

MELIKHAN TANYERI

Assistant Professor

Department of Biomedical Engineering, School of Science and Engineering
Duquesne University

Address: 600 Forbes Ave. Pittsburgh, PA 15282

Phone: (412) 396-2287

Email: tanyerim@duq.edu

Professional Summary

Highly accomplished researcher with a diverse academic background. Research interests encompass microfluidics, chemical and biomolecular sensors, and high-resolution imaging.

Education

- Ph.D. Physics, University of California, Davis, 2006 (Thesis advisor: Prof. Ian M. Kennedy)
Dissertation: Chemical and biological sensing through optical resonances in microdroplets
- B.S. Physics, Bogazici University, Istanbul, Turkey, 1999

Professional Experience

- 2018-Present Assistant Professor
Duquesne University, Department of Engineering
- 2016-2018 Research Scientist (Supervisor: Prof. Savas Tay)
University of Chicago, Pritzker School of Molecular Engineering
- 2013-2016 Assistant Professor
Istanbul Sehir University, Department of Electrical and Electronics Engineering
- Summer 2015 Visiting Professor
University of Texas Southwestern Medical Center, Green Center for Systems Biology
- 2008-2013 Postdoctoral Research Associate (Advisor: Prof. Charles Schroeder)
University of Illinois at Urbana-Champaign, Department of Chemical and Biomolecular Engineering
- 2006-2008 Postdoctoral Research Associate (Advisor: Prof. Paul Selvin)
University of Illinois at Urbana-Champaign, Department of Physics
- 2000-2006 Graduate Research Assistant (Advisor: Prof. Ian M. Kennedy)

Research Interests

My current research endeavors revolve around the application of micro and nanoscale tools/systems, coupled with cutting-edge optical microscopy techniques, to address complex challenges in biosensors, point-of-care diagnostics, and the mechanics & dynamics of biomolecules and cells. Within my research group, we possess extensive expertise in microfabrication, micropatterning, soft lithography microfluidics, as well as proficiency in brightfield, fluorescence, and superresolution microscopy. Our focus spans cell-material interactions, development & applications of novel sensors and actuators, and the design and implementation of methods, assays, and devices at the micro- and nanoscale.

Some ongoing projects within our research portfolio include:

- Development of portable blood coagulation analysis systems.
- Design and utilization of microfluidic platforms for studying single-cell mechanotransduction.
- Exploration of microfluidic trapping, manipulation, and separation techniques for biomolecules and cells.
- High throughput analysis of single cell behavior.
- Early detection methods for bacteria.

In essence, our multidisciplinary and applied research program centers on the creation of optofluidic tools and techniques to tackle current challenges in the biomedical field. My specific research interests encompass:

- Biomedical microdevices, micro and nanosystems for biology and medicine.
- Microfluidics, bioMEMS/NEMS, in vitro diagnostics, lab-on-a-chip, medical devices, and biosensors.
- Detection and manipulation techniques for biomolecules, cells, and microorganisms.
- Microfabrication, soft lithography, and micropatterning.
- Superresolution imaging and fluorescence spectroscopy.

Honors and Awards

- 2016 Turkish Academy of Sciences (TUBA) Outstanding Young Scientist Award, Finalist
- 2015 Who's Who in the World
- 2012 3rd Prize, Modeling and Simulation of Nano/Microsystems Contest
- National Nanotechnology Infrastructure Network at University of Michigan
- 2011 Chemical and Biological Microsystems Society (CBMS) Young Researcher Grant
- 2010 Best Talk Award, 8th Annual Biophysics and Computational Biology Symposium
- 2003 Graduate Studies Travel Award, UC, Davis
- 1999-2005 Non-resident Tuition Fellowship, UC, Davis

- 1995-1999 Academic Success Fellowship, Bogazici University, Turkey

Publications

Synopsis: 2 book chapters, 20 journal articles, 11 conference proceedings, 4 patents

Web of Science: h-index: 12, total citations: 683, total publications: 32

Scopus: h-index: 13, total citations: 727, total publications: 27

Google Scholar: h-index: 14, total citations: 1054, total publications: 53

Book Chapter

1. Tanyeri M, and Tay S

“Viable cell culture in PDMS-based microfluidic devices”

Methods in Cell Biology, Volume 148

Microfluidics in Cell Biology Part C: Microfluidics for Cellular and Subcellular Analysis (2018)

Editors: Daniel A. Fletcher, Junsang Doh and Matthieu Piel, ISBN: 978-0-12-814284-4, Elsevier.

