemical Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan.
- 2001.08~2006.04: Senior electrical engineer, Implant department, Second Sight Medical Products, Inc., Sylmar, CA, USA.
- 1997.02~2001.06: Research assistant, Microsystems lab, Department of Electrical Engineering, California Institute of Technology, Pasadena, CA, USA.

SPECIALTIES AND RESEARCH INTERESTS

- Biomedical and neuromorphic circuit and system
- Bio-inspired olfaction system
- Medical implant, brain-machine interface, and neural prosthesis
- Analog/Mixed signal VLSI

ACADEMIC SOCIETY SERVICES

- **Organizing Committee,** International Workshop on Neuromorphic Systems and Neural Prostheses, 2009
- **Program Committee Member,** International Congress on Computer Applications and Computational Science, 2010
- **Organizing Committee,** International Workshop on Bio-inspired Systems and Prosthetic Devices, 2010, 2012~2014

- **Technical Program Committee,** IEEE International Symposium on Circuits and Systems, 2011~2019, Live Demo Chair (2016)
- **Program Committee Member,** Symposium on Engineering, Medicine, and Biology Applications, 2011~2016
- **Publicity Co-Chair,** 5th IEEE/NIH Life Science Systems & Application Workshop (LiSSA'11), 2011
- **Program Committee Member, Session Chair,** 9th Asian Conference on Chemical Sensors (ACCS), 2011
- **Technical Program Committee,** IEEE TENCON, 2012
- **Technical Program Committee,** IEEE Biomedical Circuits and Systems Conference, 2012~2019, Publication Chair (2012), Live Demo Chair (2016, 2019), Tutorial Co-Chair (2018)
- **Special Session Co-Chair,** International Symposium on Bioelectronics and Bioinformatics, 2014
- **Track Chair,** IEEE Asia Pacific Conference on Circuits and Systems, Sensor System (2014), Analog Circuits (2016)
- **Program Committee**, IEEE International Conference on Cyber Technology in Automation, Control and Intelligent Systems, 2014
- **Technical Program Committee,** IEEE International Electron Devices Meeting, SMB Subcommittee, 2014~2015
- **Organizing Committee,** Asian-Pacific Summer School on Bio-inspired Systems and Prosthetic Devices, 2015
- **Technical Program Chair,** IEEE International Conference on Electron Devices and Solid-State Circuits (EDSSC), 2017.
- **Technical Program Committee,** International Symposium on VLSI Design, Automation and Test (VLSI-DAT), Subcommittee of Analog, Mixed Signal & RF Design, 2017~2020.
- **Technical Program Committee,** IEEE Life Sciences Conference (LSC), 2017, Tutorial co-Chair (2018).
- **Technical Program Committee,** IEEE NEWCAS 2018~2019.
- **General Vice Co-Chair,** Taiwan and Japan Conference on Circuits and Systems (TJCAS), 2018.
- **Local Arrangement Co-Chair (2019), Advisory Board (2020),** IEEE International Conference on Artificial Intelligence Circuits and Systems (AICAS).
- **Technical Program Committee,** the 18th International Symposium on Olfaction and Electronic Nose (ISOEN 2019).

AWARDS

- **Outstanding paper award,** Association of Chemical Sensors in Taiwan, 2010, 2012
- **Certificate of Merit,** National Science and Technology Program for System-on-Chip, 2011
- **Superior award,** the 11th Golden Silicon Award, 2011
- **Outstanding Young Scholar Award,** Taiwan Integrated Circuit Association, 2012

- **National Innovation Award,** 2012
- **Bronze Award,** the 13th Golden Silicon Award, 2013
- **Superior award,** the 14th Golden Silicon Award, 2014
- **Outstanding Young Scholar Project,** Ministry of Science and Technology, 2014-2017
- **Special Design Award,** National Chip Implementation Center, 2011, 2012, 2014
- **Best paper Award,** 2014 IEEE International Symposium on Bioelectronics and Bioinformatics (ISBB2014)
- **Outstanding Design Award,** National Chip Implementation Center, 2014
- **Wu Ta-You Memorial Award**, Ministry of Science and Technology, 2014
- **Outstanding Project Award,** National Program of Intelligent Electronics, Ministry of Science and Technology, 2014
- **National Innovation Award,** 2014
- **Superior award,** the 15th Golden Silicon Award, 2015
- **Taipei Biotech Awards,** Technology Transfer Silver Medal Award, 2015
- **Outstanding Project Award,** National Program of Intelligent Electronics, Ministry of Science and Technology, 2015
- **National Innovation Award,** 2015
- **Outstanding Project Award,** National Program of Intelligent Electronics, Ministry of Science and Technology, 2016
- **National Innovation Award,** 2016
- **Superior award,** the 17th Golden Silicon Award, 2017
- **Bronze Award,** the 18th Golden Silicon Award, 2018
- **Outstanding Electrical Engineering Professor Award,** the Chinese Institute of Electrical Engineering, 2018
- **Bronze Award,** the 19th Golden Silicon Award, 2019

