JOHN S. HO

Email: johnho@nus.edu.sg
Website: `https://johnho.xyz`

INDUSTRY

Research Scientist (Human AI) 2022–Present
Meta Platforms, California, USA
Leading sensing research for wearable devices, focusing on how sensors can help devices understand their users and enable more natural interactions.

Research Scientist (Technology Engineering for Devices) 2022–2024
Meta Platforms, California, USA
Developed radar sensing technology for smart glasses, spanning hardware integration, sensor roadmap, and algorithms.

ACADEMIA

Associate Professor (with tenure) 2022–Present
Department of Electrical and Computer Engineering,
Department of Biomedical Engineering (by courtesy),
Department of Materials Science and Engineering (by courtesy),
Institute for Health Innovation & Technology (affiliated faculty)
The N.1 Institute for Health (affiliated faculty)
National University of Singapore, Singapore

Assistant Professor 2015–2022
National University of Singapore, Singapore

CONSULTING

External Expert 2022
Government Technology Agency, Singapore
Delivered expert opinion on nation-wide wireless interoperability matters.

External Consultant 2021
Smart Implants Group, Cambridge Consultants, Cambridge, UK
Prototyped solutions for connected biosensors and medical devices.

EDUCATION

PhD, Electrical Engineering 2010–2015
Stanford University, Stanford, California, USA
PhD thesis title: "Wireless Powering for Bioelectronics"
Advisor: Prof. Ada S. Y. Poon

MS, Electrical Engineering 2010–2012
Stanford University, Stanford, California, USA

BEng, Electronic and Computer Engineering 2007–2010
Hong Kong University of Science and Technology, Hong Kong

AWARDS

NUS Young Researcher Award	2022
Young Scientist Award, Singapore National Academy of Science	2020
IES Prestigious Engineering Achievement Award	2020
Forbes 30 Under 30 Asia: Healthcare & Science	2017
MIT Technology Review: Innovator Under 35 Asia	2017
National Research Foundation Fellow	2017
NUS Young Investigator Award	2016
National Defense Science and Engineering Graduate Fellow	2012–2015

Academic Achievement Medal 2010
The Joseph Lau Luen Hung Charitable Trust Scholarship 2007–2010

PROFESSIONAL SERVICE

- Editorial Board Member, *Physical Review Applied* 2025
- American Physical Society, Outstanding Referee 2023
- Early Career Advisory Board, *Materials Today Electronics* 2022 – Present
- FDA Network of Digital Health Experts (NoDEx) 2020 – 2022
- Reviewer for *Nature* series journals, *Science* series journals, *Physical Review* series journals, *Advanced Materials* series journals, *PNAS*, *IEEE Transactions on Antennas and Propagation*, *IEEE Microwave Theory and Techniques*, *IEEE Transactions on Biomedical Circuits and Systems*, *The Lancet Digital Health*, *ACS Nano*, and others.

JOURNAL ARTICLES

Google Scholar (>9000 citations, h-index=46)

[71] W. Cheng, X. Wang, Z. Xiong, J. Liu, Z. Liu, Y. Jin, H. Yao, T.-S. Wong, **J. S. Ho**, B. C. K. Tee "Frictionless multiphasic interface for near-ideal aero-elastic pressure sensing", *Nat. Mater.* 130, 227201 (2023).

[70] X. Tian, Q. Zeng, S. A. Kurt, R. R. Li, D. T. Nguyen, Z. Xiong, Z. Li, X. Yang, X. Xiao, C. Wu, B. C. K. Tee, D. Nikolayev, C. J. Charles, **J. S. Ho** "Implant-to-implant wireless networking with metamaterial textiles", *Nat. Commun.* 14, 4335 (2023). **Selected as an *Editor's Highlight* and featured in *Nature Reviews Bioengineering***.

[69] Z. Li, C. Li, G. Xu, W. Chen, Z. Xiong, H. Jing, J. S. Ho, C.-W. Qiu "Synergetic positivity of loss and noise in nonlinear non-Hermitian resonators", *Sci. Adv.* 9, eadi0562 (2023).

[68] Z. Li, C. Li, Z. Xiong, G. Xu, Y. R. Wang, X. Tian, X. Yang, Z. Liu, Q. Zeng, R. Lin, Y. Li, J. K. W. Lee, **J. S. Ho**, C.-W. Qiu *et al*, "Stochastic Exceptional Points for Noise-Assisted Sensing", *Phys. Rev. Lett.* 130, 227201 (2023). **Selected as an *Editor's Selection* and featured in *Physics***.

[67] Y. Lou, *et al*, "Technology Roadmap for Flexible Sensors", *ACS Nano* online (2023).

[66] H.-J. Kim, W. Sritandi, Z. Xiong, **J. S. Ho**, "Bioelectronic Devices for Light-based Diagnostics and Therapies", *Biophysics Rev.*, 4(1), 011304 (2023). **Selected as a *Featured Article.***

[65] I. V. Soares, M. Gao, E. Cil, Z. Sipus, A. K. Skrivervik, **J. S. Ho**, D. Nikolayev, "Wireless Powering Efficiency of Deep-Body Implantable Devices", *IEEE Trans. Microw. Theory Techn.*, 71, 6, 2680-2692 (2023)

[64] H. Yang, J. Li, X. Xiao, J. Wang, Y. Li, K. Li, Z. Li, H. Yang, Q. Wang, J. Yang, **J. S. Ho**, P.-L. Yeh, K. Mouthaan, X. Wang, S. Shah, P.-Y. Chen, "Topographic design in wearable MXene sensors with in-sensor machine learning for full-body avatar reconstruction", *Nat. Commun.*, 5311 (2022).