2. Tanyeri M, and Schroeder CM

“Flow-based particle trapping and manipulation”

Encyclopedia of Microfluidics and Nanofluidics (2014) Article ID: 347830, Chapter ID: 1770 (ed. Dongqing Li), Springer.

Journal

1. Mustafa A, Ertas Uslu M, and Tanyeri M

“Optimizing Sensitivity in a Fluid-Structure Interaction-Based Microfluidic Viscometer: A Multiphysics Simulation Study”

Sensors (2023) 23(22), 9265. DOI: <https://doi.org/10.3390/s23229265>

2. Yang B, Schinke J, Rastegar A, Tanyeri M, and Viator JA

“Cost-Effective Full-Color 3D Dental Imaging Based on Close-Range Photogrammetry”

Bioengineering (2023) 10(11), 1268. DOI: [10.3390/bioengineering10111268](https://doi.org/10.3390/bioengineering10111268)

3. Mustafa A, Haider D, Barua A, Tanyeri M, Erten A, and Yalcin O

“Machine learning based microfluidic sensing device for viscosity measurements”

Sensors and Diagnostics (2023) 2, 1509-1520. DOI: [10.1039/d3sd00099k](https://doi.org/10.1039/d3sd00099k)

4. Boyd J, Hepner G, Ujhazy M, Bliss S, and Tanyeri M

“Dual hydrodynamic trap based on coupled stagnation point flows”

Physics of Fluids (2023) 35, 062001. DOI: 10.1063/5.0150089

5. Mustafa A, Eser A, Aksu AC, Kiraz A, Tanyeri M, Erten A, and Yalcin O

“A micropillar-based microfluidic viscometer for Newtonian and non-Newtonian fluids”

Analytica Chimica Acta (2020) 1135 107-115.

6. Watterson WJ, Tanyeri M, Watson AR, Cham CM, Shan Y, Chang EB, Eren AM, and Tay S

“Droplet-based high-throughput cultivation for accurate screening of antibiotic resistant gut microbes”

eLife (2020) 9:e56998.

7. Evans A, Sutton K, Hernandez S, and Tanyeri M

“Viscoelastic Hemostatic Assays - A Quest for Holy Grail of Coagulation Monitoring in Trauma Care”

Journal of Annals of Bioengineering (2019) 1: 61-64.

8. Mustafa A, Erten A, Ayaz R, Kayillioglu O, Eser A, Irfan M, Muradoglu M, Tanyeri M, and Kiraz A

“Enhanced dissolution of liquid microdroplets in the extensional creeping flow of a hydrodynamic trap”

Langmuir (2016) 32 (37) 9460-9467.

9. Shenoy A, Tanyeri M, and Schroeder CM

“Characterizing the performance of the hydrodynamic trap using a control-based approach”

Microfluidics and Nanofluidics (2015) 18 (5) 1055-1066.

10. Johnson-Chavarria EM, Agrawal U, Tanyeri M, Kuhlman TE, and Schroeder CM

“Automated single cell microbioreactor for monitoring intracellular dynamics and cell growth in free solution”

Lab on a Chip (2014) 14 (15) 2688-2697.

11. Marciel AB, Tanyeri M, Wall BD, Tovar JD, Schroeder CM, and Wilson WL

“Fluidic-directed assembly of aligned oligopeptides with π -conjugated cores”

Advanced Materials (2013) 25 (44) 6398-6404.

12. Tanyeri M, and Schroeder CM
"Manipulation and confinement of single particles using fluid flow"
Nano Letters (2013) 13 (6) 2357-2364.
13. Kim Y, Kim SH, Tanyeri M, Katzenellenbogen JA, and Schroeder CM
"Dendrimer probes for enhanced photostability and localization in fluorescence imaging "
Biophysical Journal (2013) 104 (7) 1566-1575.
14. Tanyeri M, Ranka M, Sittipolkul N, and Schroeder CM
"Microfluidic Wheatstone bridge for rapid sample analysis "
Lab on a Chip (2011) 11 (24) 4181-4186.
15. Tanyeri M, Ranka M, Sittipolkul N, and Schroeder CM
"A microfluidic-based hydrodynamic trap: Design and implementation "
Lab on a Chip (2011) 11 (10) 1786-1794.
(selected for the May 23, 2011 issue of Virtual Journal of Nanoscale Science & Technology)
16. Schudel BR, Tanyeri M, Mukherjee A, Schroeder CM, and Kenis PJA
"Multiplexed detection of nucleic acids in a combinatorial screening chip"
Lab on a Chip (2011) 11 (11) 1916-1923.
17. Johnson-Chavarria EM, Tanyeri M, and Schroeder CM
"A microfluidic-based hydrodynamic trap for single particles "
Journal of Visualized Experiments (2011) (47) DOI: 10.3791/2517.
18. Tanyeri M, Johnson-Chavarria EM, and Schroeder CM
"Hydrodynamic trap for single particles and cells "
Applied Physics Letters (2010) 96 224101.
(selected for the June 14, 2010 issue of Virtual Journal of Nanoscale Science & Technology)
19. Tanyeri M, and Kennedy IM
"Detecting single bacterial cells through optical resonances in microdroplets "
Sensor Letters (2008) Vol. 6 No. 2 p. 326-329.
(cover article)
20. Tanyeri M, Perron R, and Kennedy IM

