

Roozbeh Abedini Nassab, Ph.D.

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Summary:

- *Unique background in Electrical and Computer engineering, Bioinformatics, Mechanical Engineering, Materials Science, and molecular and cellular biology, trained in world top universities.*
- *High-impact research field in biomedical devices, lab-on-chip, microfabrication, and single-cell genomics, with a solid publication record.*
- *Editor and reviewer in international scientific journals.*

Education

- Ph.D.** in Mechanical Engineering and Materials Science, Duke University Durham, NC, USA, 2017
- Fellow**, Center for Biomolecular and Tissue Engineering, Duke University
- Ph.D.** in Electronics Engineering, University of Michigan-Shanghai Jiao Tong University Joint Institute (All but dissertation, earned graduation certificate). Shanghai, China, 2014
- B.S. and M.S.** in Electronics Engineering Tehran, Iran

Work Experiences

- University of Neyshabur, Biomedical Engineering**, Assistant Professor Neyshabur, Iran
2018-Current
- Cornell University, Biomedical Engineering**, *Postdoctoral Associate* Ithaca, NY, USA
Responsibilities: Running assays and genomic data analysis. Mentoring students. 2017-2018
- Duke University**, *Research Assistant / Fellow / Teaching Assistant* Durham, NC, USA
Responsibilities: lab-on-chip development, simulations, and data analysis. Teaching assistant. 2014-2017
- University of Michigan-SJTU JI**, *Research Assistant* Shanghai, China
Responsibilities: Managing the lab and performing computer simulations. 2011-2014
- Chungnam National University**, *Invited Researcher* Daejeon, South Korea
Responsibilities: Semiconductor processing. Feb~March 2013
- Infogostar Co.**, R&D Director Tehran, Iran
Responsibilities: leading the R&D team in publishing technical documents and designing and building circuits. 2006-2013
- Shahid Beheshti University**, Teaching assistant. 2007
- Tehran University**, Instructor 2000-2001
Responsibilities: Teaching computer courses.
Editorial board membership in multiple scientific journals. 2016-Current

Honors/Awards

- Best Researcher, University of Neyshabur, Engineering Department 2019, 2020
- Travel Award, Weill Cornell Medicine, USA 2017
- Editor's Choice award, *Recent patents on nanotechnology* journal. 2017

Graduate School travel award, Duke University, USA.	2016
MEMS travel award, Duke University, USA.	2016
6 th Mahato Image and Photo Contest, Second Place, Duke University, USA	2016
CBTE Fellowship, Highly competitive Center for Biomolecular and Tissue Engineering fellowship award. Each year only one international fellow wins this award.	2015-2017
Winner of the three awards in MEMS retreat for Oral presentation (Oral Presentation Award, Best Oral Presentation Award, and People's Choice Award), Duke University, USA.	2015
Best Poster award, Magnetically Stimulated Soft Materials. Conference, University of Georgia, USA.	2015
MEMS Fellowship, Duke University, USA.	2014
Editor's Choice award, <i>Recent patents on nanotechnology</i> journal.	2014
Shanghai Government Scholarship award for PhD studies.	2011-2014
Infogostar Travel grant for factory visit, Shenzhen, China.	2007
Infogostar Travel grant for conference presentation, SMMO, Warsaw, Poland.	2007

Patent Applications

- NONFOULING BIOSENSORS, US20200378916A1, 2020-12-03.
- PLATFORMS FOR SINGLE CELL ANALYSIS, US20200269246A1, 2020-08-27.
- MAGNETIC SINGLE CELL ARRAYS FOR PROBING CELL-DRUG AND CELL-CELL COMMUNICATION, US20180257075A1, 2018-09-13.

