Abbas Semnani

Contact Information

Electrical Engineering & Computer Science Department
The University of Toledo
1610 N. Westwood Ave., MS 308
Toledo, OH 43606-3390, USA

Phone: +1 (419) 530-8150
abbas.semnani@utoledo.edu
Office: Nitschke Hall (NI) 2031
https://www.semnani-arpl.com

Research Interests

Applied Electromagnetics and Plasma Science

High-power microwaves, reconfigurable RF electronics, tunable and small antennas, microwave plasma sources, plasma metamaterials, plasma medicine, plasma propulsion

Appointments

The University of Toledo

- Associate Professor of EECS 2023-present
  - Director of the UToledo Provost's *"Plasma-EM-Material Interactions Research Initiatives"*
    Broadening EM-plasma research scope through diverse collaborations and external stakeholder engagement.
- Assistant Professor of EECS 2019-2023
  - Director of the *"Adaptive Radiofrequency and Plasma Lab (ARPL)"*
    Founder of ARPL, equipped with state-of-the-art instrumentation for research and education in applied electromagnetics and plasma science.

Purdue University

- Research Assistant Professor 2017-2019
- Senior Research Scientist 2015-2017
- Postdoctoral Research Associate 2012-2015

Research Grants

Current

- "Resonant microwave plasma sources to improve the efficiency of compact plasma-based accelerators," U.S. Department of Energy (DOE), $722.5k, (PI, $647.5k), 2025-2028.
- "CAREER: Novel microplasmas for highly compact and versatile RF electronics," National Science Foundation (NSF), ECCS-2337815, $556k, (Single PI), 2024-2029.
- "SMART Hub: Hub for Spectrum Management with Adaptive and Reconfigurable Technology," Army Research Lab (ARL), $4.6M, (Co-PI, $121k), 2024-2025.
- "Ultra-wideband and highly efficient plasma-matched small HF antennas," Office of Naval Research (ONR), N00014-21-1-2449, $394k, (Single PI), 2021-2025.
- "Ultra-high efficiency microwave plasma for extreme low-power applications," National Science Foundation (NSF), ECCS-2102100, $365k, (Single PI), 2021-2025.
- "Reconfigurable plasma protection against high power microwaves," Office of Naval Research (ONR), N00014-21-1-2441, $764k, (Co-PI, $375k), 2021-2025.

Pending

- "ECLIPSE-PFAS: Efficient and Scalable PFAS removal using synergistic reactive species and intense UV light from microwave krypton plasmas," National Science Foundation (NSF), $600k, (PI, $360k), 2025-2028.
- "Ultra-fast, high-power, and high-isolation microwave plasma limiters," Office of Naval Research (ONR), $611k, (Single PI), 2025-2029.

- "Plasma-enhanced electrically small antennas for communications on hypersonic systems through the plasma sheath," Air Force Phase I STTR, $100k, (Co-PI, $35k), 2025.
- "Plasma-enhanced electrically small antennas (PE-ESAs) for the proliferated warfighter space architecture," Space Development Agency Phase I STTR, $305k, (Co-PI, $145k), 2025.

Completed

- "Plasma Impedance Matching Networks," Lockheed Martin Corp., 4105131951, $349k, (Single PI), 2021-2023.
- "Wideband and high-power reconfigurable plasma matching network for compact and efficient phased array emitters," Office of Naval Research (ONR), N00014-19-1-2549, $1.96M, (Co-PI, $60k), 2019-2022.
- "Real-time optimization of fundamental and harmonic load impedances, source impedance, input power, and bias," NSWC Crane, N00164-19-1-1002, $200k, (Co-PI, $10k), 2019-2020.
- "Plasmas for low noise reconfigurable RF systems," National Science Foundation (NSF), ECCS-1619547, $360k, (Co-PI), 2016-2019.
- "Reconfigurable power amplifier and filter technology for real-time adaptive next generation radar," Army Research Lab (ARL), W911NF-16-2-0054, $873k, (Co-PI), 2016-2018.
- "Plasma-tunable radio-frequency elements," Lockheed Martin Aeronautics Company, 6574009847, $70k, (Co-PI), 2017.

Awards

- The NSF CAREER Award, 2024.
- The NASA Glenn Faculty Fellowship Award (NGFFA) for the research project "Plasma-assisted communications for re-entry and hypersonic applications," 2022.
- The IEEE MTT "Tatsuo Itoh" Award for the paper "An Electronically Tunable High-Power Impedance Tuner with Integrated Closed-Loop Control", 2019.

Education

K. N. Toosi University of Technology

Ph.D., Electrical and Computer Engineering, 2009

- Thesis: Time-Domain Electromagnetic Inverse Scattering
- Ph.D. Visiting Scholar, Aristotle University of Thessaloniki, 2008

M.Sc., Electrical and Computer Engineering, 2002

University of Tehran

B.Sc., Electrical and Computer Engineering, 2000

Group Members

Post Doctoral Associates

- Muhammad Rizwan Akram, started Nov. 2022, *Physics and applications of EM-plasma interactions*

Ph.D. Students

- Kazi Sadman Kabir, started Fall 2020, *Low-power resonant microwave plasmas for biomedical applications*
- Kushagra Singhal, started Fall 2022, *Efficient microwave plasma lines for material processing*

- Nida Zahara Kazmi, to start Spring 2025
- Tahir Azam, to start Spring 2025

M.Sc. Students

- Mohammadali Parsaei, started Fall 2023, *3-D split ring resonators for microwave plasma jet applications*

Alumni

- Sandeep Narasapura Ramesh, Ph.D., 2020-2024, *Theory and design of frequency selective plasma limiters*
- Krushna Kanth Varikuntla, Postdoctoral Associate, 2021-2023, *Plasma frequency selective surfaces*
- Samsud Moon, M.Sc., 2021-2023, *Magnetic control of electrons mobility in capacitively coupled plasmas*
- Md Tanvir Ahmed, MSc., 2021-2023, *Absorptive frequency selective surfaces*
- Taylor Ann Buckey, Undergraduate Researcher, Spring 2024
- Adam Abed, Undergraduate Co-op, Summer 2023
- Amina Lokhandwala, Undergraduate Researcher, Spring 2022

Teaching Experience

The University of Toledo

- EECS3440, Electronics Laboratory — F 2019, S 2020, F 2020, F 2022, F 2023
- EECS3710, Electromagnetics I — F 2020, F 2021, F 2022, F 2023, F 2024
- EECS3720, Electromagnetics II — S 2021, S 2023, S 2024
- EECS5930, Electrical Engineering & Computer Science Seminar — S 2022

Purdue University

- Guest Lecturer, "Electrical Circuits" — F 2012
- Mentor of the "Wireless Power Transfer" team — F 2012

K. N. Toosi University of Technology

- Instructor, "Differential Equations" and "Engineering Mathematics" — 2009-2011

Invited Talks & Seminars

T19. **A. Semnani**, "EM-plasma interactions for high-power microwaves and efficient plasma generators," *ECSE Department Colloquium, Case Western Reserve University*, October, 2024.

