

Lingnan Song

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Dr. L. Song was born in July 1991, currently working as an Assistant Professor at Beihang University, P. R. China, in the School of Electronic and Information Engineering. She received her Ph.D from UCLA, Electrical and Computer Engineering, under the supervision of Prof. Yahya Rahmat-Samii. Her research of interest involves reconfigurable and conformal antennas for personal and biomedical applications, miniaturized sensing systems, and advanced antenna & EMC measurement techniques.

Education

Academic Qualifications

- 2016–2020 **Electrical and Computer Engineering**, *Ph. D. University of California, Los Angeles.*
- 2014–2016 **Electrical and Computer Engineering**, *M. S. University of California, Los Angeles.*
- 2010–2014 **Optical Engineering, Chu Kochen Honors College**, *B. S. Zhejiang University, P. R. China.*

Honors and Awards

- 2021 Applied Computational Electromagnetics Symposium (ACES) **Young Scientist Award (YSA)**
- 2019 International Symposium on Electromagnetic Theory (EMTS) **Young Scientist Award (YSA)**
- **First Place** in 2017 **Ernest K. Smith USNC-URSI Student Paper Competition.**
- UCLA Engineering School **Outstanding Master Thesis Award**, Physical & Wave Electronics.
- Chinese Scholarship Council **3-year Fellowship** in Tuition Track (only 5% of applicants awarded worldwide).
- Zhejiang University **Outstanding Bachelor Thesis Award.**

Peer-Reviewed Journal Publications

- S. Fu, **L. Song***, Y. Wang, J. Wang, D. Su, and Y. Rahmat-Samii, “A Systematic Analysis on the Frequency Selection Scheme of Wireless Links Towards Miniaturized Backscattering Neural Implants”, *IEEE Transactions on Microwave Theory and Techniques*, 2024 (accepted).
- J. Tan, **L. Song***, and Z. Xiang, “Far Field Reconstruction of Antennas via Single-Surface Phaseless Spherical Near-field Scans: A Novel Approach based on Dipole Equivalence”, *IET Electronics Letters*, 2024.
- S. Yu, **L. Song***, and D. Su, “A Ku-Band Wideband Low-Profile Patch Antenna with Slot-Loading and Parasitic Structures”, *IET Electronics Letters*, 2024.
- X. Lu, **L. Song***, H. Xu, and D. Su, “Study on the Impact of Imbalance between Transmission Lines on Crosstalk: a Novel Perspective of Displacement Current”, *Chinese Journal of Electronics*, 2024.
- Y. Wang, **L. Song***, L. Zeng, and Y. Rahmat-Samii, “A Novel Hybrid Particle Swarm and Brain Storm Optimization for Electromagnetic Applications with Enhanced Performance”, *IEEE Antennas and Propagation Magazine*, 2024.
- X. Lu, **L. Song***, H. Xu, and D. Su, “Single Sample Electromagnetic Spectrum Recognition Utilizing Fractional Fourier Transform”, *Chinese Journal of Aeronautics*, 2024.
- **L. Song***, B. Zhang, and Y. Rahmat-Samii, “Embroidery Electro-Textile Patch Antenna Modeling and Optimization Strategies with Improved Accuracy and Efficiency”, *IEEE Transactions on Antennas and Propagation*, 2022.
- J. Chiang, **L. Song**, F. Abtin* and Y. Rahmat-Samii, “Efficacy of Lung-Tuned Monopole Antenna for Microwave Ablations: Analytical Solution and Validation in a Ventilator-Controlled ex Vivo Porcine Lung Model”, *IEEE Journal of Electromagnetics, RF and Microwaves in Medicine and Biology*, 2021.
- Y. Rahmat-Samii*, and **L. Song**, “Advances in Communication and Biomedical Antenna Developments at UCLA Antenna Lab: Handheld, Wearable, Ingestible and Implantable”, *IEEE Antenna and Propagation Magazine*, 2021.
- **L. Song***, W. Gao, C. O. Chui, and Y. Rahmat-Samii, “3D Printed Microfluidics Channelizing Liquid Metal for Multi-Polarization Reconfigurable Extended E-Shaped Patch Antenna”, *IEEE Transactions on Antennas and Propagation*, 2020.
- **L. Song***, W. Gao, C. O. Chui, and Y. Rahmat-Samii, “Wide-band Frequency Reconfigurable Patch Antenna with Switchable Slots (PASS) based on Liquid Metal and 3D Printed Microfluidics”, *IEEE Transactions on Antennas and Propagation*, 2019. (Cited 90 times by 12/01/2023)

