

CURRICULUM VITAE

Mina Rais-Zadeh

Assistant Professor

School of Electrical Engineering and Computer Science

University of Michigan

Ann Arbor, MI 48109

Email: minar@umich.edu

Tel: (734) 764-4249, Fax: (734) 763-9324

URL: www.eecs.umich.edu/~minar

I. EARNED DEGREES

- Ph.D. in Electrical and Computer Engineering, *Georgia Institute of Technology*, Atlanta, GA, 2008.
- M.S. in Electrical and Computer Engineering, *Georgia Institute of Technology*, Atlanta, GA, 2005.
- B.S. in Electrical Engineering, *Sharif University of Technology*, Tehran, Iran, 2002.

II. EMPLOYMENT

- January 2009 – present: Assistant Professor, Department of Electrical Engineering and Computer Science, *University of Michigan*, Ann Arbor, MI.
- August 2008 – January 2009: Post-Doctoral Fellow, School of Electrical and Computer Engineering, *Georgia Institute of Technology*, Atlanta, GA.
- January 2003– August 2008: Graduate Research Assistant, Integrated MEMS Laboratory, School of Electrical and Computer Engineering, *Georgia Institute of Technology*, Atlanta, GA.

III. HONORS AND AWARDS

- NSF CAREER Award, 2011
- IEEE International Microwave Symposium Student Paper Award (Finalist), 2011
- IEEE SiRF Best Student Paper Award (Finalist), 2007
- Ranked 9th in National University Entrance Examination for Undergraduate Studies (among 400,000 participants), 1998
- National Organization for Development of Exceptional Talents student, 1994 –1998

IV. PUBLICATIONS

I. JOURNAL PUBLICATIONS

1. **M. Rais-Zadeh**, H. M. Lavasani, and F. Ayazi, “An integrated 800MHz coupled-resonator tunable bandpass filter in silver with a constant bandwidth,” *IEEE Journal of Microelectromechanical Systems (JMEMS)*, vol. 18, issue 3, 2009.
2. **M. Rais-Zadeh**, A. Kapoor, H. M. Lavasani, and F. Ayazi, “Fully integrated low-loss bandpass filters for wireless applications,” *Journal of Micromechanics and Microengineering (JMM)*, vol. 9, July 2009.
3. **M. Rais-Zadeh**, J. Laskar, and F. Ayazi, “High performance inductors on CMOS-grade trenched silicon substrate,” *IEEE Trans. Components and Packaging Technologies*, vol. 31, no. 1, pp. 126-134, March 2008.
4. **M. Rais-Zadeh**, P. A. Kohl, and F. Ayazi, “MEMS switched tunable inductor,” *IEEE Journal of Microelectromechanical Systems*, vol. 17, no. 1, pp. 78-84, Feb. 2008.
5. **M. Rais-Zadeh** and F. Ayazi, “Characterization of high-Q spiral inductors on thick insulator-on-silicon,” *Journal of Micromechanics and Microengineering*, vol. 15, pp. 2105-2112, Sept. 2005.
6. W. Pan, V. A. Thakar, **M. Rais-Zadeh**, and F. Ayazi, “Acoustically coupled thickness-mode

AlN-on-Si bandpass filters, Part I: principle and devices,” *IEEE Trans. Ultrasonics, Ferroelectrics and Frequency Control*, submitted.

7. V. A. Thakar, W. Pan, F. Ayazi, and **M. Rais-Zadeh**, “Acoustically coupled thickness-mode AlN-on-Si bandpass filters, Part II: simulation and analysis,” *IEEE Trans. Ultrasonics, Ferroelectrics and Frequency Control*, submitted.