AWARDS (STUDENT SUPERVISED)

- **Honorable mention,** The First International Contest of Application in Nano-micro Technology, Taiwan district, 2009
- **College Student Research Creative Award,** National Science Council, 2009
- **Honorable Mention,** Biomedical Engineering Symposium on Biosignal, Biosensor, Bioelectronics, and Bioengineering, 2009
- **Honorable Mention,** Special Topic Competition, Dept. of E.E., 2009
- **Superior Award,** Biomedical Engineering Symposium on Biosignal, Biosensor, Bioelectronics, and Bioengineering, 2010
- **2nd Prize,** Special Topic Competition, Dept. of E.E., 2010
- **1st Prize,** Special Topic Competition, Dept. of E.E., 2013

- **Student and Young Investigator Society (SYIS) award, first prize,** International Symposium on Olfaction and Electronic Nose (ISOEN), 2013
- **Honorable Mention, Master Thesis Award,** Taiwan Institute of Electrical and Electronic Engineering, 2013
- **Honorable Mention, PhD Thesis Award,** Taiwan Institute of Electrical and Electronic Engineering, 2014
- **Superior Award, Master Thesis Award,** Taiwan Engineering Medical Biology Association, 2014
- **1st Prize, PhD Thesis Award,** Taiwan Engineering Medical Biology Association, 2015
- **Honorable Mention, Master Thesis Award,** Taiwan Engineering Medical Biology Association, 2016
- **Best paper,** Ting-I Chou et al, *"A Low-power E-Nose Chip for Rapid Chronic Obstructive Pulmonary Disease Diagnosis"*, Symposium of Engineering, Medical, and Biology Applications (SEMBA), 2017.
- **Best paper,** Ting-I Chou et al, *"A 0.7 V Capacitance-to-Digital Converter for Interdigitated Electrode Capacitive Vapor Sensors"*, 2017 New Generation of Circuits and Systems (NGCAS) , 2017.
- **Best paper,** De-Ming Wong et al, *"Development of an Electronic Nose Based Breath Detection Method for Lung Cancer Identification"*, 4th IEEE International Conference on Applied System Innovation 2018. (IEEE ICASI 2018).
- **Best paper,** Chen-Yu Fang et al, *"A fast gas concentration estimation method based on metal-oxide-semiconductor gas sensors"*, 4th IEEE International Conference on Applied System Innovation 2018. (IEEE ICASI 2018).
- **Best paper,** Yi-Han Ou-Yang et al, "*A 0.65-V 10-bit 320kS/s SAR-DAC with Charge Averaging Switching Skip Algorithm*", the 14th Asia Pacific Conference on Circuits and Systems (APCCAS), 2018.
- **Honorable Mention, Master Thesis Award,** Taiwan Institute of Electrical and Electronic Engineering, 2018

JOURNAL EDITORIAL SERVICES

- **Associate Editor,** International Journal on Machine Intelligence and Sensory Signal Processing
- **Guest Editor,** Journal of Automated Methods and Management in Chemistry
- **Guest Editor,** IEEE Transaction on Biomedical Circuits and Systems (TBioCAS), Special Issue for ISCAS 2013.
- **Guest Editor,** IEEE Journal on Emerging and Selected Topics in Circuits and Systems (JETCAS), Special Issue, September 2014.
- **Associate Editor,** IEEE Transaction on Biomedical Circuits and Systems (TBioCAS), 2014~2019.

- **Review Editor,** Frontiers in Neural Technology.
- **Associate Editor,** Frontiers in Neuroscience, Neuromorphic Engineering.