T18. **A. Semnani**, S. N. Ramesh, K. Singhal, and M. R. Akram, "Synergies of plasma-electromagnetic interaction in RF electronic applications," 77^{th} *Annual Gaseous Electronics Conference (GEC)*, October, 2024.

T17. **A. Semnani**, "EM-plasma interactions: Innovations in high-power microwaves and highly efficient plasma generators," *GEDC Distinguished Lecture Series, Georgia Institute of Technology*, September, 2024.

T16. **A. Semnani**, "Reconfigurable plasma electronics: principles and applications," *AVS Michigan Chapter Spring Symposium*, June 2023.

T15. **A. Semnani**, "A plasma-based absorptive topology for frequency selective protections," *57th Annual Microwave Power Symposium (IMPI 57)*, June 2023.

T14. **A. Semnani**, "Low-power cold plasma generators for cancer treatment," *UToledo Department Of Urology*, November 2022.

T13. **A. Semnani**, "Research overview of the adaptive radiofrequency and plasma lab (ARPL)," *Collins Aerospace*, November 2021.

T12. **A. Semnani**, "Low-temperature plasma for reconfigurable RF electronics," *UToledo Department of Physics and Astronomy Colloquium*, Toledo, OH, September 2021.

T11. **A. Semnani**, "Low-temperature plasma for high-power RF electronics," *UToledo EECS graduate Seminar Series*, Toledo, OH, March 2021.

T10. **A. Semnani**, "Adaptive radiofrequency and plasma lab (ARPL)," *AFRL at Wright-Patterson Air Force Base*, Dayton, OH, January 2020.

T9. **A. Semnani**, S. Macheret, and D. Peroulis, "Plasma metamaterial: A potential solution for wideband electrically-small antennas," 10^{th} *International Workshop on Microplasmas (IWM-10)*, Kyoto, Japan, May 2019.

T8. **A. Semnani**, S. Macheret, and D. Peroulis, "Microwave microplasma: From destructive power-limiting effects to promising high-power tuning applications," 9^{th} *International Symposium on Plasma Nanoscience and Nanotechnology (iPlasmaNano-IX)*, New Buffalo, MI, August 2018.

T7. **A. Semnani**, S. Macheret, and D. Peroulis, "Low-temperature plasma for high-power microwave tuning," *IEEE International Microwave Workshop Series on Advanced Materials and Processes (IMWS-AMP)*, Pavia, Italy, September 2017.

T6. **A. Semnani**, and D. Peroulis, "Cold plasma-enabled tunable RF devices," *IEEE Wireless and Microwave Technology Conference (WAMICON)*, Clearwater, FL, April 2016.

T5. **A. Semnani**, "From graduate school to the job market; My story as an IEEE-MTT Member," *Graduates of the Last Decade (GOLD) Session, IEEE International Microwave symposium (IMS)*, Tampa, FL, June 2014.

T4. **A. Semnani** and D. Peroulis, "Radio frequency gas breakdown and micro/nano-plasma formation in high-power evanescent-mode cavity resonators," *General Assembly and Scientific Symposium of the International Union of Radio Science (URSI-GASS)*, Beijing, China, August 2014.

T3. **A. Semnani** and D. Peroulis, "High frequency gas breakdown and microplasma formation in evanescent-mode cavity resonators," *Annual Meeting of the Electrostatics Society of America (ESA)*, Notre Dame, IN, June 2014.

T2. D. Peroulis and **A. Semnani**, "RF discharges phenomena in miniaturized RF MEMS cavity-based filters," 66^{th} *Annual Gaseous Electronics Conference (GEC)*, Princeton, NJ, 2013.

T1. **A. Semnani**, "Time Domain Inverse Scattering," Aristotle University of Thessaloniki, Thessaloniki, Greece, November 2008.

Professional Services

- Technical Committee Member of the *IEEE International Power Modulator and High Voltage Conference (IPMHVC)*, Indianapolis, IN, 2024
- Selection Committee Member of the *University of Michigan Prize for Excellence in Plasma Science and Engineering*, 2023 and 2024
- Local Organization Committee Member of the *Gaseous Electronics Conference (APS GEC)*, Ann Arbor, MI, 2023
- Program Committee Member of the *American Physical Society Division of Plasma Physics (APS DPP)*, 2021
- Technical Committee Member of the *IEEE Radio & Wireless Week (RWW)*, 2017
- Guest Editor of the *IEEE Microwave Magazine* December 2016 special issue
- Reviewer for many journals, including:
  IEEE Transactions on Plasma Science, *IEEE Transactions on Microwave Theory and Techniques*, *IEEE Transactions on Antennas and Propagation*, *IEEE Transactions on Geoscience and Remote Sensing*, *IEEE Transactions on Very Large Scale Integration Systems*, *IEEE Transactions on Circuits and Systems II*, *IEEE Antennas and Wireless Propagation Letters*, *IEEE Geoscience and Remote Sensing Letters*, *IEEE Electron Device Letters*, *Journal of Applied Physics*, *Physics of Plasmas*, *Plasma Sources Science*

and Technology, *Applid Physics Letters*, *Journal of Physics D: Applied Physics*, *Optics Letters*, *Europhysics Letters*, *Electronics Letters*, and *John Wiley & Sons*

Professional Affiliations

- IEEE Senior Member
- IEEE Nuclear and Plasma Sciences
- IEEE Antennas and Propagation
- IEEE Microwave Theory and Techniques
- IEEE Geoscience and Remote Sensing
- American Physical Society (APS)

Book Chapters

B2. **A. Semnani** and M. Kamyab, "A hybrid method for solving 2-D inverse scattering problems," *Ultra-Wideband, Short Pulse Electromagnetics 9*, Eds.: F. Sabath, D. V. Giri, F. Rachidi, and A. Kaelin, Springer, Germany, pp. 89-99, 2010, ISBN: 978-0-387-77844-0.

