August 2024

Chong H. Ahn, *Professor*

Distinguished University Research Professor

M. P. Kartalia Chair Professor of BioMEMS

Department of Electrical and Computer Engineering
College of Engineering and Applied Science
University of Cincinnati
www.BioMEMS.uc.edu

EDUCATION

Georgia Institute of Technology, GA, USA	Electrical and Computer Eng.	Ph.D., 1993
Seoul National University, Seoul, South Korea	Electrical Engineering	M.S., 1983
Inha University, South Korea	Electrical Engineering	B.S., 1980

PROFESSIONAL EXPERIENCE:

April 2019 – Present:	Distinguished University Research Professor, awarded and named at University of Cincinnati.
May 2010 – Present:	M.P. Kartalia Endowed Chair Professor of Biomedical Microelectromechanical Systems (BioMEMS).
Nov. 2002 – Present:	Professor, Department of Biomedical Engineering (Secondary), University of Cincinnati.
Sept. 2001 - Present:	Professor, Director, Microsystems and BioMEMS Lab, Department of Electrical and Computer Science, University of Cincinnati, Cincinnati, Ohio.
May 2016 - May 2021:	Director, Engineering Research Center (ERC) Clean Room, and Ohio Center for Microfluidic Innovation (OCMI) at UC.
Sept.1998 - Aug. 2001:	Associate Professor, Department of Electrical Engineering and Computer Science. University of Cincinnati, Ohio.
Oct. 1994 - Aug. 1998:	Assistant Professor, Department of Electrical Engineering and Computer Science. University of Cincinnati, Cincinnati, Ohio.
June. 1993 - Oct. 1994:	Post-Doctoral Associate (Advisor: Dr. Luby Romankiw, IBM Fellow), Center for Electrochemical Technology and Microfabrication (CETAM), IBM T. J. Watson Research Center, New York/ Post Doctoral Associate (Advisor: Prof. Mark G. Allen), Georgia Institute of Technology, Atlanta, GA.

AWARDS AND HONORS:

- Alice Hamilton Award 2020 from CDC- NIOSH for Excellence in Occupation Safety and Health Research (2020)
- Distinguished Research Professor, University of Cincinnati (2019)
- Research Award, College of Engineering and Applied Science (CEAS), University of Cincinnati (2018)
- Fellow, The Graduate School, University of Cincinnati (2018 -)
- Distinguished University Research Faculty Award, CEAS, University of Cincinnati (2017)
- Established Entrepreneurial Achievement Award, University of Cicninnati (2011)
- Emerging Entrepreneurial Achievement Award, University of Cicninnati (2009)
- The Best Journal Paper Award of The IEEE Sensors Journal (2009)
- Distinguished Engineering Faculty Award, College of Engineeing, University of Cincinnati (2006)
- Fellow, The Institute of Physics (2004 -)
- NASA Group Achievement Award, NASA, Glenn Microsystems Initiative Technical Team, UC (2004)
- Scientific Leadership Award, 4th Annual BioMEMS and Biomedical Nanotechnology WORLD (2003)
- Honor Roll Professor, College of Engineering Tribunal, University of Cincinnati (2000)
- Research Award, College of Engineering (CoE), University of Cincinnati (1998)

RESEARCH CONTRIBUTIONS and COMMERCIALIZATION (Self-Advocacy Statement)

Contribution and Recognition from His Education and Research Activities:

Dr. Ahn is now Distinguished University Research Professor and Mitchell P. Kartalia Endowed Chair Professor of

Engineering in the Department of Electrical Engineering and Computer Science at the University of Cincinnati. He is currently Director of the Engineering Research Center (ERC) Clean Room and the Ohio Center for Microfluidic Innovation (OCMI, funded from the Ohio 3rd Frontier Wright Projects Program) at the University of Cincinnati. Since joining the University of Cincinnati in 1994, he has successfully initiated and established an excellent Microfluidics and BioMEMS program (www.biomems.uc.edu) at the University of Cincinnati. He is well recognized internationally as one of the pioneers in the BioMEMS, microfluidics, lab-on-a-chip (LOC) and point-of-care testing (POCT). His research achievements from the BioMEMS and Microfluidic program at the University of Cincinnati has profoundly impacted over the advanced research and education in these areas. He is currently a Fellow at the Institute of Physics, and also a Fellow of the Graduate School of the University of Cincinnati. Over the years at the University of Cincinnati, he has brought more than $20.0 M of research grants from DARPA, NSF, NIH, CDC, DOD, NASA, JPL and State of Ohio as PI or Co-PI. He advised 26 PhD and 19 MS graduate students at the University of Cincinnati. His 12 former PhD students are currently tenured or tenure-track faculty at the Universities in US, Taiwan, and S. Korea, and his 14 former PhD students are now working in industries and national research institutes as a research scientist in US and S. Korea.