- **L. Song***, Y. Rahmat-Samii, “A Systematic Investigation of Rectangular Patch Antenna Bending Effects for Wearable Applications”, *IEEE Transactions on Antennas and Propagation*, 2018. (Cited 92 times by 12/01/2023)
- **L. Song***, Y. Rahmat-Samii, “An End-to-End Implanted Brain-Machine Interface Antenna System Performance Characterization and Development”, *IEEE Transactions on Antennas and Propagation*, 2017.
- **L. Song***, J. J. Adams and Y. Zhu*, “Stretchable and Reversibly Deformable Radio Frequency Antennas Based on Silver Nanowires”, *ACS Applied Materials & Interfaces*, 2014. (Cited 320 times by 12/01/2023)

Book Chapter

- **L. Song**, and Y. Rahmat-Samii, “Antennas and Sensors for Medical Applications: A Representative Literature Review.” in *Antenna and Sensor Technologies in Modern Medical Applications*, ed. Y. Rahmat-Samii and E. Topsakal, Wiley/IEEE Press, April, 2021.

Conference Publications

- Z. Xiang, J. Tan, **L. Song**, “Near-Field Phase Reconstruction and Far-Field Prediction with Phaseless Spherical Data Using Neural Networks”, *Asia-Pacific Conference on Antennas and Propagation (APCAP)*, 2024.
- S. Fu, **L. Song**, D. Su, Y. Rahmat-Samii, “Analysis of the Frequency Selection Scheme for Miniaturized Backscattering Neural Interfaces”, *IEEE Antennas and Propagation International Symposium*, 2024.
- Y. Wang, **L. Song**, “An Aperture Coupled Frequency-Polarization Reconfigurable Patch Antenna based on Tuning Channelized Liquid Metal”, *IEEE Antennas and Propagation International Symposium*, 2024.
- J. Tan, Z. Xiang, **L. Song**, “Far Field Reconstruction from Phaseless Hemispherical Near Field using Dipole Equivalence”, *IEEE Antennas and Propagation International Symposium*, 2024.
- S. Fu, **L. Song**, and D. Su, “On the Penetration Depth of Orbital Angular Momentum Vortex Beams Interacting with the Human Tissue”, *Asia-Pacific Conference on Antennas and Propagation (APCAP)*, 2023.
- B. Zhang, **L. Song**, and Y. Rahmat-Samii, “Textile patch antenna surrogate-based optimization: Kriging surrogate modeling on equivalent circuit components”, *North American Radio Science Meeting (USNC-URSI)*, 2023.
- Z. Liu, **L. Song**, Y. Jiang, and D. Su “An RFID-based Sensing System for Visual Monitoring of Electromagnetic Radiation”, *URSI General Assembly*, 2023.
- Y. Wang, G. Lu, Z. Pei, and **L. Song**, “A Radiation Pattern-Reconfigurable Patch Antenna with Tunable CSRR based on Liquid Metal and 3-D Printed Microfluidics”, *International Applied Computational Electromagnetics Society Symposium*, 2022.
- S. Yu, **L. Song**, and D. Su, “Study on the Cylindrical Bending Effects of a Ku-Band Array Feeding Network”, *International Applied Computational Electromagnetics Society Symposium*, 2022.
- **L. Song**, J. Chiang, W. Gao, and Y. Rahmat-Samii, “Liquid Metal-based Tunable Coaxial Antenna for Microwave Ablation”, *IEEE Antennas and Propagation International Symposium*, 2021.
- **L. Song**, and Y. Rahmat-Samii, “A Hybrid of Particle Swarm and Brain Storm Optimizations for Application in Electromagnetics ”, *URSI General Assembly*, 2020.