[63] M. Wagih, L. Balocchi, F. Benassi, N. B. Carvalho, J.-C. Chiao, R. Correia, A. Costanzo, Y. Cui, D. Georgiadou, C. Gouveia, J. Grosinger, **J. S. Ho**, K. Hu, A. Komolafe, S. Lemey, C. Loss, G. Marrocco, P. Mitcheson, V. Palazzi, N. Panunzio, G. Paolini, P. Pinho, J. Preishuber-Pflugl, Y. Qaragoez, H. Rahmani, H. Rogier, J. Romero Lopera, L. Roselli, D. Schreurs, M. Tentzeris, X. Tian, R. Torah, R. Torres, P. V. Torre, D. Vital, S. Beeby, "Microwave-Enabled Wearables: Underpinning Technologies, Integration Platforms, and Next-Generation Roadmap", *IEEE J. Microwaves*, early access (2022).

[62] Z. Liu, Z. Li, J. Li, P. Xiao, Y. Qiu, G. Li, **J. S. Ho**, "A Body-Wide RF Energy Harvester Based on Textile Surface Plasmonic Antenna Array for Wearable Wireless Power Transmission", *IEEE Trans. Circuits and Syst. II: Express Br.*, early access (2022).

[61] H. Cui*, Z. Dong, H.-J. Kim, C. Li, W. Chen, G. Xu, C.-W. Qiu, **J. S. Ho**, "High-efficiency selective wireless power transfer with a bistable parity-time-symmetric circuit", *Phys. Rev. Appl.*, 18, 044076 (2022). **Selected as an Editor's Suggestion.**

[60] R. Lin, Y. Jin, R. R. Li, C. Jiang, J. Ping, C. J. Charles, Y. L. Kong, **J. S. Ho**, "Needle-integrated ultrathin bioimpedance microsensor array for early detection of extravasation", *Biosens. Bioelectron.*, 216, 114651 (2022).

[59] **J. S. Ho**, Y. Zhang, "Wireless Nanomedicine for Brain Tumors", *Nat. Nanotechnol.*, 17, 907–908 (2022).

[58] X. Yang, X. Tian, Q. Zeng, Z. Li, D. T. Nguyen, **J. S. Ho**, "Localized Surface Plasmons on Textiles for Non-contact Vital Sign Sensing", *IEEE Trans. Antennas Propag.*, 70 (9), 8507–8517 (2022).

[57] B. Sun, J. N. B. Rahmat, H.-J. Kim, R. Mahendran, K. Esuvaranathan, E. Chiong, **J. S. Ho**, K. G. Neoh, Y. Zhang, "Wirelessly Activated Nanotherapeutics for In Vivo Programmable Photodynamic-Chemotherapy of Orthotopic Bladder Cancer", *Adv. Sci.*, 2200731 (2022).

[56] F. Yang, D. T. Nguyen, B. O. Raeker, A. Grbic, **J. S. Ho**, "Near-Reflectionless Wireless Transmission into the Body with Cascaded Metasurfaces", *IEEE Trans. Antennas Propag.*, 70 (9), 8379–8388 (2022). **Selected for inclusion in a Special Issue for Women's Day 2024.**

[55] H.-J. Kim, **J. S. Ho**, "Wireless interfaces for brain neurotechnologies", *Phil. Trans. R. Soc. A*, 380, 20210020 (2022).

[54] R. Lin*, H.-J. Kim*, S. Achavananthadith, Z. Xiong, J. K. W. Lee, Y. L. Kong, **J. S. Ho**, "Digitally-embroidered liquid metal wearable wireless systems", *Nat. Commun.*, 13, 2190 (2022). **Selected for *Editor's Highlight*.**

[53] K. Li, Z. Li, Z. Xiong, Y. Wang, H. Yang, W. Xu, L. Jing, M. Ding, J. Zhu, **J. S. Ho**, P.-Y. Chen, "Thermal Camouflaging MXene Robotic Skin with Bio-Inspired Stimulus Sensation and Wireless Communication", *Adv. Funct. Mater.*, 104174 (2022).

[52] K. Du, R. Lin, L. Yin, **J. S. Ho**, J. Wang, C.T. Lim, "Electronic textiles for energy, sensing, and communication", *iScience*, 104174 (2022).

[51] D. Nikolayev, A. K. Skrivervik, **J. S. Ho**, M. Zhadobov, and R. Sauleau, "Reconfigurable Dual-band Capsule-Conformal Antenna Array for In-body Bioelectronics", *IEEE Trans. Antennas Propag.*, 70, 3749-3761 (2021). **Featured on *What's Hot in Antennas and Propagation***.

[50] S. W. M. Lian, S. Guo, K. Ren, X. U. Ying, **J. S. Ho**, C. H. Chen, "Heterogeneous multi-compartmental DNA hydrogel particles through microfluidic assembly for lymphocyte inspired precision medicine", *Nanoscale*, 13, 20531-20540 (2021).

[49] R. Lin, **J. S. Ho**, "A DIY approach to wearable sensor networks", *Nat. Electron.*, 4, 771-772 (2021).

[48] H.-J. Kim, Y. Jin, R. Lin, **J. S. Ho**, "A wireless optoelectronic skin patch for light delivery and thermal monitoring", *iScience*, 24(11), 103284 (2021).

[47] Z. Xiong*, S. Achavananthadith*, S. Lian*, L. E. Madden, Z. X. Ong, W. Chua, V. Kalidasan, Z. Li, Z. Liu, P. Singh, H. Yang, S. P. Heussler, S. M. P. Kalaiselvi, M. B. H. Breese, H. Yao, Y. Gao, K. Sanmugam, B. C. K. Tee, P.-Y. Chen, W. Loke, C. T. Lim, G. S. Hui Chiang, B. Y. Tan, H. Li, D. L. Becker, **J. S. Ho**, "A wireless and battery-free wound infection sensor based on DNA hydrogel", *Sci. Adv.*, 7(47), eabj1617 (2021). **Featured in *Scientific American*.**

[46] V. Kalidasan*, X. Yang*, Z. Xiong*, R. R. Li, H. Yao, H. Godaba, S. Obuobi, P. Singh, X. Guan, X. Tian, S. A. Kurt, Z. Li, D. Mukherjee, R. Rajarethinam, C. S. Chong, J.-W. Wang, P. L. R. Ee, W. Loke, B. C. K. Tee, J Ouyang, C. J. Charles, **J. S. Ho**, "Wirelessly operated bioelectronic sutures for the monitoring of deep surgical wounds", *Nat. Biomed. Eng.*, 5, 1217-1227 (2021). **Featured on the cover and in News & Views.**

[45] X. Fu, H. Yang, Z. Li, N.-C. Liu, P.-S. Lee, K. Li, S. Li, M. Ding, **J. S. Ho**, Y.-C. E. Li*, I.-C. Lee*, and P.-Y. Chen*, "Cation-Induced Assembly of Conductive MXene Fibers for Wearable Heater, Wireless Communication, and Stem Cell Differentiation", *ACS Biomater. Sci. Eng.*, published online.