"Lasing droplets in a microfabricated channel "

Optics Letters (2007) Vol. 32 Issue 17 p. 2529-2531.

(highlighted in photonics.com and Photonics Spectra, October 2007)

Conference Proceedings

1. Hoying M, Kazimer B, Evans A, Carbino B, Sutton K, McCallin R, and McGee A

"Project MADMEN: Proposed Analogue Fidelity Comparison to ALIEN Martian Mission"

2022 IEEE Aerospace Conference (AERO) (2022) pp. 01-10, DOI:

10.1109/AERO53065.2022.9843386.

2. Kayillioglu O, Erten A, Tanyeri M, and Kiraz A

"Dye Lasing and Laminar Flow-Induced Dissolution in Hydrodynamically Trapped Oil Microdroplets"

OSA Technical Digest (2015) pp. OtW2D.4 Optical Trapping Applications 2015.

3. Kayillioglu O, Erten A, Kiraz A and Tanyeri M

"Hydrodynamic Trapping of Oil Microdroplets in Glycerol-Water Solution"

Proc. BiyoMUT (2014) BIYOMUT 2014: 18th National Biomedical Engineering Meeting, Istanbul, Turkey.

4. Tanyeri M, and Schroeder CM

"Confinement and manipulation of single nanoparticles in free solution using a hydrodynamic trap"

Proc. NanoTR (2014) 10th Nanoscience and Nanotechnology Conference, Istanbul, Turkey.

5. Tanyeri M

"Confinement of single macromolecules in free solution using a hydrodynamic trap"

Proc. SPIE (2014) Vol. 8976 p. 89760F Microfluidics, BioMEMS, and Medical Microsystems XII.

6. Tanyeri M, and Schroeder CM

"2-D micromanipulation of single nanoparticles in free solution using a microfluidic trap"

Proc. MicroTAS (2011) 15th International Conference on Miniaturized Systems for Chemistry and Life Sciences.

Melikhan Tanyeri Curriculum Vitae

7. Schudel BR, Tanyeri M, Schroeder CM, and Kenis PJA

“Total internal reflection fluorescence of molecular beacons in a multiplexed microfluidic device”

Proc. MicroTAS (2009) Vol. 1 p. 36-38 13th International Conference on Miniaturized Systems for Chemistry and Life

Sciences.

8. Tanyeri M, Perron R, and Kennedy IM

“Lasing droplets in a microfluidic T-junction device with integrated optics”

Proc. SPIE (2007) Vol. 6465 p. 64650E Microfluidics, BioMEMS, and Medical Microsystems V.

9. Tanyeri M, Dosev DK, and Kennedy IM

“Chemical and biological sensing through optical resonances in pendant droplets”

Proc. SPIE (2005) Vol. 6008 p. 60080Q Nanosensing: Materials and Devices II.

10. Tanyeri M, Nichkova M, Hammock BD, and Kennedy IM

“Chemical and biological sensing through optical resonances in microcavities”

Proc. SPIE (2005) Vol. 5699 p. 227-236 Imaging, Manipulation, and Analysis of Biomolecules and Cells: Fundamentals

and Applications III.

11. Tanyeri M, and Kennedy IM

“Microdroplets for integrated high-sensitivity biosensors”

Proc. SPIE (2004) Vol. 5275 p. 133-140 BioMEMS and Nanotechnology.

Patents

1. Tanyeri M, Lin J, Abasiyanik F, Angarita Marmolejo YD

“Rapid Enumeration of Microorganisms ”

US Application No: 63/184,447 (May 5, 2021), WO 2022/235284 (Nov 10, 2022).