B1. **A. Semnani** and M. Kamyab, "Solving inverse scattering problems using truncated cosine Fourier series expansion method," *Advanced Microwave Circuits and Systems*, Ed.: V. Zhurbenko, In-Tech, Croatia, pp. 455-470, 2010, ISBN: 978-953-307-087-2.

Patents

P1. **A. Semnani** and K. S. Kabir, "Power-efficient microwave plasma jet based on evanescent-mode cavity technology," US Patent, US20230178868A1, 2023.

P2. S. N. Ramesh and **A. Semnani**, "Absorptive and frequency-selective plasma limiters," US Patent. (pending)

P3. M. R. Akram and **A. Semnani**, "A power-efficient microwave plasma jet based on a dielectric anapole structure," US Patent. (pending)

P4. **A. Semnani** and Kushagra Singhal, "Plasma matching for wideband electrically small antennas," US Patent. (pending)

P5. M. R. Akram and **A. Semnani**, "Super-directive Huygens antennas based on crossed electric and magnetic dipoles." (invention disclosure pending)

Journal Publications

Pending

J42. M. R. Akram and **A. Semnani**, "A Huygens antenna element based on crossed electric and magnetic dipoles," *IEEE Transactions on Antennas and Propagation.* (to be submitted)
A printed antenna element with >8.5 dBi gain and an apperture efficiency of (>90%).

J41. K. S. Kabir, K. Singhal, and **A. Semnani**, "The effect of frequency on chemical species of EVA cavity-based microwave plasma jets," *IEEE Transactions on Plasma Science.* (to be submitted)

J40. M. R. Akram and **A. Semnani**, "An energy-efficient atmospheric plasma jet line based on a dielectric microwave anapole source," *IEEE Transactions on Plasma Science.* (to be submitted)
A 2-cm atmospheric plasma line with only 1 W of input power at 1 GHz, >95% efficiency.

J39. S. N. Ramesh, K. Singhal, and **A. Semnani**, "EVAding high-power microwaves using resonant plasma technology," *IEEE Transactions on Microwave Theory and Techniques.* (to be submitted)

J38. K. K. Varikuntla, T. Ahmed, and **A. Semnani**, "A plasma-based adaptive waveguide absorptive limiter for high-power microwaves," *IEEE Transactions on Microwave Theory and Techniques.* (to be submitted)

J37. M. R. Akram and **A. Semnani**, "A high-power microwave protection using a self-actuated plasma-based EIT scheme," *IEEE Transactions on Microwave Theory and Techniques.* (under review)

J36. K. S. Kabir and **A. Semnani**, "A frequency-tunable plasma jet utilizing an SIW evanescent-mode cavity resonator," *IEEE Transactions on Plasma Science*. (under review)
The first frequency-tunable atmospheric-pressure microwave plasma jet.

Published

J35. M. R. Akram and **A. Semnani**, "Non-radiating resonances: anapoles enabling highly-efficient plasma jets within dielectric structures," under review in *IEEE Transactions on Microwave Theory and Techniques. (Early Access)*
A power-efficient (>93%) microwave plasma jet utilizing dielectric anapole technology.

J34. S. N. Ramesh and **A. Semnani**, "A plasma-loaded resonator for integrated filter-limiter applications," accepted for publication in the *IEEE Transactions on Microwave Theory and Techniques. (Early Access)*

J33. S. Mahajan, H. Wang, A. M. Loveless, **A. Semnani**, A. Venkattraman, and A. L. Garner, "Scaling laws for AC gas breakdown in microscale Gaps," *Journal of Applied Physics*, 135, 243301, 2024.

J32. M. R. Akram and **A. Semnani**, "A microwave anapole source based on electric dipole interactions over a low-index dielectric," *Physical Review Applied*, 21, 054051, 2024.
A novel microwave anapole based on electric dipole interactions in a low-index dielectric.

J31. G. Shaffer, J. Johnson, T. R. Jones, **A. Semnani**, and D. Peroulis, "Resonant impedance tuners: theory, design, power handling, and repeatability," *IEEE Transactions on Microwave Theory and Techniques*, vol. 72, no. 3, pp. 1859-1876, March 2024.

J30. S. N. Ramesh and **A. Semnani**, "Theory and design of frequency-selective absorptive microwave plasma limiters," *IEEE Transactions on Microwave Theory and Techniques*, vol. 72, no. 2, pp. 1225-1233, February 2024.
An absorptive limiter with >2% selectivity, >50 dB isolation, and >100 W power handling.

J29. **A. Semnani** and K. S. Kabir, "A highly-efficient microwave plasma jet based on evanescent-mode cavity-resonator technology," *IEEE Transactions on Plasma Science*, vol. 50, no. 10, pp. 3516-3524, October 2022.
An EVA cavity-based atmospheric pressure plasma jet with over 80% power efficiency.

J28. S. N. Ramesh and **A. Semnani**, "A comprehensive circuit modeling approach for self-sustained capacitively-coupled microwave plasmas," *IEEE Transactions on Plasma Science*, vol. 49, no. 9, pp. 2690-2699, September 2021.

J27. **A. Semnani**, B. Baskaran, and D. Peroulis, "Microwave wireless powering of sensored agricultural tiles," *IEEE Transactions on Antennas and Propagation*, vol. 69, no. 5, pp. 2913-2920, May 2021.

J26. H. An, Z. Yin, C. Mitchell, **A. Semnani**, A. R. Hajrasouliha, and M. Hosseini, "Nanodiamond ensemble-based temperature measurement in living cells and its limitations," *Measurement Science and Technology*, 32, 015701, 2021.

J25. Z. Vander Missen, **A. Semnani**, and D. Peroulis, "Plasma-based power limitation for highly linear MEMS switch protection and isolation enhancement," *IEEE Access*, vol. 8, pp. 173103-173111, 2020.

J24. V. Podolsky, **A. Semnani**, and S. O. Macheret, "Experimental and numerical studies of a tunable plasma antenna sustained by RF power," *IEEE Transactions on Plasma Science*, vol. 48, no. 10, pp. 3524-3534, October 2020.

J23. A. Dockendorf, A. Egbert, E. Langley, C. Calabrese, J. Alcala-Medel, S. Rezayat, Z. Hays, C. Baylis, A. Martone, E. Viveiros, K. Gallagher, **A. Semnani**, and D. Peroulis, "Fast optimization algorithm for evanescent-mode cavity tuner optimization and timing reduction in software-defined radar implementation," *IEEE Transactions on Aerospace and Electronic Systems*, vol. 56, no. 4, pp. 2762-2778, August 2020.

