

CURRICULUM VITAE
Marina Y. Koledintseva, Ph.D.

U.S. citizen

Home: 2301 Vienna Rd., Apt. D, Rolla, MO,
65401, USA.

Office: MS&T, EECH-115, 301 W. 16th St.,
Rolla, MO, 65409-0040, USA.

koledintseva@gmail.com;
marinak@mst.edu; www.mst.edu/~marinak

PROFESSIONAL PROFILE:

- Research, design, analytical & numerical modeling of complex electromagnetic structures for electromagnetic compatibility and signal integrity in electronic systems.
- Experimental and theoretical studies of physics of magnetic materials, interaction of various composite media, metamaterials, and nanomaterials with electromagnetic waves from RF to optical frequencies.
- Development of new techniques for measuring dielectric and magnetic electromagnetic properties of materials at RF and microwaves.
- Development of experiment-based techniques to separate of conductor loss from dielectric loss in laminate dielectrics in interconnects.
- Development of mixing rules for predicting electromagnetic properties and engineering new advanced materials with desirable frequency characteristics.
- Programming: Matlab, Maple, Fortran, C/C++.
- Electromagnetic simulations in EZ-FDTD, CST Microwave Studio, Ansoft Q2D/Q3D, FEMAS.
- Experimental equipment: various vector network analyzers, TDR, spectrum analyzers, optical microscopes, dielectric & magnetic material parameter measurements using Agilent's equipment & software
- Conducting patent searches and providing patentability opinions regarding Radio, Electronics, and Computer Engineering, and Materials Science.
- Teaching Engineering and Advanced Electromagnetics and related courses at undergraduate and graduate levels (in English and Russian).
- Languages – Russian (native), English (fluent), German (basic), and French (basic).

EDUCATION:

1996 - Ph.D. (Theoretical Radio Engineering) - Moscow Power Engineering Institute, Moscow, Russia (*Excellence; course completed in 1994*). Ph.D. dissertation: "*Frequency-Selective Power Transducers Based on Hexagonal Ferrite Resonators at Millimeter Waves*".

1984 - M.S. (Radio Physics and Electronics) - Moscow Power Engineering Institute, Moscow, Russia (*Excellence*). M.S. thesis: "*Conversion of an Additive Sum Signal + Noise by a Ferrite Cross-Multiplier*".

EMPLOYMENT HISTORY:

Jan. 2000-present: MISSOURI UNIVERSITY OF SCIENCE AND TECHNOLOGY – Missouri S&T (former UNIVERSITY OF MISSOURI-ROLLA – UMR), Rolla, MO, USA

2005-now: Research Associate Professor, Electromagnetic Compatibility Laboratory, Electrical and Computer Engineering (ECE) Dept. and Materials Research Center

Projects (sponsored by industry and other funding agencies):

- *Evaluation of Dielectric Parameters of Printed Circuit Board Substrates*: Missouri S&T-Cisco, 2007-present (**Co-PI**), \$70K/year
- *Electromagnetic Noise-Suppressing Composite Absorbing Material*: Missouri S&T, Technology Acceleration Program, since May 2011-present (**PI**), \$25K/year
- *Thin Sheet Noise Suppressing Materials for EMC/EMI Applications*: Missouri S&T-ARC-Apple-IBM, since 2009 – present (**PI**), \$60K/year

- *Methodology for Comprehensive Study of Ferrites and Magneto-Dielectric Materials for EMC Applications*: Missouri S&T-Laird-Cisco, 2008-present (**PI**), \$60K/year
- *Ferrite Chokes for Common-Mode Suppression*: Missouri S&T-John Deere-Cisco, 2009 - 2011, (**Co-PI**), \$60K/year
- API Company grant, NSF I/UCRC Center for EMC – 2010-2011, \$76K/year (**Co-PI**)
- Panasonic Corp grant, NSF I/UCRC Center for EMC – 2010-2011, \$60K/year (**Co-PI**)
- *Coaxial Sensor for Detecting Cracks in Civil Constructions* –Missouri S&T – 2007-2009 (Investigator)
- *Electromagnetic Absorbing Materials for Gaskets* – Missouri S&T-General Dynamics land Systems - 2006-2009 (Investigator)
- *Modeling of High-Energy Capacitors* – Missouri S&T- 2005-2008 (Investigator)
- *Electromagnetic Threat Reduction* – UMR-IBM – 2004-2008 (Investigator)
- *Coating Technologies for Protection Against Lasers* – UMR CAMT (Center for Aerospace Materials Technologies), 2004-2007 (Investigator)

