

Elena Semouchkina

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EDUCATION

- Ph. D. in Materials (Engineering Option)**, The Pennsylvania State University, USA 2001
Thesis: "FDTD Analysis of Microwave Resonant Structures with Dielectric Substrates"
- Ph. D. in Physics & Mathematics**, Tomsk State University, Russia 1986
Thesis: "Investigation of Interface Properties of Metal-Oxide-Semiconductor Structures Based on Narrow-Band III-V Compounds"
- M.S. in Electrical Engineering (Honors)**, Tomsk State University, Tomsk, Russia 1978
-

PROFESSIONAL EXPERIENCE

- Associate Professor**, tenured 2014-present
Department of Electrical and Computer Engineering, Michigan Technological University
- Associate Professor**, tenure-track August 2009-2013
Department of Electrical and Computer Engineering, Michigan Technological University
- Adjunct Professor** August 2011-present
Department of Physics, Michigan Technological University
- Adjunct Professor** August 2009-present
Department of Engineering Science & Mechanics, The Pennsylvania State University
- Design, simulation, prototyping, and characterization of electromagnetic devices at microwaves/optics
 - Metamaterials and electromagnetic cloaking
- Senior Research Associate/Associate Professor of Engineering Science & Mechanics** July 2006-July 2009
Materials Research Institute, Computational Electromagnetics and Antennas Research Laboratory, and Department of Engineering Science & Mechanics, The Pennsylvania State University
- Computational analysis of electromagnetic processes in complex media
 - Modeling, design, and prototyping of electronic and photonic devices
- Research Associate** June 2004-June 2006
Materials Research Institute, The Pennsylvania State University
- Materials integration for electronic and photonic devices
- Post-Doctoral Researcher** June 2001-May 2004
Materials Research Institute, The Pennsylvania State University
- Computational modeling of electromagnetic processes at microwaves; computer aided device design
- Graduate Research Assistant** August 1997-May 2001
Materials Research Institute, The Pennsylvania State University
- FDTD simulation of microwave devices and structures
- Senior Research Associate** 1994-1997
Environmental Engineering Laboratory, St. Petersburg State Technical University, St. Petersburg, Russia
- Semiconductor material and device characterization
- Scientific Consultant** 1992-1994
Engineering company "NEOS", St. Petersburg, Russia
- Research and development of semiconductor-based photodetectors
- Senior Research Associate** 1984-1992
Siberian Physics-Technical Research Institute, Tomsk, Russia

- Advancing MOS device technology; development of MOS infrared photodetectors (A_3B_5 and HgCdTe-based)

Visiting Researcher

1983-1984

Ioffe Physics-Technical Institute of Russian Academy of Science, St. Petersburg, Russia

- Deep Level Transient Spectroscopy of interface states in A_3B_5 -based MOS structures

Research Associate

1979-1983

Siberian Physics-Technical Institute, Tomsk, Russia

- Investigation and improvement of MOS device reliability

COURSES TAUGHT AND GRADUATE STUDENTS ADVISED

Courses taught at MTU:

- EE5460 Solid State Devices
- EE5430/MY5340 Electronic Materials
- EE4231 Physical Electronics
- EE3140 Electromagnetics
- EE5900 Electromagnetic Material Interactions: Theory and Practice (taught in teleconference format for MTU and PSU students)
- EE5940 Electrophysics Seminar

Courses taught at PSU:

- ESC 400H (Honors) Electromagnetic Fields
- ESC/MATSE 597i Microwave-Materials Interaction
- ESC 596A Electromagnetism for Neural Engineers
- ESC/MATSE 597C Microwave Processing of Materials

