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Associate Professor

Department of Biomedical Engineering
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•EDUCATION AND QUALIFICATIONS

- Aug 2016** Ph.D., **Mechanical Engineering, University College London (UCL), London, UK**
Thesis: "Ultrasonic histotripsy for cell therapy" (Advisor: Prof Nader Saffari)
- Nov 2012** M.Sc., **Mechanical Engineering with Distinction, University College London (UCL), London, UK**
Thesis: "Drug delivery enhancement by ultrasound" (Advisor: Prof Nader Saffari)
- Aug 2011** B.Eng., **Mechanical Engineering with Honours, University College London (UCL), London, UK**
Thesis: "Transdermal drug delivery mediated by ultrasound" (Advisor: Prof Nader Saffari)

•RESEARCH INTERESTS

Biomedical ultrasound, Therapeutic ultrasound, High intensity focused ultrasound (HIFU), Low intensity focused ultrasound (LIFU), Histotripsy, Mechanical tissue fractionation, Sono-thrombolysis, tissue decellularisation, Bubble dynamics, Acoustic cavitation, Ultrasonic neuromodulation/brain stimulation & cell stimulation, Acoustic trapping, Ultrasound imaging.

•WORK & RESEARCH EXPERIENCES

- Mar 2022 - present** Associate Professor, Department of Biomedical Engineering, Kyung Hee University, Yongin, Korea
- Sep 2019 - Feb 2022** Senior Research Scientist, Center for Bionics, Biomedical Research Division, Korea Institute of Science and Technology (KIST), Seoul, Korea
- Mar 2021 - Feb 2022** Associate Professor, Division of Bio-Medical Science & Technology, KIST School, University of Science and Technology (UST), Seoul, Korea
- Mar 2020 - Feb 2022** Visiting / Adjunct Professor, Academy-Research-Industry Cooperation Program, Korea University, Seoul, Korea
- Sep 2016 - Aug 2019** Postdoctoral Research Fellow / Technical Research Personnel (military obligation 2016.09-2019.08), Center for Bionics, Biomedical Research Institute, Korea Institute of Science and Technology (KIST), Seoul, Korea
- Sep 2012 - Aug 2016** Graduate Researcher, Ultrasonics Lab, Department of Mechanical Engineering, University College London, London, UK

•PROFESSIONAL SERVICES

- Jan 2024-present** Board Member (Director of Education), *The Korean Society of Medical & Biological Engineering* (대한의용생체공학회 교육이사)
- Dec 2023-present** Editorial Board Member, *Scientific Reports*
- Jan 2022-Oct 2023** Conference session organizer, *24th International Congress on Acoustics*
- May 2020-present** Board Member (Director of Safety / Director of International Relations), *The Korean Society for Therapeutic Ultrasound* (대한치료초음파학회 안전이사, 국제협력이사)
- April 2020-Feb 2022** TFT Member, *Biomedical Research Division, Korea Institute of Science and Technology*
- Jan 2019-Jun 2021** Organizing Committee Member - Administrative Secretary, *20th International Symposium for Therapeutic Ultrasound* (조직위원회 간사위원)
- Feb 2020-present** Project Proposal External Reviewer, *The Focused Ultrasound Foundation, United States*
- Mar 2019-present** Journal Paper Reviewer, *Ultrasonics Sonochemistry, Ultrasound in Medicine and Biology, Physics in Medicine and Biology, IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, Journal of Computational Design and Engineering, Annals of Translational Medicine, International Journal of Hyperthermia, Ultrasonography and Journal of The Korean Physical Society, etc.*

•ACADEMIC & RESEARCH AWARDS

- 05 Nov, 2022** Outstanding Research Paper Award (우수논문상), *The Korean Society of Medical & Biological Engineering* (대한의용생체공학회), Incheon, Korea
- 29 Oct, 2022** The Best Paper Award of the Year (논문저술상), *The Korean Society for Therapeutic Ultrasound* (대한치료초음파학회), Seoul, Korea