2000-2005: Visiting Associate Professor. Participation in projects:

- *Application of Genetic Algorithms for Extracting Parameters of Dispersive Dielectrics* – UMR-NIST – 2003-2004 (Investigator)
- *FDTD Modeling of Dispersive Dielectric and Magnetic Media* - UMR EMC Consortium, IBM – 2001-2004 (Investigator)
- *Connector Design for Reducing Radiated and Coupled EMI* - UMR EMC Consortium, Sun Microsystems, Inc. - 2000-2002 (Investigator)

October 1983- December 1999: MOSCOW POWER ENGINEERING INSTITUTE (MPEI), Moscow, Russia

1996-1999: Senior Scientist, Associate Professor, Radio Engineering Department, Industrial Ferrite Laboratory (OPLF). **Projects:**

- *Mitigation of Unwanted Radiation in Transport Radio Electronic Systems Using Natural Ferromagnetic Resonance in High-Anisotropic Ferrites* - MPEI, Research Grant Program “Conversion”, Russia – 1997-1999 (**PI**)
- *Application of Composite Gyromagnetic Materials for Absorbing Unwanted Radiation of Microwave Oven* - MPEI, Russia -Samsung, South Korea – 1998 (Investigator)

1995-1996: Leading Patent Engineer, Moscow Power Engineering Institute (Technical University) – MPEI, Moscow, Russia

- *Conducting patent searches and providing patentability opinions regarding Radio, Electronics, and Computer Engineering, and Materials Science.*

1983-1995: Research Engineer; Junior Scientist; Scientist, Radio Engineering Department, Ferrite Laboratory, Moscow Power Engineering Institute (MPEI), Moscow, Russia

- *Design of Power Transducers Based on Monocrystalline Hexagonal Ferrite Resonators and Semiconductor Elements* *Hall at Millimeter Waves*
- *Conversion of an Additive Sum Signal + Noise by a Ferrite Cross-Multiplier*
- *Design of Measurer of Spectral Power Density based on Ferrite Garnet Resonators with Extremely Narrow FMR Linewidth*
- *Study of Magnetostatic Oscillations in the Garnet-type Ferrite Disk Resonators*

TEACHING EXPERIENCE:

2012-present Engineering Electromagnetics (EE270 – 4 credit hours, undergraduate & graduate) – Missouri S&T

2009-2012 Research in Electromagnetics for Graduate Students (EE490) - Missouri S&T

2003-2009: Engineering Electromagnetics (EE270 – 3 credit hours, undergraduate) – Missouri S&T (former UMR)

2000-2007: Short Course in Electromagnetic Compatibility for Engineers (organized by Prof. Thomas van Doren) - MS&T (former UMR)

1984-1999: Electrodynamics/Electromagnetics; Radio Engineering Circuits and Signals; Microwave Engineering; Technical and Business English; Calculus; Discrete Mathematics; Theory of Probability and Statistics - MPEI

PUBLICATIONS: 215 total publications in the International peer-reviewed editions: book chapters (3), journals (49), Conference Proceedings (163). Full list is available.

Book Chapters:

1. K. Rozanov, **M. Koledintseva**, and E. Yelsukov, "Frequency-dependent Effective Material Parameters of Composites as a Function of Inclusion Shape", in *Composite Materials/ Book 1*, editor Ning Hu, 978-953-51-0711-8, InTech, August, 2012, Ch. 15, pp. 331-358.
2. **M. Koledintseva**, A. Khanamirov, and A. Kitaitsev, "Advances in Engineering and Applications of Hexagonal Ferrites in Russia", in *Ceramic Materials/ Book 1*, editor C. Sikalidis, InTech, Vienna, Austria, ISBN 978-953-307-350-7, Ch. 4, pp. 61-86, Sept. 2011.
3. **M. Koledintseva**, J. Drewniak, and K. Rozanov, "Engineering, Modeling and Testing of Composite Absorbing Materials for EMC Applications", in *Advances in Composite Materials- Ecodesign and Analysis*, editor B. Attaf, InTech, March 2011, ISBN 978-953-307-150-3, Ch. 13, pp. 291-316.