[44] Z. Li, G. Cao, C. Li, S. Dong, Y. Deng, X. Liu, **J. S. Ho**, C.-W. Qiu, "Non-Hermitian Electromagnetic Metasurfaces at Exceptional Points", *PIER*, 171, 1–20 (2021).

[43] C. Jiang, X. Li, S. W. M. Lian, Y. Ying, **J. S. Ho**, J. Ping, "Wireless Technologies for Energy Harvesting and Transmission for Ambient Self-Powered Systems", *ACS Nano*, 15(6), 9328-9354 (2021).

[42] Z. Li, X. Tian, C.-W. Qiu, **J. S. Ho**, "Metasurfaces for bioelectronics and healthcare", *Nat. Electron.*, 4, 382-391 (2021).

[41] Y. Gao, D. T. Nguyen. T. Yeo, S. B. Lim, W. X. Tan, L. E. Madden, L. Jin, J. Y. K. Long, F. A .B. Aloweni, Y. J. A. Liew, M. L. L. Tan, S. Y. Ang, S. D. Maniya, I. Abdelwahab, K. P. Loh, C.-H. Chen, D. L. Becker, D. Leavesley, **J. S. Ho**, C. T. Lim, "A flexible multiplexed immunosensor for point-of-care in situ wound monitoring", *Sci. Adv.*, 7, eabg9614 (2021).

[40] Z. Dong, H.-J. Kim, H. Cui, C. Li, C.-W. Qiu, **J. S. Ho**, "Wireless magnetic actuation with a bistable parity-time-symmetric circuit," *Phys. Rev. Appl.*, 15, 024023 (2021).

[39] F. Yang, B. O. Raeker, D. T. Nguyen, J. D. Miller, Z. Xiong, A. Grbic, **J. S. Ho**, "Antireflection and wavefront manipulation with cascaded metasurfaces," *Phys. Rev. Appl.*, 14, 064044 (2020).

[38] A. Li, J. Dong, J. Wang, Z. Cheng, **J. S. Ho**, D. Zhang, J. Wen, X.-L. Zhang, C. T. Chan, A. Alu, C.-W. Qiu, and L. Chen, "Hamiltonian hopping for efficient chiral mode switching in encircling exceptional points," *Phys. Rev. Lett.*, 125(18), 187403 (2020). **Top *Trending in PRL* article.**

[37] H. Yang, X. Xiao, Z. Li, K. Li; N. Cheng, S. Li, J. H. Low, L. Jing, X. Fu, S. Achavananthadith, F. Low, Q. Wang, P.-L. Yeh, H. Ren, **J. S. Ho**, C.-H. Yeow, P.-Y. Chen, "Wireless Ti_3C_2Tx MXene Strain Sensor with Ultrahigh Sensitivity and Designated Working Windows for Soft Exoskeletons," *ACS Nano*, 14(9), 1936-0851 (2020).

[36] X. Tian, Q. Zheng, D. Nikolayev, **J. S. Ho**, "Conformal Propagation and Near-Omnidirectional Radiation with Surface Plasmonic Clothing," *IEEE Trans. Antennas Propag.*, 68(11), 7309-7319 (2020).

[35] K. A. Ng, A. Rusly, G. G. L. Gammad, N. Le , S.-C. Liu, K.-W. Leong, M. Zhang, **J. S. Ho**, J. Yoo, S.-C. Yen, "A 3-Mbps, 802.11g-Based EMG Recording System with

Fully Implantable 5-Electrode EMG Acquisition Device," *IEEE Trans. Biomed. Circuits Sys.*, 11(4), 889-902 (2020).

[34] D. B. L. Teh, A. Bansal, C. Chai, T. B. Toh, R. A. J. Tucker, G. G. L. Gammad, Y. Yeo, Z. Lei, X. Zheng, F. Yang, **J. S. Ho**, N. Bolem, B. C. Wu, M. K. Gnanasammandhan, L. Hooi, G. Stewart, C. Libedinsky, W.-Y. Ong, B. Halliwell, E. K.-H. Chow, K.-L. Lim, Y. Zhang, B. K. Kennedy, "A Flexi-PEGDA Upconversion Implant for Wireless Brain Photodynamic Therapy," *Adv. Mater.*, 2001459 (2020).

[33] K. Li, M. Gao, Z. Li, H. Yang, L. Jing, X. Tian, Y. Li, S. Li, H. Li, Q. Wang, **J. S. Ho**, G. W. Ho, P.-Y. Chen, "Multi-interface engineering of solar evaporation devices via scalable, synchronous thermal shrinkage and foaming," *Nano Energy*, 74, 104875 (2020).

[32] X-Q. Wang, K. H. Chan, Y. Cheng, T. Ding, T. Li, S. Achavananthadith, S. A. Kurt, **J. S. Ho**, G. W. Ho, "Somatosensory, light-driven, thin-film robots capable of integrated perception and motility," *Adv. Mater.*, 32, 2000351 (2020).

[31] Y. Li, X. Tian, S.-P. Gao, L. Jing, K. Li, H. Yang, F. Fu, J. Y. Lee, Y.-X. Guo, **J. S. Ho**, P.-Y. Chen. "Reversible crumpling of 2D titanium carbide (MXene) nanocoatings for stretchable electromagnetic shielding and wearable wireless communication," *Adv. Funct. Mater.*, 30, 1907451 (2020).