JOURNAL PAPER REVIEWER

- IEEE Transaction on Biomedical Circuits and Systems
- IEEE Transaction on Circuits and Systems – I
- IEEE Transaction on Circuits and Systems – II
- IEEE Sensors Journals
- IEEE Transactions on Very Large Scale Integration Systems
- IEEE Transactions on Neural Networks and Learning Systems
- IEEE Internet of Things Journal
- IEEE Transactions on Systems, Man and Cybernetics: Systems
- Sensors
- IEICE Transaction on Electronics
- Journal of Medical and Biological Engineering
- The Scientific World Journal
- Micromachines
- Nanoscale

CONFERENCE PAPER REVIEWER

- IEEE Asia Pacific Conference on Circuits and Systems
- IEEE International Symposium on Circuits and Systems
- IEEE Biomedical Circuits and Systems Conference
- IEEE/NIH Life Science Systems & Application Workshop
- Symposium on VLSI Circuits
- International Symposium on Bioelectronics and Bioinformatics
- International Congress on Computer Applications and Computational Science
- Biomedical Engineering Symposium on Biosignal, Biosensor, Bioelectronic, and Bioengineering
- European Conference on Circuit Theory and Design
- IEEE International Conference on Cyber Technology in Automation, Control and Intelligent Systems
- IEEE International Conference on Electronics Circuits & Systems

ACADEMIC MEMBERSHIPS

Member of

- IEEE Solid-State Circuits Society (SSCS)
- IEEE Circuits and Systems Society (CASS)
- IEEE Engineering in Medicine and Biology Society (EMBS)

- IEEE Electron Device Society (EDS)

TC member of

- IEEE Life Science Systems and Applications (LiSSA)
- IEEE Biomedical Circuits and Systems Society (BioCAS)
  - Secretary, May 2014 ~ April 2016
  - Chair Elect, May 2016 ~ April 2018
  - Chair, May 2018 ~ April 2020
- IEEE Taipei CAS Chapter Chair, 2017 ~ 2018
- IEEE Taipei Section, Vice Chair, 2019 ~ 2020

PUBLICATIONS

BOOK CHAPTER

[B1] Y.P. Lin, **K.T. Tang***, H. Chen, "Closed-Loop Bidirectional Neuroprosthetic Systems", *Handbook of Biochips, Springer,* ISBN: 978-1-4614-6623-9 (Online), 2015.

[B2] Shih-Wen Chiu, Hsu-Chao Hao, Chia-Min Yang, Da-Jeng Yao, and **Kea-Tiong Tang***, "Handheld Gas Sensing System", Smart Sensor Systems*, Springer,* 2015*,* pp. 155-190.

[B3] Ting-I Chou, Shih-Wen Chiu, and **Kea-Tiong Tang***, "A CMOS compatible miniature gas sensing system ", Chemical, Gas, and Biosensors for Internet of Things and Related Applications*, Elsevier,* 2019, pp. 237-251.

JOURNAL

[J1] H.C. Hao, **K.T. Tang***, C.M. Yang, J.S. Chao, C.H. Li, P.S. Gu, D.J. Yao, "Development of a Portable Electronic Nose Based on Bio-Chemical Surface Acoustic Wave Array with Multiplexed Oscillator and Readout Electronics", *Sensors and Actuators B: Chemical,* 146 (2010) pp. 545-553. *(5-Year IF = 5.773, Ranking: 6/84 for Chemistry, Analytical, 4/26 for Electrochemistry, 2/61 for Instruments & Instrumentation, Citations: 49)*

[J2] L.C. Wang, **K.T. Tang***, C.T. Kuo, C.L. Ho, S.R. Lin, Yuh Sung, C.P. Chang, "Portable electronic nose system with chemiresistor sensors to detect and distinguish chemical warfare agents", *Journal of Micro/Nanolithography, MEMS, and MOEMS (JM3)* 9(3) 031010-1~031010-6 (July-Sep 2010). *(5-Year IF = 1.102, Ranking: 236/293 for Materials Science, Multidisciplinary, 72/95 for Optics, 200/265 for Engineering, Electrical & Electronic, 84/94 for NANOScience & NANOTechnology, Citations: 5)*

[J3] **Kea-Tiong Tang***, Shih-Wen Chiu, Chih-Heng Pan, Hung-Yi Hsieh, Yao-Sheng Liang, and Ssu-Chieh Liu, "**Development of a Portable Electronic Nose System for the Detection and Classification of Fruity Odors",** *Sensors,* 2010, *10(10)*, 9179-9193. *(5-Year IF = 3.302, Ranking: 23/84 for Chemistry, Analytical, 12/26 for Electrochemistry, 15/61 for Instruments & Instrumentation, Citations: 75)*