Research Impact

In specific, with the support of DARPA (MicroFlume Program) in 1997, his team had developed a new integrated microfluidic biochemical detection system for the analysis of bioterror agents [1]. The integrated system used a new on-chip magnetic bead-based sampling method. In addition, in 2000 with the support of DARPA (MicroFlip Program), for the first time his team had developed a new smart polymer lab-on-a-chip for the analysis of whole blood, which opened a new realm of disposable point-of-care testing (POCT) [2]. Furthermore, he had newly introduced and extensively explored Cyclic Olefin Copolymer (COC) as one of the most promising polymer materials for the polymer lab-on-a-chip. COC is now used in most industries and academia working on polymer lab-on-a-chip [3]. His research on the new polymer lab-on-a-chips [1-3] and the fundamentals of microfluidics [4] gave a high impact over the life science and diagnostic community which was thirst for new platforms of POCT [5] desired for the analysis of proteins or DNA molecules in small volume. He has published over ~142 journal papers and ~ 219 peer-reviewed conference proceeding papers, and chaired numerous international conferences and steering committees. In Google Scholar, he has around 16,450 citations and h-index of 62 as of April 2025. He was invited as a plenary or keynote speaker from the numerous prestigious international conferences such as uTAS, Eurosensors, APCOT, or IEEE IEDM. He is serving as one of the Scientific Advisory Board members of the Bill & Melinda Gates Foundation on microfluidics and point-of-care testing diagnostics since 2016.

[1]. Sthitodhi Ghosh, Kashish Aggarwal, Vinitha T.U., Thinh Nguyen, Jungyoup Han, and Chong H. Ahn, "A new microchannel capillary flow assay (MCFA) platform with lyophilized chemiluminescence reagents for a smartphone-based POCT detecting malaria," Nature, Microsystem and Nanoengineering (NPG) (2020) 6(5), 1-18, https://doi.org/10.1038/s41378-019-0108-8. (This paper was viewed over 8,014 and 7 citations as of September 2020)

[2]. V.T. Upaassana, S. Ghosh, A. Milleman, T.H. Nguyen, Chong H. Ahn, "Rapid Saliva Sampling and Microfluidic Capillary Flow Assay (MCFA) lab on a chip (LOC) for point-of-care testing (POCT) of Common Mental Disorders " Lab on a Chip (IF 6.8), 20, 1961-1974 (2020) DOI: 10.1039/d0lc00071j.

[3]. V. Thiyagarajan Upaassana, Sthitodhi Ghosh, Atreyee Chakraborty, M. Eileen Birch, Joseph Pius, Jungyoup Han, Bon Ki Ku, Chong H. Ahn, "Highly Sensitive Lab on a Chip (LOC) Immunoassay for Early Diagnosis of Respiratory Disease Caused by Respirable Crystalline Silica (RCS)", Analytical Chemistry (IF 6.35), 2019, 91, no. 10, 6652-6660 ("Alice Hamilton Award 2020" from CDC- NIOSH was awarded to this paper.)

[4]. Jin-Woo Choi, Kwang W. Oh, Jennifer H Thomas, William R Heineman, H Brian Halsall, Joseph H Nevin, Arthur J Helmicki, H Thurman Henderson, Chong H. Ahn "An integrated microfluidic biochemical detection system for protein analysis with magnetic bead-based sampling capabilities," Lab on a Chip 2 (1), 27-30, 2002. Cited by 404

[5]. Chong H. Ahn, Jin-Woo Choi, Gregory Beaucage, Joseph H Nevin, Jeong-Bong Lee, Aniruddha Puntambekar, Jae Y Lee, "Disposable smart lab on a chip for point-of-care clinical diagnostics,", Proceedings of the IEEE 92 (1), 154-173, 2004. Cited by 601

[6]. Aigars Piruska, Irena Nikcevic, Se Hwan Lee, Chong H Ahn, William R Heineman, Patrick A Limbach, Carl J Seliskar, "The autofluorescence of plastic materials and chips measured under laser irradiation,", Lab on a Chip 5 (12), 1348-1354, 2005. Cited by 316

[7]. Ching C Hong, Jin W Choi, and Chong H Ahn, "A novel in-plane passive microfluidic mixer with modified Tesla structures," Lab on a Chip 4 (2), 109-113, 2004. Cited by 362

[8]. W. Jung, J. Han, JW Choi, Chong H. Ahn, "Point-of-care testing (POCT) diagnostic systems using microfluidic lab-on-a-chip technologies," Microelectronic Engineering 132, 46-57, 2015. Cited by 165

Commercialization of His Research Work

He has 10 US patents and 1 JP patent issued, 5 US patents under examination, and 2 US provisional patent applications. He has licensed 3 US patents to industries such as Siloam Biosciences and Mico Biomed. Through the licensing of his inventions from the University of Cincinnati, he founded Siloam Biosciences Inc. (www.siloambio.com) in 2004, and the company was acquired by Mico Biomed in October 2018. Optimiser™ product, which was developed from Siloam Biosciences Inc., has been widely used in the industries for advanced immunoassays. The Optimiser™ products improves immunoassays through the power of microfluidics, dramatically improving immunoassay performance across a wide spectrum of measures. His efforts for the commercialization have led him to have the University's Emerging Entrepreneur Award (2009) and Established Entrepreneur Award (2011) from the University of Cincinnati. He has consulted many faculty/researchers and industries working on the commercialization of microfluidic devices and lab-on-a-chip toward *in vitro* diagnostics (IVD) products.