[30] R. Lin*, H. Kim*, S. Achavananthadith, S. A. Kurt, S. C. C. Tan, H. Yao, B. C. K. Tee, J. L. W. Lee, **J. S. Ho**, "Wireless battery-free body sensor networks using near-field-enabled clothing," *Nat. Commun.*, 11, 444 (2020). **Listed as a Top 50 Physics Article of 2020.**

[29] Y. J. Tan, H. Godaba, G. Chen, S. T. M. Tan, G. Wan, G. Li, P. M. Lee, Y. Cai, S. Li, R. F. Shepherd, **J. S. Ho**, B. C. K. Tee, "A transparent, self-healing and high-k dielectric for low-field-emission stretchable optoelectronics," *Nat. Mater.*, 19, 182–188 (2020).

[28] F. Yang, P. M. Lee, Z. Dong, X. Tian, **J. S. Ho**, "Enhancing wireless transmission from the body with wearable diffractive patterns," *Phys. Rev. Applied*, 12, 054020 (2019).

[27] T. He, H. Wang, J. Wang, X. Tian, F. Wen, Q. Shi, **J. S. Ho**, C. Lee, "Self-Sustainable Wearable Textile Nano-Energy Nano-System (NENS) for Next-Generation Healthcare Applications," *Adv. Science*, 1901437 (2019).

[26] H. Yang*, B. S. Yeow*, Z. Li*, K. Li, T.-H. Chang, L. Jing, Y. Li, **J. S. Ho**, H. Ren, P.-Y. Chen, "Multifunctional metallic backbones for origami robotics with strain sensing and wireless communication capabilities," *Sci. Robotics*, 4, eaax7020 (2019).

[25] Z. Dong, Z. Li, F. Yang, C. W. Qiu, **J. S. Ho**, "Sensitive readout of implantable microsensors using a wireless system locked to an exceptional point," *Nat. Electron.*, 2, 335-342 (2019). **Featured in News & Views.**

[24] K. Li, T.-H. Chang, Z. Li, H. Yang, F. Fu, T. Li, **J. S. Ho**, P.-Y. Chen, "Biomimetic MXene Textures with Enhanced Light-to-Heat Conversion for Solar Steam Generation and Wearable Thermal Management," *Adv. Energy Mat.*, 1901687 (2019).

[23] W. W. Lee, Y. J. Tan, H. Yao, S. Li, H. H. See, M. Hon, K. A. Ng, B. Xiong, **J. S. Ho**, B. C. K. Tee, "A neuro-inspired artificial peripheral nervous system for scalable electronic skins," *Sci. Robotics*, 4, eaax2198 (2019). **Featured on the cover.**

[22] X. Tian*, P. M. Lee*, Y. J. Tan, T. L. Y. Wu, H. Yao, M. Zhang, Z. Li, K. A. Ng, B. C. K. Tee, **J. S. Ho**, "Wireless body sensor networks based on metamaterial textiles," *Nat. Electron.*, 2, 242-251 (2019). **Featured on the cover and in News & Views.**

[21] K. A. Ng, Y. Chao, A. Rusly, A. Do, B. Zhao, S. Liu, W. Y. X. Peh, X. Y. Thow, K. Voges, S. Lee, G. G. L. Gammad, K. Leong, **J. S. Ho**, S. Bossi, G. Taverni, A. Cutrone, S. C. Yen*, Y. P. Xu*, "A wireless multi-channel peripheral nerve signal acquisition system-on-chip," *IEEE J. Solid State Circuits*, 54 (8), 2266-2280 (2019).

[20] P. M. Lee*, Z. Xiong*, **J. S. Ho**, "Methods for powering bioelectronic microdevices," *Bioelectron. Med.*, 1(3), 201-217 (2018).

[19] X. Tian, P. M. Lee, **J. S. Ho**, "Control of wireless power transfer to a bioelectronic device by harmonic feedback," *AIP Adv.*, 8, 095308 (2018). **Featured on the front page and in *Scilight*.**

[18] A. Bansal, F. Yang, T. Xi, Z. Yong, **J. S. Ho**, "In vivo wireless photonic photodynamic therapy," *Proc. Natl. Acad. Sci., USA*, 115 (7), 1469-1474 (2018).

[17] Z. Dong, F. Yang, **J. S. Ho**, "Enhanced electromagnetic energy harvesting with subwavelength chiral structures," *Phys. Rev. Applied*, 1703059 (2017).

[16] Y. Tanabe*, **J. S. Ho***, J. Liu, S. Liao, Z. Zhen, S. Hsu, C. Shuto, Z. Zhu, A. Ma, C. Vassos, P. Chen, H. F. Tse, A. S. Y. Poon, "High-performance wireless powering for peripheral nerve neuromodulation systems," *PLoS One*, 12(10), e0186698 (2017).

[15] T. Chang, Y. Tanabe, C. C. Wojcik, A. C. Barksdale, S. Doshay, Z. Dong, H. Liu, M. Zhang, Y. Chen, Y. Su, T. H. Lee, **J. S. Ho**, and J. A. Fan,"A general strategy for stretchable microwave antenna systems using serpentine mesh layouts," *Adv. Funct. Mater.*, 1703059 (2017).

[14] S. Lee, W. Y. X. Peh, J. Wang, F. Yang, **J. S. Ho**, N. V. Thakor, S. C. Yen, C. Lee,"Toward bioelectronic medicine - neuromodulation of small peripheral nerves using flexible neural clip (FNC)," *Adv. Science*, 1700149 (2017).

[13] H. U. Lee, A. Blasiak, D. R. Agrawal, D. T. B. Loong, N. V. Thakor, A. H. All, **J. S. Ho**, I. H. Yang, "Subcellular electrical stimulation of neurons enhances the myelination of axons by oligodendrocytes," *PLoS One*, 12 (7), e0179642 (2017).

[12] S. Kim, **J. S. Ho**, A. S. Y. Poon, "Non-coil, optimal sources for wireless powering of sub-millimeter implantable devices," *PIER*, 158, 99-108 (2017).