[J4] **Kea-Tiong Tang***, Yi-Shan Lin, Jyuo-Min Shyu, "A Local Weighted Nearest Neighbor Algorithm and a Weighted and Constrained Least-Squared Method for Mixed Odor Analysis by Electronic Nose Systems**",** *Sensors,* 2010, *10*(*11),* 10467-10483. *(5-Year IF = 3.302, Ranking: 23/84 for Chemistry, Analytical, 12/26 for Electrochemistry, 15/61 for Instruments & Instrumentation, Citations: 8)*

[J5] **Kea-Tiong Tang***, Shih-Wen Chiu, Meng-Fan Chang, Chih-Cheng Hsieh, *and* Juyo-Min Shyu, "A Low-Power Electronic Nose Signal Processing Chip for a Portable Artificial Olfaction System", *IEEE Transaction on Biomedical Circuits and Systems*, 2011, Vol. 5(4), pp. 380-390. *(5-Year IF = 4.233, Ranking: 13/80 for Engineering, Biomedical, 50/265 for Engineering, Electrical & Electronic, Citations: 43)*

[J6] L.C. Wang, **K.T. Tang***, S.W. Chiu, S.R. Young, C.T. Kuo, "A Bio-inspired Two-Step Multiple-walled Carbon Nanotubes-Polymer Composite Sensor Array and a Bio-inspired Fast-adaptive Readout Circuit for a Portable Electronic Nose", *Biosensors and Bioelectronics*, 26 (2011), pp.4301-4307. *(5-Year IF = 8.037, Ranking: 4/72 for Biophysics, 7/162 for Biotechnology & Applied Microbiology, 1/84 for Chemistry, 2/26 for Electrochemistry, 12/94 for NANOScience & NANOTechnology, Citations: 12)*

[J7] **Kea-Tiong Tang***, Cheng-Han Li, and Shih-Wen Chiu, "An Electronic-Nose Sensor Node Based on a Polymer-Coated Surface Acoustic Wave Array for Wireless Sensor Network Applications", *Sensors,* 2011, *11,* 4609-4621. *(5-Year IF = 3.302, Ranking: 23/84 for Chemistry, Analytical, 12/26 for Electrochemistry, 15/61 for Instruments & Instrumentation, Citations: 19)*

[J8] Chin-Kai Chang *, Hui-Lung Kuo, **Kea-Tiong Tang**, and Shih-Wen Chiu, "Optical detection of organic vapors using cholesteric liquid crystals" *Applied Physics Letter,* 99, 073504 (2011). *(5-Year IF = 3.352, Ranking: 31/148, Citations: 24)*

[J9] Li-Chun Wang, **Kea-Tiong Tang***, I-Ju Teng, Cheng-Tzu Kuo, Cheng-Long Ho, Han-Wen Kuo, Tseng-Hsiung Su, Shen-Ren Yang, Gia-Nan Shi, Chang-Ping Chang, "A single-walled carbon nanotube network gas sensing device", *Sensors*, 2011, *11,* 7763-7772. *(5-Year IF = 3.302, Ranking: 23/84 for Chemistry, Analytical, 12/26 for Electrochemistry, 15/61 for Instruments & Instrumentation, Citations: 32)*

[J10] Sudhir Kumar Pandey, Ki-Hyun Kim*, and **Kea-Tiong Tang**, "A review of sensor-based methods for monitoring hydrogen sulfide", *Trends in Analytical Chemistry*, Vol. 32, pp. 87-99, 2012. *(5-Year IF = 8.742, Ranking: 3/84, Citations: 194)*

[J11] Chin-Kai Chang *, Shih-Wen Chiu, Hui-Lung Kuo, and **Kea-Tiong Tang**, "Cholesteric liquid crystal-carbon nanotube hybrid architectures for gas detection" *Applied Physics Letter,* 100, 043501 (2012). *(5-Year IF = 3.352, Ranking: 31/148, Citations: 24)*

[J12] Hung-Yi Hsieh and **Kea-Tiong Tang***, "VLSI implementation of a bio-inspired olfactory spiking neural network", *IEEE Transactions on Neural Networks and Learning Systems,* vol.23 (7). 2012, pp. 1065-1073. *(5-Year IF = 10.445, Ranking: 2/133 for Computer Science, Artificial Intelligence, 1/52 for Computer Science, Hardware & Architecture, 1/104 for Computer Science,*