2. CONFERENCE PUBLICATIONS

1. V. J. Gokhale, J. Roberts, and **M. Rais-Zadeh**, “Bulk-mode gallium nitride resonators and filters,” *International Conference on Solid-State Sensors, Actuators and Microsystems (Transducers’11)*, accepted, Beijing, China, June 2011.
2. Z. Wu, Y. Shim, and **M. Rais-Zadeh**, “Miniaturized UWB bandpass filters integrated with notch filters using a Si-based integrated passive device technology,” *IEEE International Microwave Symposium (IMS’11), Best Student Paper Award (finalist)*, Baltimore, MD, accepted, June 2011.
3. Y. Shim, Z. Wu, and **M. Rais-Zadeh**, “A high-performance temperature-stable continuously tuned MEMS capacitor,” *IEEE International Conference on Microelectromechanical Systems (MEMS’11)*, Cancun, Mexico, pp. 752-755, Jan. 2011.
4. **M. Rais-Zadeh**, “Design and fabrication considerations in developing high-Q MEMS capacitors and inductors,” *IEEE 11th Topical Meeting on Silicon Monolithic Integrated Circuits in RF Systems (SiRF’11)*, Phoenix, AZ, Jan. 2011, *invited*.
5. V. J. Gokhale, Y. Shim, and **M. Rais-Zadeh**, “Observation of the acoustoelectric effect in gallium nitride micromechanical bulk acoustic filters,” *IEEE International Frequency Control Symposium*, Newport Beach, CA, June 2010.
6. V. J. Gokhale, Y. Shim, V. A. Thakar, and **M. Rais-Zadeh**, “Q amplification in gallium nitride thickness mode filters using acoustoelectric effect,” *Solid-State Sensors, Actuators and Microsystems Workshop*, Hilton Head, SC, June 2010.
7. Y. Shim, R. Tabrizian, F. Ayazi, and **M. Rais-Zadeh**, “Low-loss MEMS filters with improved out-of-band rejection by exploiting inductive parasitics,” *IEEE International Electron Device Meeting (IEDM’09)*, Baltimore, USA, Dec. 2009.
8. R. Tabrizian, **M. Rais-Zadeh**, and F. Ayazi, “Effect of phonon interactions on limiting the $f \cdot Q$ product of micromechanical resonators,” *Solid-State Sensors, Actuators and Microsystems (Transducers’09)*, Denver, Colorado, June 2009.
9. **M. Rais-Zadeh** and F. Ayazi, “Small-bandwidth integrated tunable bandpass filters for GSM applications,” *IEEE International Conference on Microelectromechanical Systems (MEMS’08)*, Tuscan, Arizona, Jan. 2008, pp. 1032-1035.
10. **M. Rais-Zadeh**, A. K. Samarao, P. Monajemi, and F. Ayazi, “Low-voltage large-value tunable capacitors using self-aligned HARPSS,” *IEEE International Conference on Microelectromechanical Systems (MEMS’08)*, Tuscan, Arizona, Jan. 2008, pp. 319-322.
11. **M. Rais-Zadeh**, H. M. Lavasani, and F. Ayazi, “CMOS-compatible encapsulated silver bandpass filters,” *IEEE Microwave Symposium (IMS’07)*, Honolulu, Hawaii, June 2007, pp. 1301-1304.
12. **M. Rais-Zadeh**, P. A. Kohl, and F. Ayazi, “A packaged micromachined switched tunable inductor,” *IEEE International Conference on Microelectromechanical Systems (MEMS’07)*, Kobe, Japan, Jan. 2007, pp. 799-802.
13. **M. Rais-Zadeh** and F. Ayazi, “High-Q tunable silver capacitors for RFIC’s,” *IEEE Meeting on Silicon Monolithic Integrated Circuits in RF Systems (SiRF’07), Best Student Paper Award (finalist)*, Long Beach, USA, Jan. 2007, pp. 169-172.
14. **M. Rais-Zadeh**, P. A. Kohl, and F. Ayazi, “High-Q micromachined silver passives and filters,” *IEEE International Electron Device Meeting (IEDM’06)*, San Francisco, USA, Dec. 2006, pp. 727-730.
15. **M. Raieszadeh**, P. Monajemi, S. W. Yoon, J. Laskar, and F. Ayazi, “High-Q integrated inductors on trenched silicon islands,” *IEEE International Conference on Microelectromechanical Systems (MEMS’05)*, Miami, USA, Jan. 2005, pp. 199-202.

3. PATENTS

Issued Patents

1. F. Ayazi and **M. Raieszadeh**, “Micro-electromechanical Switched Tunable Inductor”, US Patent 7847669, Published Dec. 2010.
2. F. Ayazi, **M. Raieszadeh**, and P. A. Kohl, “Micro-electromechanical voltage tunable capacitors and filter devices” US Patent issued Jan. 2011.
3. F. Ayazi, **M. Raieszadeh**, and P. Monajemi, “Self-aligned high aspect-ratio polysilicon and single-crystal silicon fabrication method,” US Patent Issued, March 2011.

Pending Patents

1. F. Ayazi and **M. Raieszadeh**, “Low-loss substrate for high quality components,” US Patent pending, Application No. 11/168066, Filed 6/28/2005.

Disclosures

1. **M. Raieszadeh** and V. J. Gokhale, “An un-cooled resonance pyro/piezo electric infrared sensor array,” Invention Disclosure Filed 8/17/2009.

V. PRESENTATIONS

1. INTERNATIONAL CONFERENCES

1. “Design and fabrication considerations in developing high- Q MEMS capacitors and inductors,” *IEEE Meeting on Silicon Monolithic Integrated Circuits in RF Systems (SiRF’11)*, Phoenix, AZ, Jan. 2011.
2. M. Rais-Zadeh, H. M. Lavasani, and F. Ayazi, “CMOS-compatible encapsulated silver bandpass filters,” *IEEE Microwave Symposium (IMS’07)*, Honolulu, Hawaii, June 2007, pp. 1301-1304.
3. “High- Q tunable silver capacitors for RFIC’s,” *IEEE Meeting on Silicon Monolithic Integrated Circuits in RF Systems (SiRF’07)*, Long Beach, USA.
4. “High- Q micromachined silver passives and filters,” presented in *IEEE International Electron Device Meeting (IEDM’06)*, San Francisco, USA.
5. “High- Q integrated inductors on trench Si islands,” presented in *IEEE International Conference on Microelectromechanical Systems*, Miami, USA.