- 28 Jul, 2021 **KSTU Academic Award** (학술상), The Korean Society for Therapeutic Ultrasound (대한치료초음파학회), Seoul, Korea
- 20 Nov, 2020 **Young Investigator Award - Grand Prix** (젊은 연구자상-대상), The Korean Society of Ultrasound in Medicine (대한초음파의학회), Seoul, Korea
- 31 Oct, 2020 **The Best Paper Award of the Year** (논문저술상), The Korean Society for Therapeutic Ultrasound (대한치료초음파학회), Seoul, Korea
- 21 Dec, 2018 **Excellence in Postdoctoral Research Award** (KIST 우수박사후연구원상), Biomedical Research Institute, Korea Institute of Science and Technology (KIST), Seoul, Korea. *2년 연속 수상
- 16 Nov, 2018 **AACR-KCA Travel Award**, American Association for Cancer Research–Korean Cancer Association Joint Conference on Precision Medicine in Solid Tumors (AACR-KCA), Seoul, Korea
- 08 Nov, 2018 **Outstanding Research Paper Award** (우수논문상), National Research Foundation of Korea (NRF), Seoul, Korea
- 20 Dec, 2017 **Excellence in Postdoctoral Research Award** (KIST 우수박사후연구원상), Biomedical Research Institute, Korea Institute of Science and Technology (KIST), Seoul, Korea
- 24 Jul, 2015 **EKC2015 Best Poster Award**, 8th Euro-Korean Conference on Science and Technology 2015 (EKC2015), Strasbourg, France
- 19 Feb, 2015 **International Society for Therapeutic Ultrasound (ISTU) Symposium Student Travel Award**, 15th International Symposium on Therapeutic Ultrasound, Utrecht, The Netherlands
- 18 Jul, 2014 **The Best Presentation Award**, Mechanical Engineering PhD Student Conference, University College London, London, UK
- 1 Nov, 2012 **Distinction Award** in MSc, Mechanical Engineering, University College London, London, UK
- 1 Aug, 2011 **Honours Award** in BEng, Mechanical Engineering, University College London, London, UK
- 28 Jun, 2008 **Ontario Scholar Award**, Albert College, Ontario, Canada

•PEER-REVIEWED PUBLICATIONS (A total of 27 papers. First & Corresponding authored - 17 papers; Co-authored - 10 papers)

- Choi K, Joung C, **Pahk KJ**, Kim H, Pahk K (2023). "Metabolic activity of visceral adipose tissue is associated with age-related macular degeneration: a pilot 18 F-FDG PET/CT study". *Frontiers in Endocrinology* (IF 5.2)
- Kim HJ, Choi YH, Kim SY, **Pahk KJ** (2023). "Increased intracellular diffusivity of macromolecules within a mammalian cell by low-intensity pulsed ultrasound". *Ultrasonics Sonochemistry*. 100. 106644 (**JCR TOP 1.6%, IF 8.4**) (**Corresponding author**).
**Ultrasonics Sonochemistry* = Acoustics 분야 최상위 저널 (Rank: 1/32).
- Son YJ, Keum C, Kim M, Jeong J, Jin S, Hwang HW, Kim H, Lee K, Jeon H, Kim H, **Pahk KJ**, Jang HW, Sun J, Han H, Lee KH, Ok M, Kim Y, Jeong Y (2023). "Selective cell-cell adhesion regulation via cyclic mechanical deformation induced by ultrafast nanovibrations". *ACS Applied Materials & Interfaces*. 15. 52100-13 (**JCR TOP 16.08%, IF 9.5**).
- Heo JM, Park JH, Kim HJ, Pahk K, **Pahk KJ** (2023). "Sonothrombolysis with an acoustic net-assisted boiling histotripsy: A proof-of-concept study." *Ultrasonics Sonochemistry*. 96. 106435 (**JCR TOP 1.562%, IF 9.336**) (**Corresponding author**).
**Ultrasonics Sonochemistry* = Acoustics 분야 최상위 저널 (Rank: 1/32).
- Pahk KJ**, Heo JM, Jeong CM, Pahk K (2023). "Noninvasive mechanical destruction of liver tissue and tissue decellularisation by pressure-modulated shockwave histotripsy." *Frontiers in Immunology* 14. 1150416 (**IF 8.787**) (**Corresponding author**).
- Heo JM, Jeong CM, Pahk K, **Pahk KJ** (2022). "Investigation of the long-term healing response of the liver to boiling histotripsy treatment in vivo." *Scientific Reports*. 12. 14462 (**IF 4.379**) (**Corresponding author**).
- de Andrade M, Haqshenas R, **Pahk KJ**, Saffari N (2022). "Mechanisms of nuclei growth in ultrasound bubble nucleation." *Ultrasonics Sonochemistry* 88. 106091 (**JCR TOP 1.562%, IF 9.336**) **Ultrasonics Sonochemistry* = Acoustics 분야 최상위 저널 (Rank: 1/32).
- Pahk KJ** (2021). "Control of the dynamics of a boiling vapour bubble using pressure-modulated high intensity focused ultrasound without the shock scattering effect: A first proof-of-concept study." *Ultrasonics Sonochemistry* 77. 105699 (**JCR TOP 1.562%, IF 9.336**) (**Corresponding author**).
**Ultrasonics Sonochemistry* = Acoustics 분야 최상위 저널 (Rank: 1/32).
- de Andrade M, Haqshenas R, **Pahk KJ**, Saffari N (2021). "Modelling the physics of bubble nucleation in histotripsy." *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control*. 3097118. 1-14 (**IF 2.725**).
- Kwon O, **Pahk KJ**, Choi MJ (2021). "Simultaneous measurements of acoustic emission and sonochemical luminescence for monitoring ultrasonic cavitation". *Journal of the Acoustical Society of America*. 149(6). 4477-4483 (**IF 1.84**).
- Pahk KJ**, Lee SH, Gélat P, de Andrade O, Saffari N (2021). "The interaction of shockwaves with a vapour bubble in boiling histotripsy: The shock scattering effect." *Ultrasonics Sonochemistry* 70. 105312 (**JCR TOP 1.562%, IF 9.336**) (**Corresponding author**).
**Ultrasonics Sonochemistry* = Acoustics 분야 최상위 저널 (Rank: 1/32).