J22. **A. Semnani**, G. S. Shaffer, Y.-C. Wu, and D. Peroulis, "High-power impedance tuner utilizing substrate-integrated evanescent-mode cavity technology and external linear actuators," *IET Microwaves, Antennas and Propagation*, vol. 13, no. 12, pp. 2067-2072, October 2019.

J21. **A. Semnani**, M. D. Sinanis, and D. Peroulis, "An evanescent-mode cavity-backed high-power tunable slot antenna," *IEEE Transactions on Antennas and Propagation*, vol. 67, no. 6, pp. 3712-3719, June 2019.

J20. **A. Semnani**, S. Macheret, and D. Peroulis, "A quasi-absorptive microwave resonant plasma switch for high-power applications," *IEEE Transactions on Microwave Theory and Techniques*, vol. 66, no. 8, pp. 3798-3806, August 2018.

J19. C. Qu, P. Tian, **A. Semnani**, M. J. Kushner, "Properties of arrays of microplasmas: application to control of electromagnetic waves," *Plasma Sources Science and Technology*, vol. 26, no. 10, 105006, 2017.

J18. **A. Semnani**, M. A. Khater, Y. C. Wu, and D. Peroulis, "An electronically-tunable high-power impedance tuner with integrated closed-loop control," *IEEE Microwave and Wireless Components Letters*, vol. 27, no. 8, pp. 754-756, August 2017.
Recipient of the 2019 "Tatsuo Itoh" Award for the best IEEE MWCL paper of the year.

J17. **A. Semnani**, S. Macheret, and D. Peroulis, "A high-power widely-tunable limiter utilizing an evanescent-mode cavity resonator loaded with a gas discharge tube," *IEEE Transactions on Plasma Science*, vol. 44, no. 12, pp. 3271-3280, December 2016.

J16. **A. Semnani**, D. Peroulis, and S. Macheret, "Plasma-enabled tuning of a resonant RF circuit," *IEEE Transactions on Plasma Science*, vol. 44, no. 8, pp. 1396-1404, August 2016.
An experimental validation of our proposed plasma varactor concept.

J15. S. Tholeti, **A. Semnani**, D. Peroulis, and A. Alexeenko, "Dark-to-arc transition in field emission dominated atmospheric microdischarges," *Physics of Plasmas*, 22, 083508, 2015.

J14. **A. Semnani** and D. Peroulis, "Contribution of ions in radio frequency properties of atmospheric pressure microgaps," *Applied Physics Letters*, 105, 253105, 2014.

J13. **A. Semnani** and D. Peroulis, "Evaluation of RF micro-discharge regimes in the performance of evanescent-mode cavity resonators," *IET Electronics Letters*, vol. 50, no. 17, pp. 1244-1246, August 2014.

J12. S. Ebadi and **A. Semnani**, "Mutual coupling reduction in waveguide slot array antennas using electromagnetic band-gap (EBG) structures," *IEEE Antennas and Propagation Magazine*, vol. 56, no. 3, pp. 68-79, June 2014.

J11. **A. Semnani**, K. Chen, and D. Peroulis, "Microwave gas breakdown in tunable evanescent-mode cavity resonators," *IEEE Microwave and Wireless Components Letters*, vol. 24, no. 5, pp. 351-353, May 2014.

J10. **A. Semnani**, A. Venkattraman, A. Alexeenko, and D. Peroulis, "Frequency response of atmospheric pressure gas breakdown in micro/nanogap," *Applied Physics Letters*, 103, 063102, 2013.
Theorized various high-frequency discharge regimes and the concept of critical frequency.

J9. **A. Semnani**, A. Venkattraman, A. Alexeenko, and D. Peroulis, "Pre-breakdown evaluation of gas discharge mechanisms in microgaps," *Applied Physics Letters*, 102, 174102, 2013.

J8. D. Oloumi, S. Ebadi, A. Kordzadeh, **A. Semnani**, P. Mousavi, and X. Gong, "Miniaturized reflectarray unit cell using fractal-shaped patch-slot configuration," *IEEE Antennas and Wireless Propagation Letters*, vol. 11, pp. 10-13, 2012.

J7. **A. Semnani**, I. T. Rekanos, M. Kamyab, and M. Moghaddam, "Solving inverse scattering problems based on truncated cosine Fourier and cubic B-spline expansions," *IEEE Transactions on Antennas and Propagation*, vol. 60, no. 12, pp. 5914-5923, Dec. 2012.

J6. **A. Semnani**, I. T. Rekanos, M. Kamyab, and T. G. Papadopoulos, "Two-dimensional microwave imaging based on hybrid scatterer representation and differential evolution," *IEEE Transactions on Antennas and Propagation*, vol. 58, no. 10, pp. 3289-3298, Oct. 2010.

J5. **A. Semnani**, M. Kamyab, and I. T. Rekanos, "Reconstruction of one-dimensional dielectric scatterers using differential evolution and particle swarm optimization," *IEEE Geoscience and Remote Sensing Letters*, vol. 6, no. 4, pp. 671-675, Oct. 2009.

J4. **A. Semnani** and M. Kamyab, "An enhanced hybrid method for solving inverse scattering problems," *IEEE Transactions on Magnetics*, vol. 45, no. 3, pp. 1534-1537, March 2009.

J3. **A. Semnani** and M. Kamyab, "Truncated cosine Fourier series expansion method for solving 2-D inverse scattering problems," *Progress In Electromagnetics Research*, vol. 81, pp. 73–97, 2008.

J2. **A. Semnani** and M. Kamyab, "An Enhanced Method for Inverse Scattering Problems using Fourier Series Expansion in Conjunction with FDTD and PSO," *Progress In Electromagnetics Research*, vol. 76, pp. 45-64, 2007.

J1. A. Mahmoudi, **A. Semnani**, R. Alizadeh, and R. Adeli, "Negative refraction of a three-dimensional metallic photonic crystal," *European Physical Journal Applied Physics*, vol. 39, pp. 27-32, 2007.

Conference Proceedings

C37. M. R. Akram and **A. Semnani**, "A highly-efficient 2.45 GHz plasma jet based on a dielectric microwave anapole structure," *IEEE International Microwave Symposium (IMS)*, Washington, DC, 2024.

C36. K. K. Varikuntla, M. T. Ahmed, and **A. Semnani**, "A plasma-based absorptive and high-power waveguide limiter," *IEEE International Microwave Symposium (IMS)*, Washington, DC, 2024.

C35. M. Parsaei, M. R. Akram, and **A. Semnani**, "A 3-D split ring resonator for power-efficient microwave plasma jets," *IEEE International Microwave Symposium (IMS)*, Washington, DC, 2024.