His key inventions and pioneering contributions includes *(a) a new concept of "Smart Polymer Lab-on-a-Chip" (U.S. Patent 7524464, 2009); (b) A new "Microfluidic Assay Platforms" (U.S. Patent 9919311 B2, 2018) for the point-of-care testing (POCT) clinical diagnostics, and (c) a new concept of "Lab-on-a-tube" (U.S. Patent 8628493, 2014) for the neurosurgical diagnostics of traumatic brain injury (TBI).*

Professional Community Service and Establishment of Research Centers

He has been serving as an Editor of *Nature - Microsystems and Nanoengineering (NPG), IEEE/ASME Journal of Microelectromechanical Systems (JMEMS) since 2006*, Editorial Boards of *Micro and Nano Systems Letters* and *Biochip Journal*, Editorial Advisory Board of the *Journal of Microfluidics and Nanofluidics*, and previously served as the Editorial Boards of *the Journal of Micromechanics and Microengineering (JMM), IEEE Sensors Journal, and Small*. He received the *Scientific Leadership Award at the 4th Annual BioMEMS and Biomedical Nanotechnology World* in 2003, NASA Achievement Award in 2004, and the Best Journal Paper Award of the *IEEE Sensors Journal* in 2009. He is now a Fellow at the Institute of Physics, and also a Fellow of the Graduate School of the University of Cincinnati.

Also, he is currently serving as Director of the Ohio Center for Microfluidic Innovation (OCMI), which is one of the advanced centers for the development of polymer lab-on-a-chips and immunoassay diagnostic products for the industries and universities in Ohio. His efforts and achievements for BioMEMS and microfluidics have greatly contributed the sequential establishments of the ERC cleanroom (which invested around $15.0 M as the Founding Director), the Ohio Center for Microfluidic Innovation (OCMI, invested around $4.0 M), and NSF Center for Advanced Design and Manufacturing of Integrated Microfluidics (CADMIM with UCI, UIC) at the University of Cincinnati.

PROFESSIONAL COMMUNITY SERVICES AND ACTIVITIES

- Editor, *Nature* - Microsystems and Nanoengineering (NPG), 2021 - now.
- Editorial Board, Biochip Journal, 2007 - now
- Editorial Advisory Board, Journal of Microfluidics and Nanofluidics, 2003 - now
- Editorial Advisory Board, Journal of Micromechanics and Microengineering (JMM), 1999 – now
- Subject Editor, Special Subject on "Microfabrication for BioMEMS," IEEE Journal of Microelectromechanical Systems (MEMS), 2013 - 2023
- Editor, IEEE Journal of Microelectromechanical Systems (MEMS), 2006 – 2023.
- Advisory Editorial Board, Journal *Small*, 2004 – 2009.
- Associate Editor, IEEE Sensors Journal, 2002 - 2004.
- Guest Editor, Journal of Biomedical Microdevices, Special Issue on "Microfluidics and Lab-on-a-chip", Vol. 3, 2001.
- Chair and Organizer, ASME MEMS Workshop, "Microfluidics and Lab-on-a-chip Workshop", 2002, 2003.
- Co-Chair, Knowledge Foundations, "BioMEMS Workshop", 2001, 2002, 2003
- Chair and Organizer, The International Workshop for Biomedical Device and BioMEMS, 2012, 2013
- Technical Program Committee, *IEEE International MEMS Conference*, 2001, 2003, 2005

- Technical Program Committee, *Transducers,* 2002, 2005, 2007, 2009, 2011
- Technical Program Committee, *Micro TAS,* 2011, 2012, 2013, 2014

FACULTY DEVELOPMENT AND LEADERSHIP ACTIVITIES

- Board of Directors, Mico Biomed USA, 2019 - 2020
- Siloam Biosciences Inc, Founder and Chair of the Board of Directors, 2008 – 2018
- Dean's Advisory Committee, College of Engineering and Applied Science (CEAS), UC, 2017 -2019
- Director, Engineering Research Center (ERC) Clean Room and OCMI, 1998 – 2011, 2016 - 2021
- Operation Committee, ERC Clean Room, UC, 2004 – 2021.