PRESS RELEASES, AWARDS AND HONORS

- Featured in the "First Bell" ASSE's newsletter under "Higher Education":
<http://mailview.custombriefings.com/mailview.aspx?m=2013032701asee&r=4154459-d0d6>
<http://mailview.custombriefings.com/mailview.aspx?m=2013020501asee&r=2865525-b08b>
- Featured at the NSF "Discoveries" website: http://www.nsf.gov/discoveries/index.jsp?pims_id=13381&org=NSF
- Featured in CBS Detroit "Top Tech stories" of the year: http://detroit.cbslocal.com/2013/12/16/the-top-tech-report-stories-of-2013-first-quarter/?utm_source=DailyContInfoNewsletters&utm_medium=DailyContInfoNewsletters&utm_campaign=TheWWJTechnologyReport
- Featured in IEEE Women in Engineering eBook: <http://www.ieee.org/ns/periodicals/WIE/issue1/index.html>
- Chosen among 12 women-engineers "Who change the world" featured in IEEE Women in Engineering Poster : <http://www.ieee.org/documents/wieposter.pdf>
- Profiled in the IEEE Magazine, Women in Engineering
- Featured in NSF "Behind the Scenes" series on LiveScience.com, a syndicated news website that partners with the NSF and highlights science, health and technology news to create content on cutting-edge research projects and the people behind them: <http://www.livescience.com/12907-invisibility-cloaks-corner-bts-110217.html>
- Press Releases and News Reports:
<http://phys.org/news/2013-03-invisibility-cloak-mtu.html>
<http://detroit.cbslocal.com/2013/03/26/invisibility-cloak-research-moves-forward-at-michigan-tech/>
http://www.reddit.com/r/science/comments/1b1bj3/michigan_technological_universitys_invisibility/
http://www.mlive.com/news/index.ssf/2013/03/real_life_harry_potter_magic_i.html#incart_river_default_upnorthlive.com

<http://www.physorg.com/news/2011-03-invisibility-cloaks-corner.html>;
<http://www.physorg.com/news/196596396.html>
<http://www.photonicsonline.com/article.mvc/An-Invisibility-Cloak-Made-Of-Glass-0001?VNETCOOKIE=NO>
<http://www.dailymail.co.uk/sciencetech/article-1296769/Scientists-invent-invisibility-cloak-glass.html>
<http://www.metro.co.uk/tech/835922-invisibility-cloak-created-by-us-scientists>
<http://detroit.cbslocal.com/2013/03/26/invisibility-cloak-research-moves-forward-at-michigan-tech/>
<http://www.uppermichiganssource.com/news/story.aspx?id=880467#.UV12ItE6U98>
<http://www.upnorthlive.com/news/story.aspx?id=897768#.Ua6dBdjBGCh>
http://article.wn.com/view/2013/03/22/Invisibility_Cloak_Research_Moves_Forward_at_Michigan_Tech_M/#/related_news
<http://www.mtu.edu/news/stories/2013/march/story87175.html>
<http://www.noodles.com/view/F30335DAF86C691934F445730AB0F0FE0A0D9BC7?6377xxx1363992305>
<http://www.technewsdaily.com/researchers-use-glass-to-make-objects-dissapear-0905/>
http://news.cnet.com/8301-17938_105-20011415-1.html
<http://wwwj.cbslocal.com/2010/10/10/tech-tour-day-two-more-terrific-michigan-tech/>
<http://wwwj.cbslocal.com/2010/07/21/michigan-tech-prof-studies-invisibility-cloak-of-glass>
<http://news.rambler.ru/7056259/>
http://www.gazeta.ru/science/2010/06/25_a_3390593.shtml
http://www.stdaily.com/special/content/2010-07/26/content_212875.htm

- NSF ADVANCE Fellows Award (Career Award), 2004-2008 for the project “Materials Integration Concepts for Electronic and Photonic Devices”. The goal of the ADVANCE program is to increase the participation of women in science and engineering through the advancement of women in academic careers. Only 20 to 40 Fellows Awards distributed through all fields supported by NSF were given annually nationwide.
- Best Ph.D. Thesis Award from the Materials Research Institute at PSU, 2001
- Young Siberian Scientists Award, Tomsk State University
- Lenin's Scholarship, Tomsk State University