C34. **A. Semnani**, K. Singhal, and S. T. Moon, "A plasma-based technique for wideband matching of electrically small antennas," *IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting (USNC-URSI)*, Portland, OR, 2023.

C33. S. N. Ramesh and **A. Semnani**, "A compact and high-power frequency-selective plasma limiter with an ultra-high isolation," *IEEE International Microwave Symposium (IMS)*, San Diego, CA, 2023.

C32. K. S. Kabir and **A. Semnani**, "A 2.45 GHz power-efficient microplasma jet utilizing an SIW evanescent-mode cavity resonator," *IEEE International Microwave Symposium (IMS)*, San Diego, CA, 2023.

C31. C. Baylis, A. Egbert, C. Calabrese, J. Roessler, A. Goad, R. J. Marks II, S. Seguin, A. Fisher, Z. Vander Missen, M. Abu Khater , D. Peroulis, and **A. Semnani**, "Real-time impedance tuning for spectrum sharing," *IEEE International Symposium on Electromagnetic Compatibility EMC)*, Spokane, WA, 2022.

C30. C. Baylis, D. Sicker, S. Blun, E. Fernandez, A. Clegg, S. Hutton, Z. Han, D. Jackson, R. Henderson, R. Narayanan , **A. Semnani**, and T. Tuinstra, "SMART Hub: Solving the spectrum crisis through parallel research in policy, technology, security, and economics for future adaptive and reconfigurable wireless systems," *IEEE Texas Symposium WMCS*, Waco, TX, 2021.

C29. Z. Vander Missen, S. O. Macheret, **A. Semnani**, and D. Peroulis, "Plasma switch-based technology for high-speed and high-power impedance tuning," *IEEE Wireless and Microwave Technology Conference (WAMICON)*, Clearwater, FL, 2021.
Recipient of the Best Student Paper Award.

C28. A. Fisher, Z. Vander Missen, **A. Semnani**, and D. Peroulis, "A low-loss 1-4 GHz optically-controlled silicon plasma switch," *IEEE Wireless and Microwave Technology Conference (WAMICON)*, Clearwater, FL, 2021.

C27. J. Alcala-Medel, A. Egbert, C. Calabrese, A. Dockendorf, C. Baylis, G. Shaffer, **A. Semnani**, D. Peroulis, E. Viveiros, K. Gallagher, and A. Martone, "Fast frequency-agile real-time optimization of high-power tuning network for cognitive radar applications," *IEEE International Microwave Symposium (IMS)*, Boston, MA, 2019.

C26. Z. Vander Missen, **A. Semnani**, and D. Peroulis, "Toward a high-power high-isolation wideband plasma limiter," *IEEE Wireless and Microwave Technology Conference (WAMICON)*, Cocoa, FL, 2019.

C25. Z. Vander Missen, **A. Semnani**, and D. Peroulis, "Microwave-driven CPW microplasma generator for low-power discharge," *IEEE International Microwave Workshop Series on Advanced Materials and Processes (IMWS-AMP)*, Ann Arbor, MI, 2018.

C24. **A. Semnani**, M. D. Sinanis and D. Peroulis, "High-power and widely-tunable evanescent-mode cavity-backed slot antenna," *IEEE International Symposium on Antennas and Propagation (AP-S)*, Boston, MA, 2018.

C23. Z. Vander Missen, **A. Semnani**, and D. Peroulis, "High-power wideband low-cost limiters using cold plasma," *IEEE International Microwave Symposium (IMS)*, Philadelphia, PA, 2018.

C22. S. Rezayat, C. Kappelmann, Z. Hays, L. Hays, C. Baylis, E. Viveiros, **A. Semnani**, and D. Peroulis, "Real-time frequency-agile circuit reconfiguration for S-band radar using a high-power tunable resonant cavity matching network," *IEEE International Microwave Symposium (IMS)*, Philadelphia, PA, 2018.

C21. Z. Vander Missen, **A. Semnani**, E. Viveiros, and D. Peroulis, "Interaction of high-power microwaves with low-temperature plasma in a gas-discharge-tube-loaded SIW structure," *IEEE Radio and Wireless Symposium (RWS)*, Anaheim, CA, 2018.

C20. Z. Hays, C. Kappelmann, L. Lamers, C. Baylis, M. Abu Khater, **A. Semnani**, D. Peroulis, E. Viveiros, and J. Penn, "Fast impedance matching using interval halving of resonator position numbers for a high-power evanescent-mode cavity tuner," *IEEE Radio and Wireless Symposium (RWS)*, Anaheim, CA, 2018.

C19. Y. C. Wu, M. A. Khater, **A. Semnani**, and D. Peroulis, "An S-band 3-W load-reconfigurable power amplifier with $50 \sim 76\%$ efficiency for VSWR up to 4:1," *IEEE International Microwave Symposium (IMS)*, Honolulu, HI, 2017.

C18. **A. Semnani**, S. Macheret, and D. Peroulis, "A 2-30 W S-band plasma-based switch," *IEEE Wireless and Microwave Technology Conference (WAMICON)*, Cocoa, FL, 2017.

C17. Z. Hays, C. Baylis, R. J. Marks, M. A. Khater, **A. Semnani**, and D. Peroulis, "Fast amplifier PAE optimization using resonant frequency interval halving with an evanescent-mode cavity tuner," *IEEE Texas Symposium on Wireless and Microwave Circuits and Systems*, Waco, TX, 2017.

C16. **A. Semnani**, H. J. Yang, M. Sinanis, S-J. Park, J. G. Eden, S. O. Macheret, and D. Peroulis, "Power limiting characteristics of a plasma-loaded evanescent-mode cavity resonator," 46^{th} *European Microwave Conference (EuMC)*, London, United Kingdom, 2016.

C15. **A. Semnani**, M. Sinanis, G. S. Shaffer, and D. Peroulis, "Field emission mitigation in X-band silicon-etched cavity resonators," *IEEE International Microwave Symposium (IMS)*, San Francisco, CA, 2016.

C14. **A. Semnani**, H. J. Yang, M. Sinanis, S-J. Park, J. G. Eden, S. O. Macheret, and D. Peroulis, "Low temperature plasma for tunable resonant attenuation," *IEEE International Microwave Symposium (IMS)*, San Francisco, CA, 2016.

C13. **A. Semnani**, Z. Vander Missen, S. Macheret, and D. Peroulis, "Gas discharge tube-based variable RF attenuator," *IEEE Wireless and Microwave Technology Conference (WAMICON)*, Clearwater, FL, 2016.