[11] D. R. Agrawal, Y. Tanabe, D. Weng, S. Liao, Z. Zhen, Z. Zhu, C. Sun, Z. Dong, F. Yang, H. F. Tse, A. S. Y. Poon, and **J. S. Ho**, "Conformal phased surfaces for wireless powering of bioelectronic microdevices," *Nat. Biomed. Eng.*, 1, 0043 (2017). **Featured in News & Views and Editorial.**

[10] K. Montgomery*, A. J. Yeh*, **J. S. Ho**, V. Tsao, S. M. Iyer, L. Grosenick, E. A. Ferenczi, Y. Tanabe, K. Deisseroth, S. L. Delp, and A. S. Y. Poon, "Wirelessly powered, fully internal optogenetics for brain, spinal, and peripheral circuits in mice," *Nat. Methods*, 12, 969-974 (2015). **Featured on the cover.**

[9] **J. S. Ho**, Y. Tanabe, S. M. Iyer, A. J. Christensen, L. Grosenick, K. Deisseroth, S. L. Delp, and A. S. Y. Poon, "Self-tracking energy transfer for neural stimulation in untethered mice," *Phys. Rev. Applied*, 4, 024001 (2015). **Editor's Suggestion and featured on *Physics*.**

[8] **J. S. Ho**, B. Qiu, A. J. Yeh, Y. Yanabe, S. Fan, and A. S. Y. Poon, "Planar immersion lens with metasurface," *Phys. Rev. B*, 91, 125145 (2015).

[7] **J. S. Ho** and A. S. Y. Poon, "Energy transfer for implantable electronics in the electromagnetic midfield," *PIER*, 148, 151–158 (2014)

[6] **J. S. Ho***, A. J. Yeh*, E. Neofytou, S. Kim, Y. Tanabe, B. Patlolla, R. E. Beygui, and A. S. Y. Poon, "Wireless power transfer to deep-tissue microimplants," *Proc. Natl. Acad. Sci., USA*, 111, 7974-7979 (2014). **Featured on the cover and in *Nature Biotechnology* commentary.**

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[3] S. Kim, **J. S. Ho**, and A. S. Y. Poon, "Midfield wireless powering of subwavelength autonomous devices," *Phys. Rev. Lett.*, 110, 203905 (2013). **Editor's Suggestion and featured on *Physics*.**

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[1] S. Kim, **J. S. Ho**, and A. S. Y. Poon, "Wireless power transfer to miniature Implants: transmitter optimization," *IEEE Trans. Antennas and Propag.*, vol. 60, no. 10, 4838, Oct. 2012.

CONFERENCE ARTICLES

[22] D. Nguyen, Q. Zeng, X. Tian, **J. S. Ho**, "Non-contact Vital Sign Monitoring with a Metamaterial Surface," *IEEE International Microwaves Biomedical Conference (IMBioC)*, Suzhou, China (online), May 2022. **Best Student Paper Award.**

[21] Q. Zheng, X. Tian, **J. S. Ho**, "Wearable Wireless Propagation and Radiation Control with Metamaterial Textiles," *IEEE International Symposium on Antennas and Propagation (AP-S/URSI)*, Singapore, Dec 2021.

[20] X. Yang, X. Tian, **J. S. Ho**, "Wearable Radio-frequency Plasmonic Resonance Sensor for Non-contact Vital Sign Monitoring," *IEEE International Symposium on Antennas and Propagation (AP-S/URSI)*, Singapore, Dec 2021.

[19] Z. Li and **J. S. Ho**, "Single-Mode Wireless Sensing by Nonlinear Parity-Time-Symmetric Circuits," *IEEE International Symposium on Antennas and Propagation (AP-S/URSI)*, Singapore, Dec 2021.

[18] R. Lin, H.-J. Kim, S. Achavananthadith, **J. S. Ho**, "Digitally-embroidered Liquid Metal Textiles for Near-field Wireless Body Sensor Networks," *IEEE-EMBS International Conference on Wearable and Implantable Body Sensor Networks (BSN)*, Virtual Conference (online), Jul 2021.

[17] Z. Li, Z. Xiong, C. Li, **J. S. Ho**, "Wireless respiration monitoring using a flexible sensor and bistable circuit," *IEEE-EMBS International Conference on Wearable and Implantable Body Sensor Networks (BSN)*, Virtual Conference (online), Jul 2021. **Best Paper Award (2nd).**

[16] X. Tian, Q. Zheng, and **J. S. Ho**, "Wearable Wireless Propagation and Radiation Control with Metamaterial Textiles," *IEEE MTT-S International Microwave Biomedical Conference (IMBioC)*, Toulouse, France (online), Dec 2020.

[15] H.-J. Kim, R. Lin, S. Achavananthadith, **J. S Ho**, "Near-field-enabled Clothing for Wearable Wireless Power Transfer," *IEEE Wireless Power Transfer Conference (WPTC) 2020*, South Korea (online), Nov 2020. **Best Paper Award.**

[14] V. Kalidasan, X. Yang, **J. S Ho**, "Surgical suture as dipole antenna for wireless monitoring of post-surgical complications," *IEEE Asia-Pacific Microwave Conference (APMC) 2019*, Singapore, Dec 2019.

[13] X. Tian, X. Yang, and **J. S. Ho**, "Energy-Efficient and Secure Wireless Body Sensor Networks with Metamaterial Textiles," *IEEE Biomedical Circuits and Systems Conference (BioCAS) 2019*, Nara, Japan, Oct 2019.

[12] P. M. Lee, X. Tian, and **J. S. Ho**, "Wireless Power Transfer for Glioblastoma Photodynamic Therapy," *IEEE Biomedical Circuits and Systems Conference (BioCAS) 2019*, Nara, Japan, Oct 2019.

[11] Z. Dong and **J. S. Ho**, "Ultrasensitive Exceptional Point Circuit for Enhanced Physiological Sensing," *Thirteenth International Congress on Artificial Materials for Novel Wave Phenomena (Metamaterials)*, Rome, Italy, Oct 2019.

[10] X. Tian, M. Zhang, and **J. S. Ho**, "Robust and High-Efficiency Wireless Body Area Networks with Spoof Surface Plasmons on Clothing," *IEEE International Microwave Symposium (IMS) 2019*, Boston, MA, USA, Jun 2019.