Publications/Presentations

Journal Articles

- B. Lim, et al., "Magnetophoretic circuits for digital control of single particles and cells", *Nature Communications*, 2014, 5, 3846.
- R. Abedini-Nassab, et al., "Optimization of magnetic switches for single particle and cell transport", *Journal of Applied Physics*, 2014, 115(24), 244509.
- L. Li, et al., "Monolithically integrated Helmholtz coils by 3- dimensional printing", *Applied Physics Letters*, 2014, 104(25), 253505.
- R. Abedini Nassab and M. Eslamian, "Recent Patents and Advances on Application of Magnetic Nanoparticles and Thin Films in Cell Manipulation", *Recent Patents on Nanotechnology*, 2014, 8(3), 157-164. **(Editor's Choice)**
- R. Abedini-Nassab, et al., "Characterizing the switching thresholds of magnetophoretic transistors", *Advanced Materials*, 2015, 27(40), 6176-6180.
- X. Hu, et al., "Dynamic trajectory analysis of superparamagnetic beads driven by on-chip micromagnets", *Journal of Applied Physics*, 2015, 118(20), 203904.
- R. Abedini-Nassab, et al., "Magnetophoretic Conductors and Diodes in a 3D Magnetic Field", *Advanced Functional Materials*, 2016, 26(22), 4026-4034.
- R. Abedini-Nassab, et al., "Magnetophoretic Transistors in a 3-Dimensional Magnetic Field", *Lab on a Chip*, 2016, 16, 4181-4188.
- R. Abedini-Nassab and X. Zhang, "Modelling in vivo Dynamics of RNA Polymerase II meeting Nucleosomes", *IJET*, 2016, 5 (2), 33-37.
- D. Y. Joh, et al., "Poly(oligo(ethylene glycol) methyl ether methacrylate) Brushes on High-κ Metal Oxide Dielectric Surfaces for Bioelectrical Environments", *ACS Applied Materials & Interfaces*, 2017, 9(6), 5522-5529. (Co-first author)

- R. Abedini-Nassab, "Nanotechnology and Nanopore Sequencing", *Recent Patents on Nanotechnology*, 2017, 11(1), 34-41. **(Editor's Choice)**
- R. Abedini-Nassab and R. Shourabi, "Bends in magnetophoretic conductors", *AIP Advances*, 2019, 9(12), 125121.
- R. Abedini-Nassab, "Magnetomicrofluidic Platforms for Organizing Arrays of Single-Particles and Particle-Pairs", *IEEE Journal of Microelectromechanical Systems*, 2019, 28(4).
- R. Abedini-Nassab and N. Mahdaviyan, "A Microfluidic Platform Equipped with Magnetic Nano Films for Organizing Bio-Particle Arrays and Long-Term Studies", *IEEE Sensors*, 2020.
- R. Abedini-Nassab, "Magnetophoretic Circuit Biocompatibility", *Journal of Mechanics in Medicine and Biology*, 2020, 20(7), 2050050.
- M. Mantri et al., "Spatiotemporal single-cell RNA sequencing of developing hearts reveals interplay between cellular differentiation and morphogenesis", *Nature Communications*, 2021, 12 (1), 1-13.
- R. Abedini-Nassab and N. Mahdaviyan, "Recent Patents and Advances on Nanotechnologies against Coronavirus", *Recent Patents on Nanotechnology*, Accepted.
- R. Abedini-Nassab, et al., "Nanotechnology and Acoustic", *Recent Patents on Nanotechnology*, Accepted.
- R. Abedini-Nassab and S. Bahrami, "Synchronous control of magnetic particles and magnetized cells in a tri-axial magnetic field", *Lab on a Chip*, Accepted.

Conference Presentations

- *Biosensors and Bioelectronics*, Phoenix, USA, 2016.
- *ASME ICNMM*, Washington, DC, USA, Accepted.
- *RTNN Research Symposium 2016*, Raleigh, USA, 2016.
- *Duke GradX*, Durham, USA, 2016.
- MEMS retreat, Duke University, Durham, USA, 2015. **(Winner of three awards)**
- *SMMO*, Warsaw, Poland, 2007.
- *VCNSC*, Arkansas, USA, 2007.
- *10th Computer and Electrical student conference*, Isfahan, Iran, 2007.

Invited Talks

- Lab on a Chip Workshop, Semnan Science and Technology Park (2020).
- 1st Iranian National Biological Mathematics Conference, University of Neyshabur (2019).
- Organ-on-chip and Lab-on-chip systems workshop, Sharif University (2018).
- Circuits with applications in Bio, Sharif University (2018).
- Circuits with applications in Bio, Shahid Beheshti University (2018).
- Memories for sorting living cells, Isfahan University of Technology (2017).
- Memories for sorting living cells, Iran University of Science and Technology (2017).
- Memories for sorting living cells, Khajeh Nasir Toosi University of Technology (2017).
- Magnetomicrofluidics, Cornell University, (2016).
- Magnetophoretic Circuits, Columbia University, (2016).
- Social Network at Single Cell Level, Shepherd University (2016).

Poster Presentations

- **R. Abedini-Nassab**, et al., "Magnetomicrofluidics for Sorting Bioparticles", *IEEE EMBS Micro and Nanotechnology in Medicine Conference*, 2016.
- **R. Abedini-Nassab**, et al., "Magnetophoretic Transistors for Single Cell and Particle Transport", *CBTE Kewaunee Poster Session*, 2015, 2016.
- **R. Abedini-Nassab**, et al., "Magnetophoretic Transistors for Single Cell and Particle Transport", *Magnetically Stimulated Soft Materials Conference, University of Georgia*, 2015. **(Best poster award)**