C12. **A. Semnani**, S. Macheret, and D. Peroulis, "A tunable VHF gas discharge tube resonator," *IEEE Radio and Wireless Symposium (RWS)*, Austin, TX, 2016.

C11. **A. Semnani** and D. Peroulis, "Electromagnetic sensitivity analysis of RF gas micro /nano-breakdown," *IEEE International Symposium on Antennas and Propagation (AP-S)*, Memphis, TN, 2014.

C10. **A. Semnani** and D. Peroulis, "Nano-plasma tunable evanescent-mode cavity resonators," *IEEE International Microwave Symposium (IMS)*, Tampa, FL, 2014.

C9. **A. Semnani** and D. Peroulis, "Electromagnetic simulation of gas discharge effects in RF microgaps," *IEEE International Symposium on Antennas and Propagation (AP-S)*, Orlando, FL, 2013.

C8. **A. Semnani** and D. Peroulis, "The influence of gas discharge in Nano-gap RF conductivity," *IEEE International Microwave Symposium (IMS)*, Seattle, WA, 2013.

C7. K. Chen, **A. Semnani**, and D. Peroulis, "High-power microwave gas discharge in high-Q evanescent-mode cavity resonator and its instantaneous/long-term effects," *IEEE International Microwave Symposium (IMS)*, Seattle, WA, 2013.

C6. **A. Semnani**, A. Venkattraman, A. Alexeenko, and D. Peroulis, "Numerical evaluation of RF gas ionization effects in micro- and nano-scale devices," *International Conference on Electromagnetics in Advanced Applications (ICEAA)*, Cape Town, South Africa, 2012.

C5. **A. Semnani**, I. T. Rekanos, and M. Kamyab, "One-dimensional profile reconstruction using cosine Fourier and cubic B-spline expansions," 40^{th} *European Microwave Conference (EuMC)*, Paris, France, 2010.

C4. **A. Semnani** and M. Kamyab, "Comparison of Differential evolution and particle swarm optimization in one-dimensional reconstruction problems," 20^{th} *Asia-Pacific Microwave Conference (APMC)*, Hong Kong, China, 2008.

C3. **A. Semnani** and M. Kamyab, "An enhanced hybrid method for solving inverse scattering problems," 13^{th} *Biennial IEEE Conference on Electromagnetic Field Computations (CEFC)*, Athens, Greece, 2008.

C2. **A. Semnani** and M. Kamyab, "Cosine Fourier series expansion method for 2-D inverse scattering problems," 37^{th} *European Microwave Conference (EuMC)*, Munich, Germany, 2007.

C1. **A. Semnani** and M. Kamyab, "A computationally efficient method in inverse scattering using Fourier series expansion in conjunction with FDTD and PSO," *Workshop on Computational Electromagnetics in Time-Domain (CEM-TD)*, Perugia, Italy, 2007.

Conference Presentations

A63. N. Narwekar, M. R. Akram, **A. Semnani**, and O. Amili, "High-speed schlieren and particle image velocimetry of a highly-efficient atmospheric plasma je," 77^{th} *Annual Meeting of the Division of Fluid Dynamics (APS-DFD)*, Salt Lake City, UT, 2024.

A62. K. Singhal, K. S. Kabir, and **A. Semnani**, "An atmospheric plasma jet array based on the evanescent-mode cavity resonator technology," 77^{th} *Annual Gaseous Electronics Conference (GEC)*, San Diego, CA, 2024.

A61. K. S. Kabir, K. Singhal, M. R. Akram, and **A. Semnani**, "Highly efficient resonant microwave plasma jets," 77^{th} *Annual Gaseous Electronics Conference (GEC)*, San Diego, CA, 2024.

A60. S. Mahajan, H. Wang, A. M. Loveless, **A. Semnani**, A. Venkattraman, L. I Breen, and A. L. Garner, "Extending microscale gas breakdown theory to AC fields," *IEEE International Power Modulator and High Voltage Conference (IPMHVC)*, Indianapolis, IN, 2024.

A59. L. I Breen, S. Mahajan, **A. Semnani**, A. M. Loveless, and A. L. Garner, "Gas breakdown at intermediate pressure and gaps," *IEEE International Power Modulator and High Voltage Conference (IPMHVC)*, Indianapolis, IN, 2024.

A58. S. Mahajan, H. Wang, A. M. Loveless, **A. Semnani**, A. Venkattraman, and A. L. Garner, "Frequency dependence on microwave, microscale gas breakdown," 25^{th} *Annual International Vacuum Electronics Conference (IVEC)*, Monterey, CA, 2024.

A57. P. Nourani, K. S. Kabir, **A. Semnani**, and O. Amili, "High-speed schlieren imaging of a highly-efficient atmospheric plasma jet," 76^{th} *Annual Meeting of the Division of Fluid Dynamics (APS-DFD)*, Washington, DC, 2023.

A56. M. R. Akram and **A. Semnani**, "A dielectric resonator-based microwave plasma jet," 76^{th} *Annual Gaseous Electronics Conference (GEC)*, Ann Arbor, MI, 2023.

A55. K. Singhal and **A. Semnani**, "An efficient atmospheric pressure resonant microwave plasma line," 76^{th} *Annual Gaseous Electronics Conference (GEC)*, Ann Arbor, MI, 2023.

A54. K. S. Kabir and **A. Semnani**, "Evaluation of reactive species in a frequency-tunable resonant microwave plasma jet," 76^{th} *Annual Gaseous Electronics Conference (GEC)*, Ann Arbor, MI, 2023.

A53. K. K. Varikuntla and **A. Semnani**, "A plasma-based frequency-selective limiting reflectarray," 76^{th} *Annual Gaseous Electronics Conference (GEC)*, Ann Arbor, MI, 2023.

A52. M. T. Ahmed, K. K. Varikuntla, and **A. Semnani**, 'Design and analysis of a plasma-based reconfigurable and frequency-selective rasorber," 76^{th} *Annual Gaseous Electronics Conference (GEC)*, Ann Arbor, MI, 2023.

A51. S. N. Ramesh and **A. Semnani**, "An EVA cavity-based frequency-selective plasma limiter," 76^{th} *Annual Gaseous Electronics Conference (GEC)*, Ann Arbor, MI, 2023.

A50. **A. Semnani**, K. Singhal, and S. T. Moon, "Impedance matching in small antennas through capacitively-coupled plasma technique," 76^{th} *Annual Gaseous Electronics Conference (GEC)*, Ann Arbor, MI, 2023.