[9] F. Yang and **J. S. Ho**, "Enhancing Wireless Transmission from Implanted Devices with an Electromagnetic Grating," *IEEE Asia-Pacific Conference on Antennas and Propagation (APCAP) 2018*, Auckland, New Zealand, Aug 2018.

[8] **J. S. Ho**, "Fully Internal, Wirelessly Powered Systems for Optogenetics," *IEEE International Conference on Optical MEMS and Nanophotonics (OMN) 2016*, Singapore, Sep 2016.

[7] A. Romano and **J. S. Ho**, "Microwave to near-infrared conversion with a millimeter-scale wireless laser for activating molecular transducers," *IEEE Engineering in Medicine and Biology Conference (EMBC) 2016*, Orlando, FL, Aug 2016.

[6] **J. S. Ho** and A. S. Y. Poon, "Conformal Microwave Lens for Focusing Across Inhomogenous Tissue," *IEEE International Symposium on Antennas and Propagation (APS) 2016*, Puerto Rico, USA, Jul 2016.

[5] **J. S. Ho** and A. S. Y. Poon, "Refraction and optimal focusing at a planar interface," *Proc. Allerton Conference (Allerton)*, Champaign, IL, Oct 2014.

[4] A. J. Yeh, **J. S. Ho**, and A. S. Y. Poon, "Optical probe for input-impedance measurement of in vivo power-receiving microstructure," *IEEE International Symposium on Antennas and Propagation (AP-S/URSI)*, Memphis, TN, Jul 2014.

[3] Y. Tanabe, H. Wong, S. Kim, **J. S. Ho** and A. S. Y. Poon, "Beam focused slot antenna for microchip implants," *IEEE International Symposium on Antennas and Propagation (AP-S/URSI) 2012*, Nagoya, Japan, Oct 2012.

[2] Y. Tanabe, **J. S. Ho**, H. Wong, and A. S. Y. Poon, "Wireless powering for microchip Implants by cross-slot antenna," *IEEE Asia-Pacific Microwave Conference (APMC) 2012*, Kaohsiung, Taiwan, Aug 2012

[1] **J. S. Ho**, O. C. Au, J. Zhou, and Y. Guo, "Demosaicking interchannel traces for digital image forensics," in *ICME Content Protection & Forensics (CPAF)*, Singapore, Jul 2010.

PATENTS

[9] **Application 10202005000P**. C. T. Lim, J. S. Ho, Y. Gao, T. D. Nguyen, J. Y. K. Long, "Thin, flexible wearable immunosensor for detection of multiple biomarkers/targets in bodily fluids". Filed March 5, 2021.

[8] **US Patent No. 17/774,924**. J. S. Ho, R. Lin, H. Kim, S. Achavananthadith, S. A. Kurt, "Methods and Systems for Near-Field Communication". Filed May 6, 2022.

[7] **International Patent Pending PCT/SG2020/050643**. J. S. Ho, V. Kalidasan, X. Yang, Z. Xiong, "Transmission Devices, Transmission Assemblies and Related Devices", Filed Nov 11, 2019.

[6] **US Patent No. 17/286,496**. J. S. Ho, B. C. K. Tee, X. Tian, P. Lee, "Radio-Wave Confinement On Metamaterial Textiles For Wireless Sensor Networking". Filed Nov 21, 2018.

[5] **US Patent No. 16/769,060**. B. C. K. Tee, W. W. Lee, K. A. Ng, J. S. Ho, "Sensor-Based Communication Apparatus and Method, and Communication Medium". Filed Dec 3, 2018. *[Licensed to SGInnovate (2018–Present)]*

[4] **US Patent No. 16/964,829**. J. S. Ho, Y. Zhang, A. Bansal, F. Yang, "Photodynamic Therapy Devices, Systems and Methods". Filed Feb 2, 2018. *[Licensed to Incando Therapeutics]*

[3] **US Patent No. 10,594,166**. J. S. Ho and A. S. Y. Poon, "Efficient wireless power transfer with flat, flexible lens". Filed Sep 28, 2015; issued Mar 17, 2020. *[Licensed to Boston Scientific (2016–2017), Neuspera Medical (2017–Present), and Invicta Medical (2021–Present) >$35k licensing revenue]*

[2] **US Patent No. 10,434,329**. A. S. Y Poon, J. S. Ho, Y. Tanabe, A. J. Yeh, K. L. Montgomery, L. Grosenick, E. A. Ferenczi, V. Tsao, S. M. Iyer, S. L. Delp, K. Deisseroth, "Autofocus wireless power transfer to implantable devices in freely moving animals". Filed Mar 25, 2015; issued Oct 8, 2019. *[Licensed to MapLight Therapeutics (2019–Present)]*

[1] **US Patent No. 9,687,664**. A. S. Y. Poon, A. J. Yeh, Y. Tanabe, J. S. Ho, and S. Kim, "Wireless midfield systems and methods". Filed Sep 16, 2014; issued Jun 27, 2017. *[Licensed to Neuspera Medical (2014–Present), 6 continuations granted and 5 pending, >$130k licensing revenue]*

MAJOR AWARDED GRANTS

National Research Foundation Fellowship Mar 2017–Feb 2022
"Small-scale Wireless Devices for Bioelectronic Therapies"
Principal Investigator, Amount: S$2.4M

Ministry of Education, Tier 3 Grant May 2017–May 2022
"Remote-controlled Photo-Therapy with Small-scale Wireless Bioelectronics"
Co-Principal Investigator, Amount: S$1.2M (Total: S$8.6M)

NUS Young Investigator Award Jan 2017–Jan 2020
"Wireless Technologies for Bioelectronic Therapies"
Principal Investigator, Amount: S$500K.

INVITED TALKS

[38] "Wireless Sensing and Therapy, Anytime and Anywhere" (online), Johnson & Johnson MedTech, External Innovation Speaker Series, Mar 2024.

[37] "Wireless Connectivity with Wearable Metamaterials" (online), University of Florida, FL, Dec 2023.