PROFESSIONAL ACTIVITIES

Associate Editor of the IEEE Antenna and Wireless Propagation Letters, 2008-2014

Expert-Evaluator and Panelist, the European Commission, Directorate-General for Research, (Brussels, Belgium), 2008-2009

Expert-Evaluator, Grant proposals, French National Research Agency, 2010

Panelist and reviewer, the National Science Foundation, 2010, 2011, 2013

Reviewer for the Oxford University Press: manuscripts of textbooks on Electromagnetics, 2012, 2007

Reviewer for Wiley & Sons: manuscripts of textbooks on RF and Microwave Engineering, 2010

Reviewer for the Cambridge University Press: manuscripts of books on Electromagnetics, 2009

Reviewer for the IEEE Transactions on Microwave Theory and Techniques, the IEEE Antennas and Propagation Magazine, the IEEE Microwave and Wireless Component Letters, the Applied Physics Letters, the Journal of Applied Physics, Physica B, International Journal of Electronics, and International Journal of Optics

Co-organizer and Co-Chair of the Special Session “Metamaterials/High frequency characterization and simulation” at the IMAPS 9th Ceramic Interconnect and Ceramic Microsystems Technology Conference (CICMT), Orlando, FL, April 2013

Co-organizer, Co-Chair and Speaker at the IEEE Women in Electromagnetics (WiEM) International Workshop, 2009-present

International Technical Committee Member, IASTED International Conference on Antennas, Radar and Wave Propagation, Boston, MA, November 2010

Member of the International Organizing Committee at the 2nd International Symposium on Smart Processing Technology, Hankyu Expo Park, Osaka, Japan, November 2007

Organizer and coordinator of the Metamaterials Seminar Series at PSU, 2007-2008

Invited Lecturer at the "1st Women in Photonics (WiP) School on Photonic Metamaterials," Paris, France, April 2008

Session Chair:

Session Chair at the IEEE Antennas and Propagation Society International Symposium, Vancouver, Canada, July 2015

Session Chair at the IEEE Antennas and Propagation Society International Symposium, Chicago, IL, July 2012

Session Chair of two sessions at the IEEE Antennas and Propagation Society International Symposium, Spokane, WA, July 2011

Session Chair at the MMET 2010, 13th International Conference on Mathematical Methods in Electromagnetic Theory, Kiev, Ukraine, September 2010

Session Chair at the Photonic Fractals Workshop, Osaka University, Japan, March 2008

Session Chair at the 2nd International Symposium on Smart Processing Technology, Hankyu Expo Park, Osaka, Japan, November 2007

Session Chair at the Metamaterials'2007, 1st International Congress on Advanced Electromagnetic Materials in Microwaves and Optics, Rome, Italy, October 2007

Session Chair at the International Symposium on Smart Processing Technology, Osaka, Japan, November 2005

Session Chair at the IEEE Antennas and Propagation Society International Symposium, Monterey, June 2004

Session Chair at the IASTED International Conference on Antennas, Radar and Wave Propagation, Banff, Canada, July 2004

Invited Talks:

2015 International Applied Computational Electromagnetics Society (ACES) Symposium, Williamsburg, VA, March 2015

Northern Illinois University, DeKalb, IL, October 2013

National Research University for Information Technology, Mechanics and Optics (ITMO), St. Petersburg, Russia, June 2013

National Research University for Information Technology, Mechanics and Optics (ITMO), St. Petersburg, Russia, December 2012

IMAPS 8th Ceramic Interconnect and Ceramic Microsystems Technology Conference, Erfurt, Germany, April 2012

MMET 2010, 13th International Conference on Mathematical Methods in Electromagnetic Theory, Kiev, Ukraine, September 2010

Metamaterials'2009, 3rd International Congress on Advanced Electromagnetic Materials in Microwaves and Optics, London, United Kingdom, September 2009