2. INVITED TALKS

1. “Characterization and Modeling of RF MEMS passive and Filters,” *2011 NNIN/C Michigan Symposium*, Ann Arbor, MI, April 2011.
2. “Design and fabrication considerations in developing high- Q MEMS capacitors and inductors,” *IEEE Meeting on Silicon Monolithic Integrated Circuits in RF Systems (SiRF’11)*, Phoenix, AZ, Jan. 2011.
3. “MEMS resonators and filters for communication and sensing applications,” University of British Columbia, May 2010, Vancouver, BC, Canada.
4. “High- Q micro-resonators and filters and their application in communication and sensing systems,” Army Research Laboratory, April 2010, Baltimore, MD.
5. “Resonant micro/nano electromechanical devices,” *IEEE Nanotechnology Conference*, Eagle Crest Conference Center, Nov. 2009, Ypsilanti, MI.
6. “High- Q RF passives on CMOS-compatible trench-silicon-islands” presented in *Industry Advisory Board Meeting*, 2007, Atlanta, GA.

VI. RESEARCH AWARDS

1. CURRENT

1. Title: Ultra-Sensitive Resonant GaN Infrared Sensors using CNT-Polymer Nanocomposites, Organization: *NSF*, Investigators: Mina Rais-Zadeh (PI), P. C. Ku (Co-PI), Grant Period: 5/15/2010 – 05/14/2013.
2. Title: MEMS Reconfigurable Subwavelength Metallic Slits for Broadband Terahertz Modulation,

Organization: *NSF*, Investigators: Mona Jarrahi (PI), Mina Rais-Zadeh (Co-PI), Grant Period: 09/1/2010 – 08/31/2013.

3. Title: Wide Tuning Range Integrated Filter for Tactical Radios, Organization: *Harris Corporation*, Investigator: Mina Rais-Zadeh (PI), Grant Period: 04/1/2010 – 03/31/2011.
4. Title: IR Detector Arrays Using Q -amplified MEMS Resonators, Organization: *ARL*, Micro Autonomous Science and Technology Center (MAST), Investigators: Mina Rais-Zadeh (PI), Kamal Sarabandi (Center Director), Grant Period: 10/1/2010 – 09/30/2011.
5. Title: MEMS Reconfigurable Filters for Multi-Band Low-Power Radios, Organization: *NSF CAREER*, Investigator: Mina Rais-Zadeh (PI), Grant Period: 02/1/2011 – 01/31/2016.

2. PREVIOUS

None

VII. SERVICES AND ACTIVITIES

- NSF Panelist, 2010-present
- IEEE Southeast Michigan Chapter, EDS vice chair, 2009-present
- NSF GAANN Fellowship committee, 2009-present
- Undergraduate Faculty Advisor, University of Michigan, 2009-present
- Co-founder of RadiOMEMS, an Atlanta-Based Start-up Company with Dr. Farrokh Ayazi
- IEEE woman in engineering member, 2005-present
- IEEE member, Electron Device Society, 2003-present
- Reviewer for the IEEE Journal of Microelectromechanical Systems, Journal of Micromechanics and Microengineering, IEEE Transaction on Electron Devices, IEEE Transaction of Microwave Theory and Techniques, Sensors and Actuators A: Physical, IEEE Design and Test of Computers
- Technical Program Committee: IEEE IEDM conference (2011), IEEE Sensors conference (2011),

VIII. ACADEMIC TEACHING

- EECS 514: Advanced MEMS-Device and Technologies
- EECS 515: Integrated Microsystems
- EECS 311: Electronic Circuits
- EECS 598: RF MEMS (New Course)

IX. STUDENTS

1. PH.D. STUDENTS

- Yonghyun Shim, B.S. in Electrical Engineering, Seoul National University; M.S. in Electrical Engineering and Computer Science, University of Michigan, 2009.
- Vikrant J. Gokhale, B.Tech in Electronics and Instrumentation Engineering at Vellore Institute of Technology, Vellore, TN, India.
- Zhengzheng Wu, M. Eng. in Microelectronics and Solid State Electronics, Chinese Academy of Sciences, Shanghai, China.
- Vikram Thakar, B.S. in Mechanical Engineering, University of Pune, India.
- Azadeh Ansari, B.S. in Electrical Engineering, Sharif University of Technology, Iran.

2. M.S. STUDENTS

- Jeff Ruan, B.S. in Electrical Engineering, University of California Los Angeles (UCLA).

3. UNDERGRADUATE STUDENTS

- Natalie Swider (Summer 2010)
- Sui Yu (Winter 2011)
- Anchal Agarwal (Winter 2011)