A49. K. K. Varikuntla and **A. Semnani**, "A conformal plasma frequency selective surface with tunable and switching performance," 76^{th} *Annual Gaseous Electronics Conference (GEC)*, Ann Arbor, MI, 2023.

A48. S. T. Moon and **A. Semnani**, "Tuning of radio-frequency (RF) plasmas by a perpendicular magnetic field," 76^{th} *Annual Gaseous Electronics Conference (GEC)*, Ann Arbor, MI, 2023.

A47. A. L. Garner, A. M. Loveless, H. Wang, S. Mahajan, A. Venkattraman, and **A. Semnani**, "Gas breakdown for nano- and microscale gaps: linking electron emission and avalanche theories," 76^{th} *Annual Gaseous Electronics Conference (GEC)*, Ann Arbor, MI, 2023.

A46. **A. Semnani**, K. Singhal, and S. T. Moon, "A plasma matching approach to realize wideband and efficient small antennas," *IEEE International Conference on Plasma Science (ICOPS)*, Santa Fe, NM, 2023.

A45. S. N. Ramesh, K. K. Varikuntla, and **A. Semnani**, "An absorptive plasma topology for frequency selective microwave protection," *IEEE International Conference on Plasma Science (ICOPS)*, Santa Fe, NM, 2023.

A44. K. S. Kabir and **A. Semnani**, "An efficient microwave microplasma jet realized with printed circuit board technology," *IEEE International Conference on Plasma Science (ICOPS)*, Santa Fe, NM, 2023.

A43. A. M. Loveless, A. Venkattraman, H. Wang, **A. Semnani**, and A. L. Garner, "Comparing continuum and particle-in-cell simulations at microscale," *IEEE International Conference on Plasma Science (ICOPS)*, Santa Fe, NM, 2023.

A42. S. Mahajan, A. M. Loveless, **A. Semnani**, A. Venkattraman, and A. L. Garner, "Theoretical analysis of microwave breakdown for microscale gaps," *IEEE International Conference on Plasma Science (ICOPS)*, Santa Fe, NM, 2023.

A41. A. M. Loveless, A. Venkattraman, S. Mahajan, **A. Semnani**, and A. L. Garner, "Comparison of particle-in-cell and continuum simulations for RF microscale gas breakdown," *IEEE International Power Modulator and High Voltage Conference (IPMHVC)*, Knoxville, TN, 2022.

A40. S. Mahajan, A. M. Loveless, **A. Semnani**, A. Venkattraman, and A. L. Garner, "Microscale gas breakdown for microwave fields: theory and simulation," *IEEE International Power Modulator and High Voltage Conference (IPMHVC)*, Knoxville, TN, 2022.

A39. **A. Semnani** and K. S. Kabir, "A highly efficient atmospheric pressure resonant microwave plasma jet," *IEEE International Conference on Plasma Science (ICOPS)*, Seattle, WA, 2022.

A38. S. N. Ramesh and **A. Semnani**, "Analysis of self-sustained capacitively coupled microwave plasmas using a circuit modeling technique," *IEEE International Conference on Plasma Science (ICOPS)*, Seattle, WA, 2022.

A37. A. M. Loveless, A. Venkattraman, S. Mahajan, **A. Semnani**, and A. L. Garner, "Comparison of particle-in-cell and continuum simulations for microscale gas breakdown," *IEEE International Conference on Plasma Science (ICOPS)*, Seattle, WA, 2022.

A36. S. Mahajan, A. M. Loveless, **A. Semnani**, A. Venkattraman, and A. L. Garner, "Theoretical analysis of microwave breakdown for microscale gaps," *IEEE International Conference on Plasma Science (ICOPS)*, Seattle, WA, 2022.

A35. J. C. Welch III, H. Wang, A. Venkattraman, S. Mahajan, A. M. Loveless, **A. Semnani**, and A. L. Garner, "Calculation of ionization coefficient for microscale gas breakdown in AC fields," *IEEE International Conference on Plasma Science (ICOPS)*, Seattle, WA, 2022.

A34. S. Mahajan, A. M. Loveless, **A. Semnani**, and A. L. Garner, "Asymptotic analysis of AC microscale gas breakdown," 74^{th} *Annual Gaseous Electronics Conference (GEC)*, Virtual, 2021.

A33. V. Podolsky, **A. Semnani**, and S. O. Macheret, "Experimental study of a low noise tunable plasma antenna sustained by CW and pulsed RF power," 72^{th} *Annual Gaseous Electronics Conference (GEC)*, College Station, TX, 2019.

A32. **A. Semnani**, Z. Vander Missen, and D. Peroulis, "Toward a wideband and high-isolation power limiter," *IEEE International Conference on Plasma Science (ICOPS)*, Orlando, FL, 2019.

A31. A. Loveless, Z. Vander Missen, **A. Semnani**, and A. Garner, "RF gas breakdown theory and experiment as a function of gas, gap size, frequency, and pressure," *IEEE International Conference on Plasma Science (ICOPS)*, Orlando, FL, 2019.

A30. **A. Semnani**, M. D. Sinanis, and D. Peroulis, "Evanescent-mode cavity-backed tunable slot antenna," *USNC-URSI National Radio Science Meeting (NRSM)*, Boulder, CO, 2019.

A29. **A. Semnani**, B. Baskaran, and D. Peroulis, "Wireless microwave powering of agricultural sensors," *USNC-URSI National Radio Science Meeting (NRSM)*, Boulder, CO, 2019.

A28. J. A. Alcala-Medel, C. Calabrese, C. Baylis, A. Martone, K. Gallagher, E. Viveiros, **A. Semnani**, and D. Peroulis, "Fast reconfiguration of second-generation tunable evanescent-mode cavity matching network for frequency agility in S-band cognitive radar applications," *USNC-URSI National Radio Science Meeting (NRSM)*, Boulder, CO, 2019.

A27. A. Dockendorf, E. Langley, A. Egbert, C. Baylis, **A. Semnani**, D. Peroulis, A. Martone, E. Viveiros, and R. J. Marks II, "Frequency-agile reconfiguration for a high-power resonant cavity tuner using previous search results," *USNC-URSI National Radio Science Meeting (NRSM)*, Boulder, CO, 2019.

A26. C. Baylis, A. Martone, K. Gallagher, E. Viveiros, **A. Semnani**, D. Peroulis, and R. J. Marks II, "Software defined, spectrally sensitive radar transmission," *USNC-URSI National Radio Science Meeting (NRSM)*, Boulder, CO, 2019.