Workshop on High Temperature Sensors for Fossil Energy Systems, Penn State University, November 2008

1st Women in Photonics (WiP) School on Photonic Metamaterials, Paris, France, April 2008

Photonic Fractals Workshop, Osaka University, Japan, March 2008

2nd International Symposium on Smart Processing Technology, Hankyu Expo Park, Osaka, Japan, November 2007

COMMAND Workshop, Electro-Optics Center, Kittanning, PA, November 2007

Metamaterials'2007, 1st International Congress on Advanced Electromagnetic Materials in Microwaves and Optics, Rome, Italy, October 2007

URSI North American Radio Science Meeting, Ottawa, ON, Canada, July 2007

7th Photonic Fractals Consortium Seminar, Shinshu University, Matsumoto, Japan, July 2006

Osaka University, Japan, July 2006

International Symposium on Smart Processing Technology, Osaka, Japan, November 2005

Osaka University, Japan, November 2005

29th International Conference on Advanced Ceramics and Composites, Cocoa Beach, Florida, January 2005.

University of Pennsylvania, November 2004.

Center for Nanotechnology, NASA Ames Research Center, CA, July 2004

Member of the IEEE, of the Materials Research Society, and of the American Ceramic Society

PUBLICATIONS

Refereed Journal Publications:

1. Semouchkina, E., Duan, R. (grad. Student), Semouchkin, G., and Pandey, R., "Sensing Based on Fano-Type Resonance Response of All-Dielectric Metamaterials", *Sensors, Special Issue "Metamaterial-Inspired Sensors"*, v. 15, no. 4, p. 9344-9359, 2015.
2. Duan, R. (grad. student), Semouchkina, E., and Pandey, R., "Geometric Optics-Based Multiband Cloaking of Large Objects with the Wave Phase and Amplitude Preservation", *Optics Express*, v. 22, no. 22, p. 27193-27202, 2014.
3. Chen, F. (grad. student), Wang, X. (grad. student), Semouchkin, G., and Semouchkina, E., "Effects of Inductive Waves on Multi-Band Below-Cut-off Transmission in Waveguides Loaded with Dielectric Metamaterials", *American Institute of Physics (AIP) Advances*, v. 4, no. 10, p. 107129-1-107129-15, 2014.
4. Wang, X. (grad student) and Semouchkina, E., "A Route for Efficient Non-Resonance Cloaking by Using Multilayer Dielectric Coating", *Applied Physics Letters*, v. 102, p. 113506, 2013. **Featured in the "First Bell" ASSE's newsletter under "Higher Education"**.
5. Wang, X. (grad student), F. Chen (grad student), and Semouchkina, E., "Spherical Cloaking Using Multilayer Shells of Ordinary Dielectrics", *American Institute of Physics (AIP) Advances*, v. 3, p. 112111-1-112111-7, 2013.
6. Wang, X. (grad student), Chen, F. (grad student), and Semouchkina, E., "Implementation of Low Scattering Microwave Cloaking by All-Dielectric Metamaterials", *IEEE Microwave and Wireless Components Letters*, v. 23, no. 2, p. 63-65, February 2013. **Featured in the "First Bell" ASSE's newsletter under "Higher Education". This work has inspired a question on the game show "Who Wants to Be a Millionaire?"**
7. Rybin, M. V., Samusev, K. B., Sinev, I. S., Semouchkin, G., Semouchkina, E., Kivshar, Y. S., and Limonov, M. F., "Mie Scattering as a Cascade of Fano Resonances", *Optics Express*, v. 21, no. 24, p. 30107-30113, 2013.
8. Hosseinzadeh, A. (grad student), and Semouchkina, E., "Effect of Permittivity on Energy Band Diagrams of Dielectric Metamaterial Arrays", *Microwave and Optical Technology Letter*, v.55, no. 1, p. 134-137, Jan. 2013.
9. Semouchkina, E., "All-Dielectric Metamaterials for New Areas of Applications", Invited paper, *Journal of Microelectronics and Electronic Packaging*, no. 4, Dec. 2012.
10. Chen, F. (grad student), Wang, X. (grad student), and Semouchkina, E., "Formation of Resonance States due to Interaction between Resonators in Arrays Used in Dielectric Metamaterials", *Microwave and Optical Technology Letters*, v.54, no. 3, p. 555-560, March 2012.
11. Chen, F. (grad student), Mao, S. (grad. student), Wang, X. (grad student), Semouchkina, E., and Lanagan, M., "Effect of Cavity Dimensions on TE_{01δ} Mode Resonance in Split-Post Dielectric Resonator Techniques", *Journal of Electromagnetic Analysis and Applications (JEMAA)*, published online Sept. 2012.
12. Semouchkina, E., Scholz, J., Perini, S., Semouchkin, G. B., Lanagan, M., Haupt, R., Simonds, H. "Metamaterials-Inspired Miniaturization of UHF Patch Antennas with Circular Polarization", *Microwave and Optical Technology Letters*, v.53, no. 8, p. 1938-1943, August 2011.
13. F. Namin, T. G. Spence, D. H. Werner, and E. Semouchkina, "Broadband, Miniaturized Stacked-Patch Antennas for L-Band Operation Based on Magneto-Dielectric Substrates", *IEEE Transactions on Antennas and Propagation*, vol. 58, no.9, September 2010.