[36] "Wireless Connectivity with Wearable Metamaterials" (online), Kyung Hee University, South Korea, May. 2023.

[35] "Wound-Integrated Bioelectronic Sensors with Polymeric Electronics" (invited), MRS Spring 2023, San Francisco, CA, Feb. 2023.

[34] "Wireless Connectivity with Wearable Metamaterials" (online), E-Textiles 2022, Nottingham, UK, Nov. 2022.

[33] "Wireless Technologies for Bioelectronic Therapies and Diagnostics" (online), 31st Flexible Medical IT Study Group, University of Tokyo, Japan, Jun. 2022.

[32] "Wireless Body Sensor Networks with Metamaterial Textiles", IUPESM World Congress on Medical Physics and Biomedical Engineering, Singapore, Jun. 2022.

[31] "Wireless Sensing and Therapy, Anytime and Anywhere", 4th iHealthTech Symposium, Singapore, Jun. 2022.

[30] "Wireless Technologies for Bioelectronic Therapies and Diagnostics" (online), BioMSE Symposium, University of Tokyo, Japan, Dec. 2021.

[29] "Wireless Technologies for Bioelectronic Therapies and Diagnostics" (online), Institute of Flexible Electronics, Northwestern Polytechnical University, China, Dec. 2021.

[28] "Bioelectronics for Wireless Therapy and Diagnostics", Institute for Biomedical Engineering, University of Oxford, Oxford, UK, Nov. 2021.

[27] "Sensing, powering, and actuating wireless implants with parity-time-symmetric systems" (online), METANANO 2021, Sep. 2021.

[26] "AI in Bioelectronics" (online), WAIC Developer Summit, Shanghai, China, Jul. 2021.

[25] "Physics-based Technologies for Bioelectronics" (online), American Physical Society (APS) Colloquium, Ridge, NY, USA, Jun. 2021.

[24] "Wireless Technologies for Bioelectronic Therapies and Diagnostics" (online), Convergence Future Communication Colloquium Series, Kyung Hee University, South Korea, May 2021.

[23] "Networked Battery-free Sensors with Wirelessly-enabled Clothing" (online), SPIE Defense + Commercial Sensing (DCS), Apr. 2021.

[22] "Metamaterial Textiles: Convergence of Wireless Technology with Clothing" (online), Convergence Engineering Institute for Emerging Communication Technology, Kyung Hee University, South Korea, Feb. 2021.

[21] "Metamaterials for Bioelectronic Therapies and Diagnostics" (online), International Conference on Metamaterials and Nanophotonics (METANANO), Oct. 2020.

[20] "Wireless Technologies for Bioelectronic Therapies and Diagnostics" (online), IEEE Engineering & Medicine and Biology Society (EMBS) Kharagpur Section, Indian Institute of Technology Kharagpur (IIT KGP), Aug. 2020.

[19] "Wireless Bioelectronic Technologies, Therapies, and Diagnostics" (online), Brain Engineering Convergence Research Center, Daegu Gyeongbuk Institute of Science & Technology (DGIST), Jun. 2020.

[18] "Smart Clothing and Wireless Technology" (online), Innovate Textiles & Apparel 2020, Singapore, May 2020.

[17] "Bioelectronics for Precision Photomedicine", International Workshop on Photomedicine for e-Healthcare, Korea Advanced Institute for Science and Technology (KAIST), Nov. 2019.

[16] "Wireless Body Sensor Networks with Metamaterial Textiles", Asia-Pacific Conference on Antennas and Propagation (APCAP), Incheon, South Korea, Oct. 2019.

[15] "Wireless Photonic Photodynamic Therapy", Symposium on Drug Delivery, International Conference on Materials for Advanced Technologies (ICMAT), Singapore, Jun. 2019.

[14] "Wireless Bioelectronic Technologies, Therapies, and Diagnostics", Radiation Lab Seminar, University of Michigan, Ann Arbor, USA, Feb. 2019.

[13] "Wireless Bioelectronic Technologies, Therapies, and Diagnostics", Micro/Nano Technology Lab Seminar, University of Illinois, Urbana-Champaign, USA, Jan. 2019.

[12] "Enhancing Wireless Transmission from the Body", Asia-Pacific Conference on Antennas and Propagation (APCAP), Auckland, Aug. 2018.

[11] "Wireless Photonic Photodynamic Therapy", IEEE Wireless Power Transfer Conference (WPTC), Montreal, Jun. 2018

[10] "Wireless Light Delivery for Photodynamic Therapy", IEEE International Conference on Nano/Micro Engineered and Molecular Systems (NEMS), Singapore, Apr. 2018.

[9] "Fully Internal, Wirelessly Powered Systems for Optogenetics", Neurophotonics Workshop, Nanyang Technological University, Singapore, Mar. 2017.

[8] "Conformal Phased Surfaces in Theranostic Systems", International Microwave Symposium (IMS), Honolulu, Hawaii, Jun. 2017.

[7] "Conformal Phased Surfaces for Wireless Powering of Bioelectronic Devices", Applied Computational Electromagnetics Society (ACES), Suzhou, Aug. 2017.

[6] "Physiological Modulation with Small-scale Wireless Bioelectronics", International Conference on Biomedical Engineering (ICBME), Singapore, Dec. 2016.

[5] "Microwave to Near-infrared Conversion with a Millimeter-scale Wireless Laser for Activating Molecular Transducers", IEEE Engineering in Biology and Medicine Conference (EMBC), Orlando, Aug. 2016.

[4] "Conformal Microwave Lens for Wireless Powering across Heterogenous Tissue", IEEE Antennas and Propagation Conference, Puerto Rico, Jun. 2016.

[3] "Wireless Powering for Bioelectronics", Korea Institute of Electromagnetics Symposium, Seoul, South Korea, Oct. 2015.

[2] "Wireless Powering for Implanted Electronics", Department of Electronic and Computer Engineering Seminar, Hong Kong University of Science and Technology, Dec. 2013.