Theory & Methods, 3/265 for Engineering, Electrical & Electronic, Citations: 35)

[J13] Ku, Pei-Hsin; Hsiao, Chen-Yun; Chen, Mei-Jing; Lin, Tai-Hsuan; Li, Yi-Tian; Liu, Szu-Chieh; **Tang, Kea-Tiong**; Yao, Da-Jeng; Yang, Chia-Min, "Polymer/Ordered Mesoporous Carbon Nanocomposite Platelets as Superior Sensing Materials for Gas Detection with Surface Acoustic Wave Devices", *Langmuir*, vol. 28, no. 31, pp. 11639-11645, 2012. *(5-Year IF = 3.888, Ranking: 56/172 for Chemistry, Multidisciplinary, 53/148 for Chemistry, Physical, 76/293 for Materials Science, Multidisciplinary, Citations: 22)*

[J14] Chih-Heng Pan, Hung-Yi Hsieh, and **Kea-Tiong Tang***, "An Analog Multilayer Perceptron Neural Network for a Portable Electronic Nose", *Sensors*, 2013, *13,* 193-207. *(5-Year IF = 3.302, Ranking: 23/84 for Chemistry, Analytical, 12/26 for Electrochemistry, 15/61 for Instruments & Instrumentation, Citations: 14)*

[J15] Hung-Yi Hsieh and **Kea-Tiong Tang***, "A Hardware Friendly Probabilistic Spiking Neural Network with Long-term and Short-term Plasticity", *IEEE Transactions on Neural Networks and Learning Systems,* vol. 24, no. 12, pp. 2063-2074, 2013. *(5-Year IF = 10.445, Ranking: 2/133 for Computer Science, Artificial Intelligence, 1/52 for Computer Science, Hardware & Architecture, 1/104 for Computer Science, Theory & Methods, 3/265 for Engineering, Electrical & Electronic, Citations: 15)*

[J16] Shih-Wen Chiu, **Kea-Tiong Tang***, "Towards a Chemiresistive Sensors Integrated Electronic Nose: a Review", *Sensors*, 2013, *13 (10),* 14214-14247. *(5-Year IF = 3.302, Ranking: 23/84 for Chemistry, Analytical, 12/26 for Electrochemistry, 15/61 for Instruments & Instrumentation, Citations: 87)*

[J17] Shih-Wen Chiu, Hsiang-Chiu Wu, Ting-I Chou, Hsin Chen, and **Kea-Tiong Tang***, "A Miniature Electronic Nose System Based on a MWNT-Polymer Microsensor Array and a Low-Power Signal Processing Chip", *Analytical & Bioanalytical Chemistry*, pp. 1-10, 2014/01/03, 2014. *(5-Year IF = 3.217, Ranking: 21/79 for Biochemical Research Methods, 18/84 for Chemistry, Analytical, Citations: 5)*

[J18] [#]Shih-Wen Chiu, [#]Jen-Huo Wang, [#]Kwuang-Han Chang, [#]Ting-Hau Chang, [#]Chia-Min Wang, [#]Chia-Lin Chang, Chen-Ting Tang, Chien-Fu Chen, Chung-Hung Shih, Han-Wen Kuo, Li-Chun Wang, Hsin Chen, *Member, IEEE*, Chih-Cheng Hsieh, Meng-Fan Chang, Yi-Wen Liu, Tsan-Jieh Chen, Chia-Hsiang Yang, Herming Chiueh, Juyo-Min Shyu, and **Kea-Tiong Tang***, "A Fully Integrated Nose-on-a-Chip for Rapid Diagnosis of Ventilator-Associated Pneumonia", *IEEE Transaction on Biomedical Circuits and Systems*, vol. 8(6), pp. 765-778, 2014. *(5-Year IF = 4.233, Ranking: 13/80 for Engineering, Biomedical, 50/265 for Engineering, Electrical & Electronic, Citations: 11)*

[J19] Yu-Po Lin, Hung-Chih Chiu, Ping-Yang Huang, Zong-Ye Wang, Hsiang-Hui Cheng, Yi-Ting Lee, Ji-Fen Chuang, Po-Chiun Huang, **Kea-Tiong Tang***, His-Pin Ma, Yen-Chung Chang, Shih-Rung Yeh, and Hsin Chen*, "A Battery-less, Implantable Neuro-electronic Interface for Studying the Mechanisms of Deep Brain Stimulation in Rat Models", *IEEE Transaction on Biomedical*