14. Semouchkina, E., Werner, D., Semouchkin, G. B., Pantano, C., "An Infrared Invisibility Cloak Composed of Glass", *Applied Physics Letters*. Vol. 96, no. 23, June 2010. **This paper was among 20 most downloaded American Institute of Physics publications in 2010.**
15. K. Haines, T. Neuberger, M. Lanagan, E. Semouchkina, and A. G. Webb, "High Q Calcium Titanate Cylindrical Dielectric Resonators for Magnetic Resonance Microimaging," *Journal of Magnetic Resonance*, vol. 200, Issue 2, 349-353, October 2009.
16. Tyagi, V. and Semouchkina, E., "Sensitivity Analysis of the Effective Parameter Extraction Procedure for Metamaterial Applications", *Microwave Optical Tech. Lett.*, April, 2009.
17. T. Neuberger, T., Tyagi, V., Semouchkina, E., Lanagan, M., Baker, A., Haines, K., and Webb, A., "Design of a Ceramic Dielectric Resonator for NMR Microimaging at 14.1 Tesla", *Concepts in Magnetic Resonance Part B: Magnetic Resonance Engineering*, vol. 33B, Issue 2, 109-114, April 2008.
18. Semouchkina, E., Miyamoto, Y., Kirihara, S., Semouchkin, G., and Lanagan, M., "Analysis of Electromagnetic Response of 3D Dielectric Fractals of Menger Sponge Type," *IEEE Transactions on Microwave Theory Techn.*, vol. 55, No. 6, 1305-1313, June 2007.
19. Semouchkina, E., "Double Negative Materials: Hypothesis, Realization, and New Developments", invited paper in *Smart Processing Technology*, High Temperature Society of Japan, Japan, 79-87, 2006.
20. Hennings, A., Semouchkina, E., Baker, A., and Semouchkin, G., "Design Optimization and Implementation of Band-Pass Filters with Normally Fed Microstrip Resonators Loaded by High-Permittivity Dielectric," *IEEE Transactions on Microwave Theory Techn.*, vol. 54, No. 3, 1253-1261, March 2006.
21. Iwasaki, M., Semouchkina, E., Semouchkin, G., Rajab, K., Randall, C., and Lanagan, M., "Symmetry Matching of Hybrid Modes for Dielectric Metamaterials", *Japanese Journal of Applied Physics*, vol. 45, No. 4A, 2835-2841, 2006.
22. A. Baker, M. Lanagan, C. Randall, E. Semouchkina, G. Semouchkin, K. Rajab, R. Mittra, R. Eitel, S. Rhee, P. Geggier, C. Duschl, G. Fuhr, "Integration Concepts for the Fabrication of LTCC Structures," *The International Journal of Applied Ceramic Technology*, 2[6] 514-520 (2005).