PLENARY, KEYNOTE OR INVITED TALKS AT THE INTERNATIONAL MAJOR CONFERENCES

- Plenary Talk, Chong Ahn, "Lab on a Chip in Hematology," ICKSH, March 28-30, 2024. Walker Hill Hotel, South Korea.
- Invited Speaker, "A New Mobile Healthcare System using Smart Phone and Immunoassay Lab Chip," NANO Korea, KINTEX, Seoul Korea, July 11-13, 2018.
- Plenary Speaker, "Microfluidics for Point-of-Care Testing (POCT) Clinical Diagnostics," Biochip Conference, PyeongChang, S. Korea, May 16-18, 2018.
- Keynote Speaker, "Ultra-High Sensitive Immunoassays using Microfluidic Platform for In Vitro Diagnostics IVD for POCT," 9th Lab-on-a-Chip and Microfluidics, Munich German, May 10-11, 2017.
- Plenary Speaker, "Academic Research to Commercialization: Microfluidics to Point-of-Care Testing (POCT) Clinical Diagnostics," K-MEMS Annual Conference 2017, Jeju Island, South Korea, March 29 - April1, 2017.
- Plenary Speaker to give a talk on " From Academic Research to Commercialization: Ultra-High Sensitive Immunoassays using Microfluidic Platforms for In Vitro Diagnostics (IVD) POCT," Micro TAS 2015, The 19th International Conference on Miniaturized Systems for Chemistry and Life Sciences, Gyeongju, South Korea, October 25-29, 2015.
- Invited Speaker to give a talk on " Multifunctional Smart Lab-on-a-tube (LOT) Probe for Monitoring Traumatic Brain Injury," The IEE Electron Device Meeting (IEDM), San Francisco, USA, December 15-17, 2014.
- Keynote speaker on "Next Generation Immunoassays for Point-of-Care Testing (POCT) using Microfluidics and Lab-on-a-Chips" at 7th APCOT 2014.
- Invited Speaker to give a talk on " A New Open-Source Point-of-Care Test (POCT) System for Emergency Room and Physician's Office Labs" at "The 5th Next Generation Diagnostic Summit: Enabling Point-of-Care Diagnostics."
- Keynote Speaker to give a talk on "A Rapidly Reconfigurable, "Open-Source" Point-of-Care Test (POCT) System" at The Point-of-Care Diagnostics World Congress 2013.
- Distinguished Speaker on "A New Game Changer for Rapid and Ultra-High Sensitive Immunoassays and Point-of-Care Test (POCT): Microfluidics and Lab-on-a-Chips" as a part of Distinguished Seminar Series at The University of Utah, 2013.
- Keynote Speaker at the 2012 Annual Symposium for the Microfluidics in Biomedical Sciences Training Program (NIH) at the University of Michigan, Ann Arbor on May 10, 2012.
- Invited to speak at the Bio Nanotech Expo 2012, Santa Clara, California, June 18-21, 2012.
- Keynote speaker at Eurosensors XXV (25th), September 4-8, 2011, Athens, Greece on the topic "A New Game Changer for Immunoassays and IVD: Microfluidics and Lab Chips"
- Keynote speaker at the NSF Workshop on Novel Sampling and Sensing for Improving Food Safety, June 16-17, 2011, Georgia Tech, USA on the topic "Innovative Microfluidics and Lab-on-a-Chips for Point-of-Care (POC) Food Safety"

COLLABORATORS OTHER THAN THOSE BEING CITED:

Michael G. Bissell, Jae Lee (OSU), J.B. Lee (UT Dallas), Joe. Nevin, Gregory. Beaucage, Bill Heineman, Brian Halsall, Pat Limbark, Carl Seliskar, Ian Papautsky (UC), Ken Wehmeyer (P&G), S. Krishnamoorthy (CFD-RC), Ken Kozack (Meridian Biosciences), Brian Gibler (MD, UC), Edward Jauch (MD, UC), Joseph Clark (UC), Thimothy Cripe (MD, CCHMC), Richard Azizkhan (MD, CCHMC), Sung W. Kim (Harvard Univ.)

GRADUATE STUDENTS (PhD and MS) AND POST-DOCTORS

PhD Graduated: Trifon M. Liakopolous (1995-2000), Daniel J. Sadler (1996-2001), Jin Woo Choi (1996-2001), Kwang Wook Oh (1996-2001), Hyoung Jin Cho (1997-2002), Aniruddha Puntambekar (1998-2003), Chien-Chong Hong (1998-2004), Xiaoshan Zhu (2000-2005), Chuan Gao (2000-2005), Jungyoup Han (2001-2006), Junhai Kai (2001-2006), Japhil Do (2001-2006), Sehwan Lee (2001-2008), Clayton Sippola (2001-2006), Rong Rong (2000-2007), Sehwan Lee (2001-2007), Mike Rust (2003-2009), Peming Wu (2003-2009), Zhuzwei Zho (2003-2009), Matt Estes (2004 -2009), Andrew Brown (2005-2009),Junseop Shim (2005-2010), Wooseok Jung (2008-2013), Kangkug Lee (2009-2014), Zhizhen Wu (2012-2017), Sthitodhi Ghosh (2015-2020), Vinitha T

Upaassana (2016-2023)

- **PhD Currently Advising (3)**: Vinitha T Upaassana (2016-2022), Heeyeong Jang (2021 -), Supereeth DS, (2021 -)

MS graduated: Wenjin Zhang (1994-1996), Ming Xu (1995-1998), Kurt Kramer (1996-1999), Jeffrey Cropp (1996-1999), Arum Han (1997-2000), Srinivasan Iyengar (1997-1999), Shomir Banejee (1999-2002), Ramachandran Trichur (2000-2001), Sreeram Appasamy (2000-2002), Jaephil Do (2001-2003), Se Hwan Lee (2001-2003), Chunyan Li (2001-2003), Phalgun Mynemi (2002-2005), Alok Jani (2002-2005), Bharat Ram Ramaswamy (2012), Youngkun Sui (2015), Nirjhar Bhattacharya (2015), Kashish Aggarwal (2018), Juan Quintana (2020), Shaojie Shi (2021)

Post-Doctoral Fellows: Dr. Shekhar Bhansali (1998-2000), Dr. S. M. Lee (1999-2000), Dr. Jin-Woo Choi (2001-2002), Dr. Sanghyo Kim (2001-2002), and Dr. Young-Soo Sohn (2001-2002)

PATENTS ISSUED, LICENSED, AND UNDER EXAMINATION

(Patents Issued):