Circuits and Systems, vol. 10(1), pp. 98-112, 2016. *(5-Year IF = 4.233, Ranking: 13/80 for Engineering, Biomedical, 50/265 for Engineering, Electrical & Electronic, Citations: 39)*

[J20] L.C. Wang, T. H. Su, C. L. Ho, H. W. Kuo, S.R. Yang, **K.T. Tang***, "A bio-inspired two-layer sensing structure of polypeptide artificial olfactory mucosa and multiple-walled carbon nanotube to sense small molecular gases", *Sensors,* 15(3), pp. 5390-5401, 2015. *(5-Year IF = 3.302, Ranking: 23/84 for Chemistry, Analytical, 12/26 for Electrochemistry, 15/61 for Instruments & Instrumentation, Citations: 3)*

[J21] Yu-Po Lin and **Kea-Tiong Tang***, "An Inductive Power and Data Telemetry Subsystem With Fast Transient Low Dropout Regulator for Biomedical Implants", *IEEE Transaction on Biomedical Circuits and Systems*, vol. 10(2), pp. 435-444, 2015. *(5-Year IF = 4.233, Ranking: 13/80 for Engineering, Biomedical, 50/265 for Engineering, Electrical & Electronic, Citations: 10)*

[J22] Kuan-Ting Lin, Yu-Wei Cheng and **Kea-Tiong Tang***, "A 0.5V 1.28MS/s 4.68fJ/conversion-step SAR ADC with Energy-Efficient DAC and Tri-Level Switching Scheme", *IEEE Transactions on Very Large Scale Integration Systems*, vol. 24(4), pp. 1441-1449, 2015. *(5-Year IF = 1.946, Ranking: 146/265 for Engineering, Electrical & Electronic, 26/52 for Computer Science, Hardware & Architecture, Citations: 5)*

[J23] Chi-Yung Cheng, Shih-Shen Huang, Chia-Min Yang, **Kea-Tiong Tang**, and Da-Jeng Yao "Detection of third-hand smoke on clothing fibers with a surface acoustic wave gas sensor", *Biomicrofluidics*, 10, 011907, 2016. *(5-Year IF = 3.011, Ranking: 52/94 for NANOScience & NANOTechnology, 11/32 for Physics, Fluids & Plasmas, 36/79 for Biochemical Research Methods, 36/72 for Biophysics, Citations: 10)*

[J24] Wentian Mi, Shih-Wen Chiu, Tao Xue, Yuanquan Chen, Hanyu Qi, Yi Yang, **Kea-Tiong Tang**, and Tian-Ling Ren, "Highly Sensitive and Portable Gas Sensing System Based on Reduced Graphene Oxide", *Tsing Hua Science and Technology*, vol. 21(4), pp.435-441, 2016. *(5-Year IF = 1.670, Ranking: 159/265 for Engineering, Electrical & Electronic, 100/155 for Computer Science, Information Systems, 48/107 for Computer Science, Software Engineering, Citations: 1)*

[J25] Wu C-C, Liu S-C, Chiu S-W, **Tang K-T***. A Low Noise CMOS Readout Based on a Polymer-Coated SAW Array for Miniature Electronic Nose. *Sensors*. 2016; 16(11):1777. *(5-Year IF = 3.302, Ranking: 23/84 for Chemistry, Analytical, 12/26 for Electrochemistry, 15/61 for Instruments & Instrumentation, Citations: 1)*

[J26] Ting-I Chou, Kwuang-Han Chang, Jia-Yin Jhang, Shih-Wen Chiu, Guoxing Wang, Chia-Hsiang Yang, Herming Chiueh, Hsin Chen, Chih-Cheng Hsieh, Meng-Fan Chang, **Kea-Tiong Tang***, "A 1V 2.6mW Environmental Compensated Fully Integrated Nose-on-a-Chip", *IEEE Transactions on Circuits and Systems II: Express Briefs* (*TCAS-II*), vol. 65 (10), pp.1365-1369, 2018. (*5-Year IF = 2.924, Ranking: 80/265, Citations: 0)*.