23. Semouchkina, E., Semouchkin, G., Lanagan, M., and Randall, C., "FDTD Study of Resonance Processes in Metamaterials," *IEEE Transactions on Microwave Theory Techn.*, vol. 53, No. 4, 1477-1487, April 2005.
24. Semouchkina, E., Baker, A., Semouchkin, G., Lanagan, M., and Mittra, R., "New Approaches for Designing Microstrip Filters Utilizing Mixed Dielectrics," *IEEE Transactions on Microwave Theory Techn.*, vol. 53, No. 2, 644-652, February 2005.
25. Semouchkina, E., Semouchkin, G., Mittra, R. and Cao, W., "Finite Difference Time Domain Simulation of Resonant Modes of Rectangular Dielectric Resonators", *Microwave Optical Tech. Lett.*, vol. 36, 160-164, 2003.
26. Semouchkina, E., Cao, W., Lanagan, M., Mittra, R., and Yu, W., "Combining FDTD Simulations with Measurements of Microstrip Ring Resonators for Characterization of Low- and High-K Dielectrics at Microwaves", *Microwave Optical Tech. Lett.*, Vol.29, 21-24, 2001.
27. Semouchkina, E., Cao, W., Mittra, R., and Lanagan, M., "Numerical Modeling and Experimental Investigation of Resonance Properties of Microwave Capacitors", *Microwave Optical Tech. Lett.*, Vol. 29, 54-60, 2001.
28. Semouchkina, E., Cao, W., Mittra, R., and Yu, W., "Efficient Determination of Resonance Frequencies in Resonant Structures using the FDTD Method", *Microwave Optical Tech. Lett.*, Vol. 28, 244-247, 2001.
29. Semouchkina, E., Cao, W., Mittra, R., and Yu, W., "Analysis of Resonance Processes in Microstrip Ring Resonators by the FDTD Method", *Microwave Optical Tech. Lett.*, Vol. 28, 312-321, 2001.
30. Semouchkina, E., Cao, W., and Mittra, R., "Modeling of Microwave Ring Resonators Using the Finite-Difference Time-Domain Method (FDTD)", *Microwave Optical Tech. Lett.*, Vol. 24, 392-396, 2000.
31. Semouchkina, E., Cao, W., and Lanagan, M., "High Frequency Permittivity Determination by Spectra Simulation and Measurement of Microstrip Ring Resonators", *Electronics Lett.*, Vol. 36, 956-958, 2000.
29. Semouchkina, E., Cao, W., and Mittra, R., "Source Excitation Methods for the Finite Difference Time Domain Modeling of Circuits and Devices", *Microwave Optical Tech. Lett.*, Vol. 21, 93-100, 1999.