2. Yalcin O, Erten AC, Tanyeri M

“Microfluidic Thromboelastometry Instrument ”

US2021/0268497 (Sep 2, 2021), WO 2020/027741 (Feb 6, 2020), EP3830573 (Jul 29, 2018).

3. Kim Y, Kim SH, Tanyeri M, Katzenellenbogen JA, and Schroeder CM

“Dye-conjugated dendrimers ”

US Patent 9,448,173 (September 20 2016).

4. Tanyeri M, Perron R, and Kennedy IM

“Optical resonances in droplets in a microchannel ”

WIPO Publication No: WO 2008/030281 (March 13 2008). International Application No: PCT/US2007/012590.

Projects and External Funding

Duquesne University (2018-present)

Synopsis: Secured ~\$502.6K grant funding with a success rate of 27% (4/15 applications funded).

1. NSF Engineering -UKRI EPSRC Lead Agency Opportunity (Principal Investigator, Award No: 2325750)

A novel multifunctional platform to study cell and nuclear mechanosensing

Budget: \$479,414, Period: September 2023 – August 2026

2. NASA Pennsylvania Space Grant Consortium (PSGC) Mini-Grants Program (S004045-NASA mini grant subaward)

Project MADMEN (Principal Investigator)

Budget: \$4,999, Period: July 2021 – April 2024

3. Duquesne University Faculty Development Fund (Principal Investigator)

Teaching Key Engineering Concepts through Music

Budget: \$7,576, Period: May 2019 – April 2021

4. Samuel and Emma Winters Foundation (Principal Investigator)

Development of a high-throughput microfluidic platform for isolating and culturing low abundance bacterial species

from gut samples

Budget: \$10,600, Period: July 2018 – June 2019

Istanbul Sehir University (2013-2016)

Synopsis: Secured ~\$486K grant funding with a success rate of 50% (6/12 grant applications funded, national average: 17.7%).

1. 2551 TUBITAK-British Council Bilateral Cooperation Program (Co-Principal Investigator, Project No: 215Z702)

Paper-based microfluidic electrochemical biosensor for detection of miRNA biomarkers towards early diagnosis of lung cancer

Budget: 357,666 TL (~ US\$120,000), Period: Oct 2016 – Sep 2018

2. 1001 TUBITAK Research Project (Co-Principal Investigator, Project No: 115M220)

Fabrication of multiplex and hierarchical patterns using self-assembly of block-copolymers and microfluidic molding for applications in nanolithography

Budget: 288,700 TL (~ US\$97,000), Period: Sep 2015 – Aug 2017

3. 1003 TUBITAK Priority Areas Research Project (Co-Principal Investigator, Project No: 115S120)

Development of a portable thromboelastometry device for evaluating the coagulation pathway

Budget: 415,088 TL (~ US\$139,000), Period: Oct 2015 – Sep 2017

4. 2537 TUBITAK-Czech Republic ASCR Bilateral Cooperation Program (Co-Principal Investigator, Project No: 114F253)

The Use of Emulsion Droplets of Liquid Crystals as Largely Tunable Anisotropic Laser Cavities

Budget: 239,243 TL (~ US\$80,000), Period: Jan 2015 – Dec 2017

5. Koc University Seed Research Program (Co-Principal Investigator)

Investigation of Red Blood Cell Deformability Using Hydrodynamic Trapping

Budget: 48,859 TL (~ US\$16,400), Period: Jun 2014 – May 2016

6. TUBITAK BIDEB 2232 (Principal Investigator, Project No: 114C083)

Confinement and Manipulation of Nanoparticles and Biological Macromolecules

Teaching

Duquesne University (2018-Present)

I adhere to the "educate, inspire, engage" philosophy in my approach to teaching and advising. My primary goal in these roles is to cultivate a positive learning environment that encourages students to acquire, test, and generate knowledge, equipping them with essential skills to emerge as distinguished individuals among the next generation of engineers. As a teacher and mentor, I envision my role as one that kindles students' enthusiasm, stimulates their interest, and ultimately empowers them to think creatively and independently.

Within the domain of Biomedical Engineering, I instruct the following courses under both our undergraduate and graduate programs:

- BMED 110 Introduction to Programming for Engineers
- BMED 310 Biomedical Signals and Systems
- BMED 451/551 Biomedical Microdevices I
- BMED 452/552 Biomedical Microdevices II

Istanbul Sehir University (2013-2016)

- ECE 441/541 Nano and Micro Electro Mechanical Systems
- ECE 422/522 Wave Propagation and Antennas
- EE 311 Introduction to Electronic Devices
- EE 321 Electromagnetics I
- PHYS 103 Physics I Mechanics & Dynamics
- PHYS 104 Physics II Electromagnetics & Modern Physics

Faculty Diversity Intern (2004-2005), Los Rios Community College District, Sacramento, California

Co-taught Physics 350 (a general physics course consisting of classroom lectures and a weekly lab session) with Prof. William

Simpson at American River College in Sacramento, California.