[J27] Li-Ying Chen, Cheng-Chun Wu, Ting-I Chou, Shih-Wen Chiu, and **Kea-Tiong Tang***, "Development of a Dual MOS Electronic Nose/Camera System for Improving Fruit Ripeness

Classification". *Sensors*, 2018; 18(10): 3526. *(5-Year IF = 3.302, Ranking: 23/84 for Chemistry, Analytical, 12/26 for Electrochemistry, 15/61 for Instruments & Instrumentation, Citations: 4)*

[J28] Yi-Han Ou-Yang and **Kea-Tiong Tang***, "An Energy-Efficient SAR ADC with Event-Triggered Error Correction", *IEEE Transactions on Circuits and Systems II: Express Briefs* (*TCAS-II*), vol.66 (5), pp.723-727, 2019. (*5-Year IF = 2.924, Ranking: 80/265, Citations: 0)*

[J29] Chi-Yung Cheng, Shih-Shien Huang, Chia-Min Yang, **Kea-Tiong Tang**, Da-Jeng Yao, "Detection of Cigarette Smoke Using a Surface-acoustic-wave Gas Sensor with Non-polymer-based Oxidized Hollow Mesoporous Carbon Nanospheres", *Micromachines*, vol.10 (4), p.276, 2019. (*5-Year IF = 2.480, Ranking: 55/94 for NANOScience & NANOTechnology, 25/61 for Instruments & Instrumentation, Citations: 0)*

[J30] Wei-Hao Chen, Chunmeng Dou , Kai-Xiang Li , Wei-Yu Lin , Pin-Yi Li , Jian-Hao Huang , JingHong Wang , Wei-Chen Wei , Ya-Chin King , Chorng-Jung Lin , Ren-Shuo Liu , Chih-Cheng Hsieh , **Kea-Tiong Tang** , J. Joshua Yang , Mon-Shu Ho , Meng-Fan Chang, "Fully CMOS-integrated Memristive 1Mb Nonvolatile Computing-in-Memory Macro for AI Edge Processors", *Nature Electronics, accepted*.

[J31] C.-C. Wu, S.-W. Chiu, **K.-T. Tang***, " An Electronic Nose System for Rapid Detection of Ketamine Smoke ", *IEEE Sensors Letters*, vol. 3 (8), pp.1-4.

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RESEARCH GRANTS

The funding sources of our team include National Science Council (NSC), Ministry of Science and Technology (MOST), Chung-Shan Institute of Science and Technology (CSIST), Industrial Technology Research Institute (ITRI), Mediatek Inc., etc.

PRINCIPLE INVESTIGATOR

- Key Technology of Recognition and Object Tracking for Edge Devices (107-2218-E-007-031, 2018/05/01~2019/04/30, $9,926,000), MOST, in execution.
- Low-power Low-latency Neuromorphic Artificial Intelligence Inference Chip (2018/01/01~2018/12/31, $2,000,000), ITRI, in execution.
- A wearable smart electronic nose integrated with microfluidics for long-term monitoring of COPD patients (106-2221-E-007-119, 2017/08/01~2018/07/31, $1,313,000), MOST, closed.
- A Portable Ketamine Gas Detection Instrument (105-3011-F-007-007-003, 2016/08/01~2017/07/31, $2,078,000), MOST, closed.
- A Probabilistic Spiking Neural Network Chip for Low-Power Learning Applications (103-2221-E-007-135-MY3, 2014/08/01~2017/07/31, $4,783,000), MOST, closed.
- Early Detection and Long-term Monitoring of COPD Patients with a Handheld Electronic Nose System ─ Main project and subproject 2: Research and Development of Highly Sensitive Integrated Gas Sensors and Low-Voltage Temperature and Humidity Sensors (103-2220-E-007-023, 2014/05/01~2015/04/30, $3,008,000), (104-2220-E-007-008, 2015/05/01~2016/07/31, $3,038,000), MOST, closed.
- Biomimetic Circuitry and Inductive Power Managements for Sub-Retinal Prosthesis (103-2622-E-007-015-CC2, 2014/02/01~2015/01/31, $1,239,000), MOST, closed.
- Early prediction and real-time detection of the microorganisms of pneumonia in ventilated-patients by an electronc nose SoC – Main project and subproject 2: Development of CMOS-compatible gas sensors and a low-power adaptive interface (100-2220-E-007-007, 2011/05/01~2012/04/30, $2,908,000) ((101-2220-E-007-006, 2012/05/01~2013/04/30, $2,824,000) (102-2220-E-007-006, 2013/05/01~2014/07/31, $3,423,000), MOST, closed.
- Next Generation Intelligent ICU – subproject 2: Analog Front End of the Biomedical Sensing System for the Next Generation Intelligent ICU (100-2220-E-007-011, 2011/05/01~2012/04/30, $758,000) (101-2220-E-007-010, 2012/05/01~2013/04/30, $686,000) (102-2220-E-007-010, 2013/05/01~2014/10/31, $638,000), MOST, closed.
- Research on Ion Mobile Spectrum Techniques (2013/01/13~2013/11/30, $690,000), CSIST, closed.
- Gas Analysis for Ion Mobile Spectrum (101-2623-E-007-011-D, 2012/01/01~2012/12/31,