Listed below selected publications are under maiden name:

30. Davidov, V. N., Loskutova, E. A. (maiden name), and Pushkarev, A. L., "Long-Term Relaxation of Parameters of Surface Layers of III-V Compounds", *Sov. Phys. J.*, Vol 32, 929-940, 1990.

31. Davidov, V. N., Loskutova, E. A. (maiden name), and Naiden, E. P., "Magnetic-Field- Stimulated Delayed Structural Changes in Semiconductors", *Sov. Phys.: Semiconductors*, Vol. 23, 989, 1989.
32. Davydov, V. N., Loskutova, E. A. (maiden name), and Fefelova, I. I., "Effect of Fluorine on the Properties of 'Oxides-Semiconducting III-V Compound' Systems", *Sov. Microelectron.*, Vol. 15, 257-261, 1986.
33. Loskutova, E. A. (maiden name), Davidov, V. N., and Gudkin, A. A., "DLTS Study of Surface States in InAs MOS Structures," *Sov. Surface Journal (Poverkh. Fiz. Khim. Mek.)*, Vol. 10, 36-41, 1985.
34. Loskutova, E. A. (maiden name), Davidov, V. N., and Lezina, T. D., "Some Features of the Electrophysical and Photoelectrical Properties of MOS Structures [InAs]", *Sov. Microelectron*, Vol. 14, 134-139, 1985.
35. Davydov, V. N. and Loskutova, E. A. (maiden name), "Effect of Shortwave Illumination on the Properties of a Metal-Anode Oxide Film-Indium Antimonide Structure", *Sov. Phys. J.*, Vol. 26, 561-565, 1983.
36. Davidov, V. N. and Loskutova, E. A. (maiden name), "Generation of Surface States in MOS Structures based on Indium Antimonide", *Sov. Microelectron*, Vol. 12, 25-29, 1983.
37. Davydov, V. N. and Loskutova, E. A. (maiden name), "Forming Characteristics of Recombination Properties of InSb MOS Structures", *Sov. Phys. J.*, Vol. 26, 86-90, 1983.

Books and Book Chapters

1. Semouchkina, E., Formation of Coherent Multi-Element Resonance States in Metamaterials, book Chapter in "Metamaterial", ISBN: 978-953-51-0591-6, INTECH, pp. 91-112, May 2012. Achieved a record readership result: accessed more than 500 times during one month and more than 2000 times during 1.5 year after on-line publication
2. Semouchkina, E., Resonance Field Analysis and Electromagnetic Coupling Effects in Metamaterials Structures, book Chapter in "Metamaterials: Classes, Properties and Applications, ISBN: 978-1-61668-958-2, Nova Science Publishers, pp.137-164, 2011.
3. Semouchkina, E., Development of Miniature Microwave Components by Using High Contrast Dielectrics, book Chapter in "Microwave and Millimeter Wave Technologies from Photonic Bandgap Devices to Antenna and Applications", ISBN: 978-953-7619-99-4, INTECH, pp. 231-256, 2010. Accessed more than 4000 times during 4 years after on-line publication
4. Semouchkina, E., Analysis of Microwave Resonance Structures by Using the FDTD Method: Capacitors, Microstrip Antennas, and Microstrip Resonators, ISBN: 978-3-639-18899-8, VDM Verlag Dr. Muller, 190 pages, 2010.
5. Randall, C., Yang, G., Dickey, E., Eitel, R., Shrout, Lanagan, M., Kwon, D., Semouchkina, E., Semouchkin, G., Baker, A., Nagata, Wang, A., Trolier-McKinstry, S., Rhee, S., Present and Future Challenges in Multilayer Ceramic Devices, book Chapter in "Global Roadmap for Ceramic and Glass Technology", ISBN-13 978-0470-10491-0, ISBN-10 0-470-10491-0, John Wiley & Sons, 2005.

Refereed Proceedings

1. Seifi, B. (grad. student), Semouchkina, E., Perger, W., Lee, G.-C., Neuberger, T., and Lanagan, M., "Modified Design of the Coil Probe for High Field MRI", *2015 IEEE International Symposium on Antennas and Propagation*, Vancouver, Canada, July 2015-also presented.
2. Gandji, N. (grad. student), Semouchkin, G., and Semouchkina, E., "Frequency Selective Transmission through Waveguides with ENZ/INZ Sections", *2015 IEEE International Symposium on Antennas and Propagation*, Vancouver, Canada, July 2015-also presented.
3. Chen, F. (grad. student) and Semouchkina, E., "Negative Refraction in Arrays of Identical Dielectric Resonators", *International Applied Computational Electromagnetics Society (ACES) Symposium*, Williamsburg, VA, March 2015-also presented (i).
4. Duan, R. (grad. student) and Semouchkina, E., "Multiband Unidirectional Cloaking Based on Geometric Optics", *2014 IEEE International Symposium on Antennas and Propagation*, Memphis, TN, June 2014. **The paper was selected as a FINALIST in the Best Student Paper Competition. As an honorable mention recipient, R. Duan has received a \$1250 stipend to attend the Symposium and was invited to serve as the Session Chair.**
5. Wang, X. (grad student) and Semouchkina, E., "Electromagnetic Cloaking by Using Multilayer Dielectric Coating", *2013 IEEE International Symposium on Antennas and Propagation*, Lake Buena Vista, FL, July 2013. **The paper**