12. **Pahk KJ** (2021). "Evidence of the formation of the shock scattering induced violent cavitation cluster during boiling histotripsy insonation: A numerical case study." *J. Phys.: Conf. Ser.* 1761. 1-7 (Scopus indexed) (**Corresponding author**).
13. Huh H, Park T, Seo H, Han M, Jung BJ, Choi H, Lee E, **Pahk KJ**, Kim H, Park J (2020). "A local difference in blood-brain barrier permeability in the caudate putamen and thalamus of a rat brain induced by focused ultrasound." *Scientific Reports*. 10.19286 (IF 4.379).
14. Nam GH*, **Pahk KJ***, Jeon S, Park H, Kim GB, Oh SJ, Kim K, Kim H, Yang Y (2020). "Investigation of the potential immunological effects of boiling histotripsy for cancer treatment", *Advanced Therapeutics*. 3, 1900214 (IF 5.003) (***Co-first author**).
15. **Pahk KJ**, de Andrade M, Gélat P, Kim HM, Saffari N (2019). "Mechanical damage induced by the appearance of rectified bubble growth in a viscoelastic medium during boiling histotripsy exposure", *Ultrasonics Sonochemistry* (JCR TOP 1.613%, IF 9.336). 53. 164-177 (**Corresponding author**). **Ultrasonics Sonochemistry = Acoustics 분야 최상위 저널 (Rank: 1/32)*.
16. **Pahk KJ**, Shin CH, Bae IY, Yang YS, Kim SH, Pahk K, Kim HM#, Oh SJ# (2019). "Boiling histotripsy-induced partial mechanical ablation modulates tumour microenvironment by promoting immunogenic cell death of cancers." *Scientific Reports*. 9(1). 9050 (IF 4.379)
17. **Pahk KJ**, de Andrade M, Kim HM, Saffari N (2019). "The effects of the size of a boiling bubble on lesion production in boiling histotripsy", *J. Phys.: Conf. Ser.* 1184(012007). 1-9 (Scopus indexed) (**Corresponding author**).
18. Park TY, **Pahk KJ**, Kim HM (2019). "Method to optimize the placement of a single-element transducer for transcranial focused ultrasound", *Computer Methods and Programs in Biomedicine*. 179. 104982 (IF 5.428).
19. Joe H, **Pahk KJ**, Park S, Kim H (2019). "Development of a subject-specific guide system for low-intensity focused ultrasound (LIFU) brain stimulation." *Computer Methods and Programs in Biomedicine*. 176. 105-110 (IF 5.428).
20. de Andrade MO, Haqshenas S, **Pahk KJ**, Saffari N (2019). "The effects of ultrasound pressure and temperature fields in millisecond bubble nucleation", *Ultrasonics Sonochemistry* (JCR TOP 1.613%, IF 9.336). 55. 262-272.
21. **Pahk KJ**, Gélat P, Kim HM, Saffari N (2018). "Bubble dynamics in boiling histotripsy". *Ultrasound in Medicine and Biology*. 44 (12) 2673-2696 (IF 3.964).
22. Baek HC, **Pahk KJ**, Kim MJ, Youn I, Kim H (2018). "Modulation of cerebellar cortical plasticity using low-intensity focused ultrasound for post-stroke sensorimotor function recovery", *Neurorehabilitation and Neural Repair*. 32(9). 777-787 (IF 3.919).
23. Park TY*, **Pahk KJ***, Kim HM (2018). "A novel numerical approach to stimulation of a specific brain region using transcranial focused ultrasound". *IEEE Engineering in Medicine and Biology Society*, 8513331, 3697-3700 (Scopus indexed) (***Co-first author**).
24. **Pahk KJ**, Gélat P, Sinden D, Dhar DK, Saffari N (2017). "Numerical and experimental study of mechanisms involved in boiling histotripsy". *Ultrasound in Medicine and Biology*. 43(12). 2848-2861 (IF 3.964).
25. Baek H*, **Pahk KJ***, Kim H (2017). "A review of low-intensity focused ultrasound for neuromodulation". *Biomed. Eng. Lett.* 7, 2, 135-142 (IF 3.72) (***Co-first author**).
26. **Pahk KJ**, Mohammad GH, Malago M, Saffari N, Dhar DK (2016). "A novel approach to ultrasound-mediated tissue decellularization and intra-hepatic cell delivery in rats". *Ultrasound in Medicine and Biology*. 42(8).1958-1967 (IF 3.964).
27. **Pahk KJ**, Dhar DK, Malago M, Saffari N (2015). "Ultrasonic histotripsy for tissue therapy". *J. Phys.: Conf. Ser.* 581(1).012001-012020 (Scopus indexed) (**Corresponding author**).