1. A. Puntambekar, J. Kai, S. lee and Chong H. Ahn, "Microfluidic Assay Platforms," U.S. Patent 9919311 B2, issued March 30, 2018.
2. A. Puntambekar, J. Kai, S. lee and Chong H. Ahn, "Microfluidic Analytical Platform", Japan Patent 5663574B2, issued February 04, 2015.
3. Chong H. Ahn, R. Narayan, and C. Li, "Flexible Spirally-Rolled Polymer Tube for Monitoring and Treatment of Brain Injuries", US Patent 8628493 B2, issued January 14, 2014.
4. K. Kang and Chong H. Ahn, "Fiber-Optic Biosensor and Biosensing Methods", U.S. Patent 8,563,328 B2, issued October 22, 2013.
5. Chong H. Ahn, A. Puntambekar, A. Jain and J. Han, "On-chip Sample Preparation for Whole Blood Analysis" U.S. patent 7601269 B2, issued 10/13/2009.
6. Chong H. Ahn, J. Choi, G. Beaucage and J. Nevin, "Smart Disposable Plastic Lab-on-a-Chip for Point-of-Care Testing", U.S. Patent 7524464 B2, issued 04/28/2009.
7. Chong H. Ahn, A. Puntambekar, A. Jain and J. Han, "On-chip Sample Preparation for Whole Blood Analysis" US patent 7476326, issued 01/13/2009.
8. Chong H. Ahn, D. J. Sadler and W. Zhang, "Electromagnetically Driven Microactuated Device and Method of Making The Same," U.S. Patent 6116863, Issued 9/12/2000.
9. Chong H. Ahn and M. Allen, "Fully Integrated Micromachined Magnetic Particle Manipulator and Separator", U.S. Patent 5655665, Issued by 8/12/1997.
10. Chong H. Ahn and M. Allen, "Fully Integrated Magnetic Micromotor and Methods for Their Fabrication", U.S. Patent 5710466, Issued by 01/20/1998.
11. Aniruddha Puntambekar, Se Hwan Lee, Jungyoup Han, Chong H. Ahn, Winton Gibbons, "Methods for optimizing detection of immunoassay reactions conducted within a microfluidic microplate," US Patent number: 10569269, Issued on 02-25-2020,

(US Patents Licensed):

1. Chong H. Ahn, et.al, "Smart Disposable Plastic Lab-on-a-Chip for Point-of-Care Testing", U.S. Patent 7524464, issued 04/28/2009.
   Inclusively Licensed to Siloam Biosciences Inc., 10/01/2004.
2. Chong H. Ahn, et.al, "On-chip Sample Preparation for Whole Blood Analysis" US patent 7476326, issued 01/13/2009. Inclusively Licensed to Siloam Biosciences Inc., 10/01/2004.
3. Chong H. Ahn, et.al, "Methods and Applications of On-Chip Dried or Lyophilized Chemiluminescence Substrate Reagents," US App. 62/553,436, 09/01/2017, Inclusively Licensed to Mico Biomed Inc., 06/01/2018.

PUBLICATIONS

(Peer-Reviewed Journal Publications)

1. Chong Ahn, Taekhee Lee, J.H. Shin, J.S. Lee, Vinitha TU, Sthitodhi Ghosh, Bon Ki Ku, "Lab on a Chip for Early Detection of Pulmonary Response to Respirable Crystalline Silica Exposure of Workers using a Clara Cell Protein 16 (CC16) Biomarker," Microfluidics and Nanofluidics, 2023, 27:72.