A25. **A. Semnani**, S. Macheret, and D. Peroulis, "Plasma-based electrically small antennas," 71^{th} *Annual Gaseous Electronics Conference (GEC)*, Portland, OR, 2018.

A24. S. Macheret, **A. Semnani**, D. Peroulis, S. S. Tholeti, A. Alexeenko, A. Khomenko, and V. Podolsky, "Spatial and temporal manipulation of plasmas for RF electronics," 9^{th} *International Symposium on Plasma Nanoscience and Nanotechnology (iPlasmaNano-IX)*, New Buffalo, MI, 2018.

A23. **A. Semnani**, Z. Vander Missen, and D. Peroulis, "Microplasma generation in low-power microwave coplanar waveguide (CPW) structures," *IEEE International Conference on Plasma Science (ICOPS)*, Denver, CO, 2018.

A22. **A. Semnani**, D. Peroulis, and S. Macheret, "Analysis of plasma parameters and conditions required for reconfigurable antennas," *IEEE International Conference on Plasma Science (ICOPS)*, Denver, CO, 2018.

A21. **A. Semnani**, Z. Vander Missen, and D. Peroulis, "A wideband and high-power plasma-based microwave power limiter," *IEEE International Conference on Plasma Science (ICOPS)*, Denver, CO, 2018.

A20. A. L. Garner, A. M. Loveless, Z. Vander Missen, and **A. Semnani**, "AC gas breakdown: from simple scaling laws to experiments," *IEEE International Conference on Plasma Science (ICOPS)*, Denver, CO, 2018.

A19. **A. Semnani**, S. Macheret, and D. Peroulis, "Plasma varactor for reconfigurable RF/microwave systems," *USNC-URSI National Radio Science Meeting (NRSM)*, Boulder, CO, 2018.

A18. **A. Semnani**, M. Abu Khater, D. Peroulis, C. Baylis, L. Hays, C. Kappelmann, and Z. Hays, "An evanescent-mode cavity-based high-power impedance tuner for adaptive radar applications," *USNC-URSI National Radio Science Meeting (NRSM)*, Boulder, CO, 2018.

A17. **A. Semnani**, S. Macheret, and D. Peroulis, "High-power microwave tunable resistor based on low-temperature plasma technology," *USNC-URSI National Radio Science Meeting (NRSM)*, Boulder, CO, 2018.

A16. Z. Vander Missen, **A. Semnani**, and D. Peroulis, "Plasma cell loaded transmission line technologies for broadband applications," *USNC-URSI National Radio Science Meeting (NRSM)*, Boulder, CO, 2018.

A15. C. Kappelmann, L. Hays, Z. Hays, S. Rezayat, C. Baylis, R. J. Marks, E. Viveiros, M. Abu Khater, **A. Semnani**, and D. Peroulis, "Frequency-agile power amplifier matching network reconfiguration using a hybrid real-time search," *USNC-URSI National Radio Science Meeting (NRSM)*, Boulder, CO, 2018.

A14. L. Hays, S. Rezayat, Z. Hays, A. Egbert, C. Kappelmann, C. Baylis, R. J. Marks, E. Viveiros, D. Peroulis, M. Abu Khater, and **A. Semnani** "Direct tuning of cavity position numbers for circuit optimization using an evanescent-mode cavity tuner dsigned for reconfigurable radar transmission," *USNC-URSI National Radio Science Meeting (NRSM)*, Boulder, CO, 2018.

A13. **A. Semnani**, S. Macheret, and D. Peroulis, "Tuning of AC sheath thickness by varying plasma excitation frequency," 70^{th} *Annual Gaseous Electronics Conference (GEC)*, Pittsburgh, PA, 2017.

A12. **A. Semnani**, S. Macheret, and D. Peroulis, "High-power microwave switching utilizing low-temperature gas discharge tube," *IEEE International Conference on Plasma Science (ICOPS)*, Atlantic City, NJ, 2017.

A11. **A. Semnani**, S. Macheret, and D. Peroulis, "Plasma-based tunable high frequency power limiter," 69^{th} *Annual Gaseous Electronics Conference (GEC)*, Bochum, Germany, 2016.

A10. S. Macheret, **A. Semnani**, and D. Peroulis, "Abnormal glow discharge as a variable capacitor for tunable RF systems," 69^{th} *Annual Gaseous Electronics Conference (GEC)*, Bochum, Germany, 2016.

A9. **A. Semnani** S. Macheret, and D. Peroulis, "Tunable RF electronics based on low temperature plasma," *IEEE International Conference on Plasma Science (ICOPS)*, Banff, Alberta, Canada, 2016.

A8. **A. Semnani** S. Macheret, and D. Peroulis, "Plasma-based reconfigurable RF electronics," *Annual Meeting of the Electrostatics Society of America (ESA)*, West Lafayette, IN, 2016.

A7. **A. Semnani**, S. Macheret, and D. Peroulis, "Plasma tunable LC resonator for high-power electromagnetic applications," 68^{th} *Annual Gaseous Electronics Conference (GEC)*, Honolulu, HI, 2015.

A6. **A. Semnani**, S. Tholeti, A. Alexeenko, S. Macheret, and D. Peroulis, "Electron energy distribution functions and plasma lifetime in atmospheric pressure microdischarges," 8^{th} *International Workshop on Microplasmas (IWM)*, Newark, NJ, 2015.

A5. **A. Semnani** and D. Peroulis, "Interaction of High-Frequency Electromagnetic Waves with Pre-Breakdown Atmospheric Pressure Micro-Discharge Region," 67^{th} *Annual Gaseous Electronics Conference (GEC)*, Raleigh, NC, 2014.

A4. **A. Semnani** and D. Peroulis, "High frequency tuning mechanism using nano-plasma," *Annual Technical Meeting of Society of Engineering Science (SES)*, West Lafayette, IN, 2014.

A3. **A. Semnani** and D. Peroulis, "Evaluation of RF micro-discharge regimes in the performance of evanescent-mode cavity resonators," 66^{th} *Annual Gaseous Electronics Conference (GEC)*, Princeton, NJ, 2013.

A2. **A. Semnani**, I. T. Rekanos, M. Kamyab, and C. S. Antonopoulos, "Solving 2-D inverse scattering problems using truncated cosine Fourier and cubic B-spline expansions," *Progress In Electromagnetics Research Symposium (PIERS)*, Marrakesh, Morocco, 2011.

A1. **A. Semnani** and M. Kamyab, "A hybrid method for solving 2-D inverse scattering problems," *European Electromagnetics Conference (EUROEM)*, Lausanne, Switzerland, 2008.