[1] "Wireless Powering for Implanted Electronics", Networking, Communication, and DSP Seminar, University of California, Berkeley, USA, Oct. 2013.

Post-docs

- Yunxia Jin, Research Fellow (2018–2025) → Post-doc, University of Cambridge
- Han-Joon Kim, Research Fellow (2018–2022) → Assistant Professor, Kumoh National Institute of Technology
- Ze Xiong, Research Fellow (2017–2022) → Assistant Professor, ShanghaiTech
- Rongzhou Lin, Research Fellow (2017–2022) → Assistant Professor (China Young Talent Program), South China University of Technology
- Viveka Kalidasan, Research Fellow (2016–2021) → Technology Development Officer/ Senior Research Fellow, A*STAR
- Pui Mun Lee, Research Fellow (2016–2019) → Technology Manager, Intellectual Property Intermediary

PhD Students

- Dat T. Nguyen, PhD (2019–2023) → Researcher, Meta
  Thesis title: "Metamaterial-based Technologies for Wireless Physiological Sensing"
- Qihang Zeng, PhD co-advised by Prof. Benjamin Tee (2019–2023) → Assistant Professor, Zhejiang University of Technology
  Thesis title: "Metamaterial Textile Design for Wireless Bioelectronic Networking and Sensing"
- Sippanat Achavananthadith, PhD co-advised by Prof. Jerald Yoo (2017–2022)
  Thesis title: "Wearable Near-field Systems for Continuous Healthcare Monitoring"
- Hongjian Cui, PhD co-advised by Prof. Cheng-Wei Qiu (2017–2022) → Engineer, MediaTek
  Thesis title: "Bistable Parity-time-symmetric Electronics: Theory and Applications"
- Xin Yang, PhD (2017–2022) → Post-doc, University of Pennsylvania
  Thesis title: "Radio-frequency Techniques for Wireless Operation of Textile Biomedical Sensors"
- Sophie Lian, PhD co-advised by Prof. Chia-Hung Chen (2017–2022) → Medical Affairs Executive, Bioptimal International
  Thesis title: "Hydrogel Systems for Biosensors and Drug Delivery"

- Zhipeng Li, PhD co-advised by Prof. Cheng-Wei Qiu (2017–2022) → Research Fellow, NUS
  Thesis title: "Sensitive and Noise-Robust Wireless Biosensors based on Exceptional Points"
- Xi Tian, PhD (2016–2021) → Assistant Professor, Tsinghua-Berkeley Institute
  Thesis title: "Metamaterial Textile for Body Sensor Networks"
- Fengyuan Yang, PhD (2016–2020) → Associate Professor, Shanghai University
  Thesis title: "Metasurfaces for Wireless Interfacing with Bioelectronics"
- Zhenya Dong, PhD (2016–2020), Research Fellow (2020–2021) → Research Engineer, HiSilicon
  Thesis title: "Non-Hermitian Electronics for Wireless Biomedical Sensing"

CONFERENCE ORGANIZATION

- Symposium Co-Chair, Materials and Systems for Fully Implantable Organ Interfaces, MRS Spring, Seattle, 2024.
- Track Chair, Sensors, Actuators and Bioelectronics, IEEE International Flexible Electronics Technology Conference (IFETC), San Jose, 2023.
- Member, Technical Program Committee, IEEE AP-S International Symposium on Antennas and Propagation (APS), San Diego, 2023
- Track Chair – Wearable Sensors and Systems, IEEE SENSORS, Dallas, 2022
- Member, Local Organizing Committee, IUPESM World Congress on Medical Physics and Biomedical Engineering (IUPESM WC), Singapore, 2022
- Member, Technical Program Committee, IEEE AP-S International Symposium on Antennas and Propagation (APS), Denver, 2022
- Co-chair, Technical Program Committee, IEEE International Microwave Biomedical Conference (IMBioC), TBD, 2022
- Co-chair, Technical Program Committee, IEEE Wireless Power Week (WPW), Bordeaux, France, 2022
- Special Session Co-Organizer, IEEE-EMBS International Conference on Wearable and Implantable Body Sensor Networks (BSN), Virtual Conference, 2021
- Super Reviewer, IEEE AP-S International Symposium on Antennas and Propagation (APS), Singapore, 2021
- Session Chair, IEEE Wireless Power Transfer Conference (WPTC), Seoul, South Korea, 2020
- Technical Program Committee, IEEE Asia-Pacific Microwave Conference (APMC), Singapore, 2019
- Local Organizing Committee, International Conference of Biomedical Engineering (ICBME), Singapore, 2019
- Special Session Organizer/Chair, IEEE Asia-Pacific Conference on Antennas and Propagation (APCAP), Auckland, New Zealand, 2018
- Technical Program Committee Chair, Asia Wireless Power Transfer Conference (AWPTC), Singapore, 2017
- Special Session Organizer/Chair, International Conference of Biomedical Engineering (ICBME), Singapore, 2015

BOOK CHAPTERS

[4] H. J. Kim, Z. Dong, and **J. S. Ho**, "Wireless interfaces for bioelectronics," *Handbook of Neuroengineering*, Ed. Nitish Thakor, Springer New York, in press.

[3] Z. Li and **J. S. Ho**, "Microwave metamaterials for biomedical sensing," *Encyclopedia of Sensors and Biosensors*, Ed. Roger Narayan, Elsevier, November 2020.

[2] **J. S. Ho**, A. J. Yeh, S. Kim, and A. S. Y. Poon, "Wireless powering for miniature implantable systems," *Neural Computation, Neural Devices, and Neural Prosthesis*, Ed. Yang Zhi, Springer New York, 2014.

[1] O. C. Au, Y. Guo, and **J. S. Ho**, "Steganography in Halftone Images," *Visual Cryptography and Secret Image Sharing*, Eds. Stelvio Cimato and Ching-Nung Yang, CRC Press, August 2011.

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Includes coverage by Reuters, SF Chronicle, New York Times, Scientific American, The Wall Street Journal, ABC, NBC, BBC, MIT Technology Review, Business Insider, The Straits Times, South China Morning Post, and The Telegraph. More details may be found on my website.