2. Sthitodhi Ghosh, Kashish Aggarwal, Vinitha T.U., Thinh Nguyen, Jungyoup Han, and Chong H. Ahn, “A new microchannel capillary flow assay (MCFA) platform with lyophilized chemiluminescence reagents for a smartphone-based POCT detecting malaria,” Nature, Microsystem and Nanoengineering (NPG) (2020) 6(5), 1-18, https://doi.org/10.1038/s41378-019-0108-8. (This paper was downloaded over 11,000 and 29 citations as of September 2021)
3. V.T. Upaassana, S. Ghosh, A. Milleman, T.H. Nguyen, Chong H. Ahn, "Rapid Saliva Sampling and Microfluidic Capillary Flow Assay (MCFA) lab on a chip (LOC) for point-of-care testing (POCT) of Common Mental Disorders " Lab on a Chip (IF 6.8), 20, 1961-1974 (2020) DOI: 10.1039/d0lc00071j.
4. V. Thiyagarajan Upaassana, Sthitodhi Ghosh, Atreyee Chakraborty, M. Eileen Birch, Joseph Pius, Jungyoup Han, Bon Ki Ku, Chong H. Ahn, “Highly Sensitive Lab on a Chip (LOC) Immunoassay for Early Diagnosis of Respiratory Disease Caused by Respirable Crystalline Silica (RCS)”, Analytical Chemistry (IF 6.35), 2019, 91, no. 10, 6652-6660 (“Alice Hamilton Award 2020” from CDC-NIOSH was awarded to this paper.)
5. Sthitodhi Ghosh, Kevin Margatan, Chong H. Ahn, Je-Hyeong Bahk, “Radiant heat recovery by thermoelectric generators: A theoretical case-study on hot steel casting,” Energy Conversion and Management, 175 (2018) 327–336.
6. S. Ghosh, G.K.Kurup, A.P.Lee and C.H.Ahn,“A mass manufacturable thermoplastic based microfluidic droplet generator on Cyclic Olefin Copolymer (COC)” Journal of Micromechanics and Microengineering, 29,2019,055009
7. Ghosh, Sthitodhi and Chong H. Ahn. "Lyophilization of chemiluminescent substrate reagents for high-sensitive microchannel-based lateral flow assay (MLFA) in point-of-care (POC) diagnostic system." Analyst 144.6 (2019): 2109-2119.
8. Dat Thinh Ha, Sthitodhi Ghosh, Chong H. Ahn, David J. Segal and Moon-Soo Kim, "Pathogen-specific DNA sensing with engineered Zinc finger proteins immobilized on a polymer Chip," Analyst, 2018, 143, 4009–4016.
9. Chunyan Li, Kanokwan Limnuson, Zhizhen Wu, Aseer Amin, Anjali Narayan, Eugene V. Golanov, Chong H. Ahn, Jed A. Hartings, and Raj K. Narayan. "Single probe for real-time simultaneous monitoring of neurochemistry and direct-current electrocorticography." Biosensors and Bioelectronics, Vol 77, pp: 62-68, 2016.
10. Zhizhen Wu, Chunyan Li, Jed A. Hartings, Raj K. Narayan and Chong H. Ahn, "Polysilicon Thin Film Developed on Flexible Polyimide for Biomedical Applications" Journal of Microelectromechanical Systems, Vol 25, No.4, pp 585-592, 2016.
11. Kang Kug Lee, Laszlo Labiscsak, Chong H. Ahn and Christian I. Hong, "Spiral-based microfluidic device for long-term time course imaging of *Neurospora crassa*with single nucleus resolution", Fungal Genetics and Biology,94,pp 11-14, 2016.
12. Zhizhen Wu, Chunyan Li, Jed Hartings, Sthitodhi Ghosh, Raj Narayan, and Chong Ahn. "Polysilicon-based flexible temperature sensor for brain monitoring with high spatial resolution." Journal of Micromechanics and Microengineering, Vol 27, No. 2, 2016.
13. Chunyan Li, Zhizhen Wu, Kanokwan Limnusan, Cletus Cheyuo, Ping Wang, Chong H. Ahn, Raj K. Narayan and Jed A. Hartings, "Development and application of a microfabricated multimodal neural catheter for neuroscience", Biomedical Microdevices, (2016) 18:8.
14. Chunyan Li, Raj K. Narayan, Pei-Ming Wu, Neena Rajan, Zhizhen Wu, Neal Mehan, Eugene V.Golanov, Chong H. Ahn and Jed A. Hartings, "Evaluation of microelectrode materials for direct-current electrocorticography", Journal of Neural Engineering, 13,(2016).
15. Chunyan Li, Pei-Ming Wu, Zhizhen Wu, Kanokwan Limnuson, Neal Mehan, Cameron Mozayan, Eugene V.Golanov, Chong H. Ahn, Jed A. Hartings, Raj K. Narayan "Highly accurate thermal flow microsensor for continuous and quantitative measurement of cerebral blood flow", Biomed Microdevices, (2015) 17:87.
16. Wooseok Jung, Jungyoup Han, Jin-Woo Choi, Chong H. Ahn, "Point-of-care Testing Diagnostic Systems Using Microfluidic Lab-on-a-chip Technologies", Microelectronic Engineering 132 (2015) 46-57.
17. Wooseok Jung, Jungyoup Han, Junhai Kai, Ji-Youn Lim, Donggeun Sul, and Chong H. Ahn, “An innovative sample-to-answer polymer lab-on-a-chip with on-chip reservoirs for the POCT of thyroid stimulating hormone (TSH)”, Lab Chip, 13(23), pp. 4653-62, 2013.
18. Kang Kug Lee and Chong H. Ahn, “Superhydrophilic Multilayer Silica Nanoparticle Networks on a Polymer Microchannel Using a Spray Layer-by-Layer Nanoassembly Method,”ACS Appl. Mater. Interfaces, 2013, 5 (17), pp 8523–8530.
19. Kang Kug Lee, Chong H. Ahn, Christian I. Hong, “Circadian Rhythms in Neurospora Crassa on Polydimethylsiloxane Microfluidic Device for Real-time Gas Perturbations,” Biomicrofluidics, vol. 7, pp. 044129–1 – 044129–7, 2013.
20. Wooseok Jung and Chong H. Ahn, “A micro blood sampling system for catheterized neonates and pediatrics in intensive care unit”, Biomedical Microdevices, Vol. 15, pp. 241-253, 2013.
21. Kang Kug Lee and Chong H. Ahn, “A New On-Chip Whole Blood/Plasma Separator Driven by Asymmetric Capillary Forces,” Lab on a Chip, vol. 13, pp. 3261 – 3267, 2013.
22. M. Lakkis, J. Kai, N. Santiago, A. Puntambekar, V. Moore, S. H. Lee, D. Sehy, R. Schultheis, J. Han, C. Ahn, “Novel Biomarkers Detection and Identification by Microfluidic-Based MicroELISA”, Translational Medicine 2012 S:1.