was selected as an **HONORABLE MENTION** at the **Best Student Paper Competition**. As an honorable mention recipient, **X. Wang** has received a **\$1000 stipend** to attend the **Symposium** and was invited to serve as the **Session Chair**.

6. Wang, X. (grad student) and Semouchkina, E., "Microwave Cloaking Using Resonant and Non-resonant Dielectric Materials", *7th International Congress on Advanced Electromagnetic Materials in Microwaves and Optics-Metamaterials 2013*, Bordeaux, France, Sept. 2013.
7. Rybin, M. V., Samusev, K. B., Poddubny, A. N., Semouchkina, E., Semouchkin, G., Kivshar, Yu. S., and Limonov, M. F., "Fano Resonances in All-Dielectric Metamaterials", *7th International Congress on Advanced Electromagnetic Materials in Microwaves and Optics-Metamaterials 2013*, Bordeaux, France, Sept. 2013.
8. Semouchkina, E., Hosseinzadeh, A. (grad student), and Semouchkin, G., "Realization of High-Q Fano Resonances in Ceramic Dielectric Metamaterials for Sensing Applications", *Proc. of IMAPS 9th Ceramic Interconnect and Ceramic Microsystems Technology Conference (CICMT)*, Orlando, FL, April 2013-also presented (i).
9. Hosseinzadeh, A. (grad student), Semouchkina, E., and Semouchkin, G., "Controlled by the Permittivity Transformation of Energy Bands of Dielectric Metamaterials", *Proc. of the Metamaterials'2012, 6th International Congress on Advanced Electromagnetic Materials in Microwaves and Optics*, St. Petersburg, Russia, September 2012.
10. Chen, F. (grad student), Hosseinzadeh, A. (grad student), Semouchkina, E., and Semouchkin, G., "Challenges of Metamaterial Homogenization in Dispersive Cloaking Shells", *Proc. of the Metamaterials'2012, 6th International Congress on Advanced Electromagnetic Materials in Microwaves and Optics*, St. Petersburg, Russia, September 2012.
11. Wang, X. (grad student-presenter), Chen, F. (grad student), and Semouchkina, E., "Low Scattering Microwave Cloaking by All-Dielectric Metamaterials", *Proc. of 2012 IEEE International Symposium on Antennas and Propagation*, Chicago, IL, July 2012.
12. Hosseinzadeh, A. (grad student-presenter) and Semouchkina, E., "Effects of Magnetic Resonance on the Band Structure of 3D Dielectric Metamaterial Arrays", *Proc. of 2012 IEEE International Symposium on Antennas and Propagation*, Chicago, IL, July 2012.
13. Chen, F. (grad student-presenter), Wang, X. (grad student), and Semouchkina, E., "Resonance Mode Splitting in Split-Ring Resonator Arrays Used in the Microwave Invisibility Cloak", *Proc. of 2012 IEEE International Symposium on Antennas and Propagation*, Chicago, IL, July 2012.
14. Duan, R. (grad student-presenter), Semouchkina, E., and Pandey, R., "Gradient Index Transmission Cloak Composed of Arrays of Dielectric Elements", *Proc. of 2012 IEEE International Symposium on Antennas and Propagation*, Chicago, IL, July 2012.
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