$675,000), MOST, closed.

- Development of gas absorption recognition chip (BD96017P, 2007/02/01~2007/11/30, $480,000) (BD97010P, 2008/02/01~2008/11/30, $489,000) (CSIST-808-V110(98), 2009/01/07~2009/12/31, $700,000) (CSIST-808-V207(99), 2010/01/15~2010/12/31, $700,000) (CSIST-808-V207(100), 2011/1/13~2011/12/31, $700,000), CSIST, closed.
- Research on Sensor Development and Integration and Its Interface Circuit in an Electronic Nose SoC (I) (99-2221-E-007-121, 2010/08/01~2011/07/31, $433,000), NSC, closed.
- An electronic nose SoC that can detect fish spoilage (96-2220-E-007-051, 2007/11/01~2009/02/28, $5,113,000) (97-2220-E-007-036, 2008/11/01~2010/01/31, $5,155,000) (98-2220-E-007-017, 2009/11/01~2010/12/31, $5,144,000), NSC, closed.
- Analog Computation in VLSI for an Electronic Nose Chip (95-2218-E-007-114, 2006/11/01~2007/07/31, $499,000), NSC, closed.

CO- PRINCIPLE INVESTIGATOR

- Wearable application for life-assist environment sensing (103-2218-E-007-016, 2014/09/01~2015/07/31, $5,138,000), (104-3115-E-007-002, 2015/08/01~2016/07/31, $5,257,000), (105-2218-E-007-006, 2016/08/01~2017/07/31, $5,487,000), MOST, closed.
- Early Detection and Long-term Monitoring of COPD Patients with a Handheld Electronic Nose System－subproject 3: Realization of the low-voltage low-power scalable electronic nose chip (103-2220-E-007-024, 2014/05/01~2015/04/30, $802,000), (104-2220-E-007-009, 2015/05/01~2016/04/30, $892,000),MOST, closed.
- Early prediction and real-time detection of the microorganisms of pneumonia in ventilated-patients by an electronc nose SoC －subproject 1: Study the bacteria species of pneumonia and early detect the pathogen from expired gas by electronic nose (100-2220-E-038-001, 2011/05/01~2012/04/30, $519,000) (101-2220-E-038-001-, 2012/05/01~2013/04/30, $619,000) (102-2220-E-038-001, 2013/05/01~2014/07/31, $749,000), MOST, closed.
- Next Generation Intelligent ICU – Main project and subproject 4: a low-power multi-core biomedical signal processing SoC platform for the next generation intelligent ICU (100-2220-E-009-052, 2011/05/01~2012/04/30, $2,481,000) (101-2220-E-009-049, 2012/05/01~2013/04/30, $3,290,000) (102-2220-E-009-033, 2013/05/01~2014/10/31, $2,615,000), MOST, closed.
- Innovation Technology to Characterize Balance Loss in Ecological Settings of Daily Life: Application to Parkinson's Disease - SubProject 2 (102-2923-B-007-001-MY3, 2013/01/01~2015/12/31, $4,200,000), MOST, in execution.
- Air quality monitor, analysis, and control system development for the polluted environment (98-2218-E-007-019, 2009/11/01~2010/10/31, $2,078,000) (99-2218-E-007-007, 2010/11/01~2011/10/31, $2,111,000) (100-2218-E-007-004, 2011/11/01~2012/10/31, $2,111,000), MOST, closed.
- NTHU-Mediatek embedded system technique research and personal training

(2008/08/01~2009/07/31, $12,000,000) (2009/08/01~2010/07/31, $12,000,000), Mediatek, closed.

- A SAW type of detection chip to sense amine vapors (97-EPA-M-007-001, 2008/02/01~2008/12/31, $1,550,000), NSC, closed.