23. Junhai Kai, Aniruddha Puntambekar, Nelson Santiago,Se Hwan Lee, David W. Sehy, Victor Moore, Jungyoup Hana and Chong H. Ahn "A novel microfluidic microplate as the next generation assay platform for enzyme linked immunoassays (ELISA)", Lab Chip, 2012, 12, 4257–4262.
24. Montaha Lakkis, Junhai Kai, Nelson Santiago, Aniruddha Puntambekar, Victor Moore, Se Hwan Lee, David W. Sehy, Ron Schultheis, Jungyoup Han and Chong H Ahn, "Novel biomarkers detection and identification by microfluidic-based MicroELISA," Translational Medic S1:006, 2012.
25. Chunyan Li, Pei-Ming Wu, Zhizhen Wu, Chong H. Ahn, David LeDoux, Lori A. Shutter, Jed A. Hartings and Raj K. Narayan, "Brain temperature measurement: A study of in vitro accuracy and stability of smart catheter temperature sensors," Biomedical Microdevices, Volume 14, Number 1, pp. 109-118, 2012.
26. Joon S. Shim and Chong H. Ahn, "An on-chip whole blood/plasma separator using hetero-packed beads at the inlet of a microchannel," Lab Chip, Volume 12, pp. 863-866 , 2012.
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3. Juan M. Quintana, Thinh H. Nguyen, and Chong H. Ahn, “Polysilicon thin film developed on ultra-thin flexible glass for temperature sensor.” IEEE Sensors Conference, DOI: 10.1109/SENSORS47125.2020.9278855, October 25-28, 2020.
4. T.H. Nguyen, A. Milleman, S. Ghosh, V.T. Upaassana and C.H. Ahn, "A new microfluidic monitoring method using infrared sensor unit" in the MicroTAS conference, Basel, Switzerland, Oct 27 - Oct 31, 2019.
5. V.T. Upaassana, S. Ghosh, A. Milleman, T.H. Nguyen, C.H. Ahn, "Rapid saliva sampling and diagnostic Lab-on-a-Chip for Point-of-Care Testing (POCT) of unbound Para Thyroid Hormone (PTH)" in the MicroTAS conference, Basel, Switzerland, Oct 27 - Oct 31, 2019.

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7. (Plenary) Chong Ahn, "What I Have Learned from My Academic Research to Commercialization: Development of Point-of-Care Testing (POCT) Clinical Diagnostics" Korea Biochip Annual Spring Conference, Pyeong-Chang, S. Korea, May 16-18, 2018.
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10. Zhizhen Wu and Chong Ahn, "A wearable pressure and temperature sensor array using polysilicon thin film on polyimide," The 19th International Conference on Solid-State Sensors, Actuators and Microsystems (Transducer '17) Kaohsiung, Taiwan, Jun 18-22, 2017
11. S. Ghosh, G. Kurup, M. S. Lee, A.P.Lee and C. H. Ahn "A Mass Manufacturable Thermoplastic Based Microfluidic Droplet Generator Using Rapid Injection Molding And Solvent Bonding Method", The 19th International Conference on Solid-State Sensors, Actuators and Microsystems, June 18-22, 2017, Kaohsiung, Taiwan
12. Zhizhen Wu, Chunyan Li, Raj K. Narayan and Chong Ahn, "Polysilicon based flexible temperature sensor for high spatial resolution brain temperature monitoring", 38th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC'16), August 16-20, 2016, Orlando, FL, USA (Oral Presentation).
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181. J. Sadler, T. M. Liakopoulos, and C. H. Ahn, "A New Micromachined Electromagnet with Electroplated Ni/Fe Permalloy Through-Holes," 194th Meeting of the Electrochemical Society, Boston, MA, Nov. 1-6, 1998.

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201. S. Koh, D. Sadler, K. W. Oh, K. Roenker and C. H. Ahn, "Design and Fabrication of Optoelectronic Multichip Module Prototypes using MEMS Fabrication Techniques", Proc. SPIE Conference, Optoelectronics'97, pp. 128-135, Austin, Texas, 1997.
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211. C. H. Ahn and M. G. Allen, "A Comparison of Two Micromachined Inductors (Bar-type and Meander-type) For Fully Integrated Boost DC/DC Power Converters", 1st International Symposium on Advanced Packaging Materials, Atlanta, GA, February 7-9, 1995.
212. C. H. Ahn and M. G. Allen, "Fluid Micropumps Based on Rotary Magnetic Actuators", Proc. IEEE Micro Electro Mechanical Systems (MEMS) Workshop, Amsterdam, Netherlands, pp. 408-412, January 30 - February 2, 1995.
213. C. H. Ahn and M. G. Allen, "A Comparison of Two Micromachined Inductors For Fully Integrated Boost DC/DC Power Converters", Proc. IEEE Applied Power Electronics Conference (APEC), pp. 5-11, Orlando, FL, February, 1994.
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216. C. H. Ahn, Y. J. Kim, and M. G. Allen, "A Fully Integrated Micromachined Toroidal Inductor With a Nickel-Iron Magnetic Core (the switched dc/dc converter application)", Transducers'93, Proc. 7th International Conference on Solid-State Sensors and Actuators, pp. 70-73, Yokohama, Japan, June 7-10, 1993.
217. C. H. Ahn, Y. J. Kim, and M. G. Allen, "A Planar Variable Reluctance Magnetic Micromotor with Fully Integrated Stator and Wrapped Coils", Proc. IEEE Microelectromechanical Systems (MEMS) Workshop, pp. 1-6, Fort Lauderdale, FL, February 7-10, 1993.
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MAJOR RESEARCH GRANTS AWARDED (Total amount of over $25.0 M)