- **L. Song**, W. Gao, and Y. Rahmat-Samii, “3D Printing-based Liquid Metal Patch Antennas with Wide-Band Frequency and Multi-Polarization Reconfigurations”, *International Symposium on Electromagnetic Theory*, 2019.
- **L. Song**, D. Zhang, and Y. Rahmat-Samii, “Towards Embroidered Textile Antenna Systematic Design and Accurate Modeling: Investigation of Stitch Density”, *North American Radio Science Meeting (USNC-URSI)*, 2019.
- **L. Song**, Y. Rahmat-Samii, “Reconfigurable Patch Antenna with Liquid Metal Tuning Slots and 3D Printed Microfluidics”, *IEEE Antennas and Propagation International Symposium*, 2018.
- **L. Song**, D. Zhang, and Y. Rahmat-Samii, “Towards Embroidered Textile Antenna Systematic Design and Accurate Modeling: Rectangular Patch Antenna Case Studies”, *IEEE Antennas and Propagation International Symposium*, 2018.
- **L. Song**, W. Gao, C. O. Chui, and Y. Rahmat-Samii, “Liquid Metal 3D Printed Microfluidic Channel Reconfigurable Patch Antenna with Switchable Slots”, *Proceedings of the North American Radio Science Meeting (USNC-URSI)*, 2018.
- **L. Song**, Y. Rahmat-Samii, “Patch Antenna Bending Effects for Wearable Applications: Guidelines and Design Curves”, *Proceedings of the North American Radio Science Meeting (USNC-URSI)*, 2018.
- **L. Song**, Y. Rahmat-Samii, “Miniaturized Antenna System Designs and Characterizations for Wireless and Fully-Passive Brain-Machine Interface”, *Proceedings of the North American Radio Science Meeting (USNC-URSI)*, 2017.
- **L. Song**, Y. Rahmat-Samii, “Miniaturized Loop Antennas for Wireless Brain-Machine Interfaces: Efficiency Enhancement and Link Characterizations”, *IEEE Antennas and Propagation International Symposium*, 2016.
- **L. Song**, Y. Rahmat-Samii, “Analysis of Millimeter-Size Implanted Loop Antennas for Brain-Machine Interface Systems”, *Proceedings of the North American Radio Science Meeting (USNC-URSI)*, 2016.

- **L. Song**, Y. Rahmat-Samii, "A Systematic Investigation on Patch Antenna Bending Effects for Wearable Applications", *IEEE Antennas and Propagation International Symposium*, 2017.

Patents

- Y. Zhu, S. Yao, **L. Song**, and A. Myers, "Electrodes and Sensors Having Nanowires." United States PCTUS2015024696, July, 2014.
- J. Chiang, **L. Song**, and Y. Rahmat-Samii, "Apparatus and Systems for Liquid Metal-based Tunable Coaxial Antenna for Microwave Ablation." United States PCTUS2021030711, November, 2021.

Teaching Experiences

- 2021-2023 **Electromagnetics, Beihang University**, *Instructor*, Undergraduate.
- 2021-2022 **RF Circuits Simulation Techniques, Beihang University**, *Instructor*, Graduate.
- 2021 **Microwave Communication Systems, Beihang University**, *Instructor*, Graduate.
- 2020 **BE120 Biomedical Transducers, UCLA**, *Teaching Assistant*, Undergraduate.
- 2019 **EE2 Physics for Electrical Engineers, UCLA**, *Teaching Assistant*, Undergraduate.
- 2018 **EE101A Engineering Electromagnetics, UCLA**, *Teaching Assistant*, Undergraduate.