Key Recent Journal Publications:

1. **M.Y. Koledintseva**, J. Huang, J.L. Drewniak, R.E. DuBroff, and B. Archambeault, "Modeling of metasheets embedded in dielectric layers", *Progress In Electromagnetics Research*, PIER B, vol. 44, 2012, pp. 89-116.
2. **M. Koledintseva**, V.V. Khilkevich, A.G. Razmadze, A.Y. Gafarov, S. De, and J. L. Drewniak, "Evaluation of absorptive properties and permeability of thin sheet magneto-dielectric materials", *Journal of Magnetism and Magnetic Materials*, vol. 324, issue 21, Elsevier, 2012, pp. 3389-3392.
3. A. Koul, **M.Y. Koledintseva**, J.L. Drewniak, and S. Hinaga, "Differential extrapolation method for separating dielectric and rough conductor losses in printed circuit boards", *IEEE Trans. Electromag. Compat.*, vol. 54, no. 2, Apr. 2012, pp. 421-433.
4. C. Singh, S. Bindra Narang, and **M.Y. Koledintseva**, "Microwave absorption characteristics of substituted $Ba_{0.5}Sr_{0.5}M_xFe_{12-2x}O_{19}$ sintered ferrite at X-band", *Microwave and Optical Technology Letters*, Wiley, vol. 54, no. 7, July 2012, pp. 1661-1665.
5. F. de Paulis, M. Nisanci, **M. Koledintseva**, J.L. Drewniak, and A. Orlandi, "From Maxwell Garnett to Debye model for electromagnetic simulation of composite dielectrics. Part I: Random spherical inclusions", *IEEE Trans. Electromag. Compat.*, vol. 53, 2011, no. 4, 2011, pp. 933 – 942.
6. F. de Paulis, M. Nisanci, **M. Koledintseva**, J.L. Drewniak, and A. Orlandi, "From Maxwell Garnett to Debye model for electromagnetic simulation of composite dielectrics. Part II: Random cylindrical inclusions", *IEEE Trans. Electromag. Compat.*, vol. 54, no. 2, Apr. 2012, pp. 280-289.
7. F. de Paulis, M.H. Nisanci, **M.Y. Koledintseva**, J. L. Drewniak, and A. Orlandi, "Derivation of homogeneous permittivity of composite materials with aligned cylindrical inclusions for causal electromagnetic simulations", *Progress In Electromagnetic Research B*, vol. 37, 2012, pp. 205-235.
8. K.N. Rozanov, **M.Y. Koledintseva**, and J.L. Drewniak, "A mixing rule for predicting frequency dependence of material parameters in magnetic composites", *Journal of Magnetism and Magnetic Materials*, no. 324, pp. 1063-1066, 2012.
9. **M.Y. Koledintseva**, A.G. Razmadze, A.Y. Gafarov, V.V. Khilkevich, J.L. Drewniak, and T. Tsutaoka, "Attenuation in extended structures coated with thin magneto-dielectric absorber layer", *Progress In Electromagnetic Research*, PIER 118, July 2011, pp. 441-459.
10. **M. Koledintseva**, J. Xu, S. De, J.L. Drewniak, Y. He, and R. Johnson, "Systematic analysis and engineering of absorbing materials containing magnetic inclusions for EMC applications", *IEEE Trans. Magnetics*, vol. 47, no. 2 (1), Feb. 2011, pp. 317-323, doi: 10.1109/TMAG.2010.2084991.

PATENTS:

1. *Microwave oven*. RF Certificate of Authorship and Patent, application No 98120094/20, priority Nov., 4, 1998. 6H05B6/64.
2. *Microwave Gyromagnetic Cross-Multiplier*. RF Patent No 2099854 Bulletin No 35, 1997, December, 20, 1997 on the application 95119473/09 (033854) with priority Nov., 15, 1995.
3. *Method of Spectrum Analysis of Wideband Noise Microwave Signals and the Device for its Realization*. RF Patent No 2088945, Bulletin No 24, 1997, Sept. 27, 1997 on the application No 93021125/09 (020368) with priority of Jan., 21, 1993.
4. *Device for Frequency-Selective Microwave Power Conversion*. RF Patent No 2066865, Bulletin No 26, 1996, on the application No 93-038323/09 (038211) with priority date July, 27 1993.
5. *Frequency-Selective Power Converter of Microwave Power*. Patent of RF No 2007791, Bulletin No 3, February, 15, 1994 on the application N 4944466/09 of June, 14, 1991.