- Ohio Bureau of Workers Compensation (BWC, State of Ohio), 07/01-2024 – 06/30/2025 (1 Year), $141,724, Chong Ahn (Co-PI, 100%)
  Title: “Development of Smart Helmets for Reducing Work-Related Traumatic Brain Injury”

- Mico Biomed Inc Co., 08/01/2021 – 09/30/2025 (4 years), $600,000, Chong Ahn (PI, 100%), Active
  Title: “Development of Microchannel Capillary Flow Assay (MCFA) Lab Chip and Analyzer for Cardiac Biomarker Point-of-Care Test (POCT)”

- CDC-NIOSH, 10/01/2017 - 04/30/2022 (4 years) $460,000, Chong H. Ahn (PI, 100%),
  Title: “Biomarker Detection Device for Early Effect of Exposure to Respirable Crystalline Silica”

- Mico Biomed Inc., Grant# 1014665, 10/01/2018 - 09/30/2019, $80,000, Chong Ahn (PI, 100%),
  Title: “Development of Polymer Lab-on-a-Chip Platforms using Chemiluminescence-Based Immunoassays for Point-of-Care Diagnostics (POCD)”

- CDC-NIOSH, 05/01/2015 - 04/30/2019, $200,000, Chong H. Ahn (PI, 100%)
  Title: “Device for Early Detection of Health Effects from Silica Aerosol Exposure”

- State of Ohio, The 3rd Frontier Project Program, 06/30/10 – 06/30/14, $3,000,000
  Jason Heikenfeld (PI), Ian Papautsky (Co-PI), Andrew Steckl (Co-PI), Chong Ahn (Co-PI)
  Title: “Ohio Center for Microfluidic Innovation (OCMI)”

- Department of Defense (DoD), CMRPP Program, W81XWH-10-1-0977, 09/30/10 – 06/30/16, $2,117,069
  Jed Hartings (PI) and Chong Ahn (Co-PI, 50%)
  Title: “Novel Smart Catheter for Multimodal Monitoring of the Head-Injured Warrior”,

- NSF, EPDT program, ECCS-0622036, 9/01/06 – 8/31/09, $320,000,
  Chong Ahn (PI, 100%)
  Title: “Interdigitated Nanoelectrode (IDn) Biosensors on Polymer with Charge-Balanced Transduction Method”

- NIH, NIEHS program, R01 ES015446, 06/1/06 – 5/31/09, $1,250,000 ($1.25M)
  Paul Bishop (PI) and Chong Ahn (Co-PI, 50%)
  Title: “A Point Detection Disposable Lab-on-a-chip With Bulit-in Mercury Precursor Electrodes for Heavy Metal Detection”

- NIH, NIEHS program, R01 GM69547, 01/01/04 – 12/31/07, $1,360,008 ($1.36 M)
  Pat Limbach (PI), Chong Ahn (Co-PI, 50%)
  Title: “Bioassays and Molecular Characterization by Microchip CE”

- NSF, Biosensor Program, BES- 0330075, 01/01/04 – 12/31/07, $648,765
  Kyung Kang (PI), Chong Ahn (Co-PI, 50%)
  Title: “Rapid, Multi-Analyte Immuno Biosensor with Passive Microfluidics: A Model System – Four Cardiac Marker Monitoring Device”

- DARPA, BioFlips Program, DoD, 06/01/00 – 06/14/04, $3,800,000 ($3.8 M)
  Chong H. Ahn (PI)
  Title: "Plastic-Bsed Structurally Programmable Microfluidic Bio-Chips for Clinical Diagnostics", BioFlips Program

- NASA, Glenn Microsystems Initiative, 02/01/00 – 12/31/01, $270,000
  Chong H. Ahn (PI, 100%),
  Title: "A Novel Bi-Directionally Actuated Magnetic Microactuator for Fuel/Air Control and Regulation",

- NASA, Jet Propulsion Laboratory (JPL), 01/01/00 – 12/31/00, $150,000
  Chong H. Ahn (PI, 100%)
  Title: "Development of Micromachined Planar Inductors for On-Chip DC/DC Power Converters Using UV-LIGA and MEMS Techniques"

- DARPA/General Electric (GE) Corporation Research and Development Center, 1/01/99 – 12/31/03, $1,560,000 ($1.56M)
  Chong H. Ahn (PI, 100%)
  Title: "Development of Microvalves for Small Scale Propulsion Systems (SSPS)"

- Procter & Gamble (P&G) Pharmaceuticals- PI, 06/01/99 – 05/31/02, $472,000
  Chong H. Ahn (PI, 50%) and William Heineman (Co-PI)
  Title: "Development of A Prototype Electrophorosis (CE) System on A Glass Chip Toward High Throughput Drug Synthesis"

- DRAPA, MicroFlumes Program, DoD, 05/01/97 – 12/31/00, $3,800,000 ($3.8 M)

Chong Ahn (PI, 100%)
Title: "A Generic Microfluidic system for Remote Sensors"