6. *Method of Frequency-Selective Measuring of Peak Power of a Microwave Signal*. Certificate of Authorship USSR No 1800377, published on Oct., 9, 1992 on application N 4818210 of April, 24 1990.

Scientific and professional society membership:

- Member of IEEE (EMC/AP/MTT) since 1996; Senior Member of IEEE since 2003.
- Member of Educational Committee (2000-2010), TC-9 Computational Electromagnetics Committee (since 2002), TC-4 Shielding Effectiveness Committee (2004-2010), TC-10 Signal Integrity (2008-2011), TC-11 Nanotechnology and Advanced Materials since 2007.
- Member of The Mathematical Association of America (MAA) since 2005.
- Member of The Materials Science (TMS) Society since 2010.
- Member of the International Bureau on Gyromagnetic Electronics since 1992.

Honors and awards:

- IEEE Symp. on EMC – Best Symposium Paper Award – 2012.
- IEEE EMC Society - Best Reviewer of Transactions – 2012.
- IEEE IM Society – Best Reviewer of Transactions – 2011.
- DesignCon – finalist of the Best Paper Award competition (in PCB Summit) – 2011.
- IPC APEX / EXPO, Las Vegas, Best Paper Awards – 2009 and 2010.
- URSI (International Union on Radio Science) Young Scientist Awards - 1995 (St. Petersburg EMT'95), 1996 (Wroclaw EMC'96), 1997 (Zurich EMC'97), 1998 (Thessaloniki EMT'98, Wroclaw EMC'98), 1999 (Zurich EMC'99).
- IEEE EMC Society (Denver, CO, IEEE EMC Symp. travel grant) – 1998.
- First Prize at the USSR Students' Competition in Physics, Mathematics, Science, and Engineering – 1984.

Institutional and professional services:

- Chair of TC-11 “Nanotechnology and Advanced Materials” Committee since 2011. Secretary of TC-11 “Nanotechnology and Advanced Materials” in 2007-2011.
- Chair of numerous technical and special sessions TC-9, TC-10, and TC-11 at IEEE EMC Symposia 2008-2013.
- Chair of “E4 -Shielding, Grounding, and Absorber Design” session, AP-RASC'10 (Asia-Pacific Regional URSI conference), Toyama, Japan, Sept. 22-26, 2010.
- Session Chair at the Int. Microwave Magnetics Conference (ICMM-2010), Boston, MA.
- Chair of numerous sessions at Progress In Electromagnetic Research Symposium (PIERS), Cambridge, MA, 2006-2010.
- Chair of the Session on Electromagnetic Compatibility, Int. Measurement Technology Conf. (IMTC-2003, Vail, Colorado).
- Member of Organizing Committee of annual Gyromagnetic Electronics & Electrodynamics Conf., Moscow, Russia- 1996-2012.
- Reviewer for numerous scientific editions – since 1996.

Invited seminars and lectures in industry and universities:

- National Institute of Standards and Technology (Boulder, CO) – August 2011.
- Naval Research Laboratory (Washington D.C.), ESTD – June 2011, February 2013.
- Cisco Systems, ESTG (San Jose, CA) – February 2011.
- Colorado State University (Fort Collins, CO) – September 2010.
- Northeastern University (Boston, MA) – June 2009, June 2010.
- National Research University “Moscow Power Engineering Institute”, 2008, 2011; 2012.
- Moscow State University, Physics Department (Moscow, Russia) – August 2011.

Collaborations in academia:

- **USA:** Northeastern University (Boston, MA) and University of Houston (Houston, TX)
- **Italy:** L'Aquila University (L'Aquila) and Sapienza University of Rome (Rome)
- **Japan:** Hyogo University (Himeji, Hyogo) and Hiroshima University (Hiroshima)
- **Russia:** National Research University “Moscow Power Engineering Institute” (Moscow) and Institute of Theoretical & Applied Electromagnetics, Russian Academy of Sciences