Seminar in College Teaching (2005), University of California, Davis

Completed a certificate program to build essential skills for designing, delivering, and evaluating college-level courses.

Developed a syllabus, and prepared a lesson plan for an introductory physics course; wrote a teaching philosophy statement.

Teaching Assistant (2002-2004), University of California, Davis

Taught several freshman physics labs and freshman and sophomore math courses. Courses included classical physics, calculus and differential equations.

Presentations

Invited

1. "Microfluidic techniques for probing molecular and cellular processes"
Duquesne University, Biological Sciences Seminar
Pittsburgh, PA (October 27, 2023)

2. "Microfluidic tools for studying biomolecules, cells and soft matter"
Ohio State University, Biophysics Seminar

Columbus, OH (September 29, 2021)

3. "Hydrodynamic Trap: A new microfluidic tool for studying soft matter"
Carnegie Mellon University, Colloids, Polymers and Surfaces Seminar
Pittsburgh, PA (March 9, 2018)

4. "Observation of droplet dissolution in aqueous media using a hydrodynamic trap"
3rd World Chemistry Conference
Dallas, TX (September 11-12, 2017)

5. "Innovation in IVD (in vitro diagnostics) devices & kits - The future of IVD technologies"
In Vitro Diagnostics Symposium
Izmir, Turkey (February 18-20, 2016)

6. "Optofluidic systems for biotechnology and medicine"
Electrical and Electronics Engineering Seminar, Ozyegin University
Istanbul, Turkey (January 8, 2016)

7. "Microfluidic systems for biotechnology and medicine"
2nd International Congress on Biosensors
Izmir, Turkey (June 10-12, 2015)

8. "Microfluidic systems for biotechnology and medicine"
Institute of Biomedical Engineering, Bogazici University
Istanbul, Turkey (April 28, 2015)

9. "Microfluidic systems for biotechnology and medicine"
Electrical Engineering/Mechatronics Joint Seminar, Sabanci University
Istanbul, Turkey (April 22, 2015)

10. "Micro and nanoscale systems for biotechnology and medicine"
Department of Bioengineering, Izmir Institute of Technology
Izmir, Turkey (March 27, 2015)

11. "Micro and nanoscale systems for biology and medicine"
Molecular Biology and Genetics Colloquium, Istanbul Technical University
Istanbul, Turkey (September 30, 2014)

12. "Micro and nanoscale systems for biotechnology and medicine"
International Seminar on Lab-on-a-chip Biosensor Systems
Kusadasi, Turkey (September 7-11, 2014)

13. "Microfluidic systems and applications in photonics"
Photonics 2014: 16th National Optics, Electro-optics and Photonics Workshop
Kocaeli, Turkey (September 5, 2014)

14. "Microfluidic systems and applications in optics"
Graduate Summer School on Nanoparticles and Microfluidics in Biosensor Systems
Bodrum, Turkey (August 31 - September 7, 2014)

15. "Microfluidic systems and applications in photonics"
Workshop on Current Trends in Biophotonics and BioMEMS, Istanbul Sehir University
Istanbul, Turkey (August 12, 2014)

16. "Micro and nanoscale systems for biophysical studies"
TUBITAK Materials Institute

Gebze, Turkey (January 8, 2014)

17. "Micro and nanoscale systems for biophysical studies"
Department of Physics, Koc University
Istanbul, Turkey (November 27, 2013)

18. "Micro and nanoscale systems for biophysical studies"
Mechatronics/Materials Science & Engineering Joint Seminar, Sabanci University
Istanbul, Turkey (October 30, 2013)

19. "Micro and nanoscale systems for biophysical studies"
Department of Physics, University of Texas–Pan American
Edinburg, TX (April 15, 2013)

20. "Micro and nanoscale systems for biotechnology and medicine"
Department of Electrical Engineering, Kettering University
Flint, MI (March 13, 2013)

21. "Micro and nanoscale systems for biotechnology and medicine"
Department of Mechanical Engineering, Ihsan Dogramaci Bilkent University
Ankara, Turkey (July 6, 2012)

22. "Micro and nanoscale systems for biotechnology and medicine"
Department of Mechanical Engineering, Izmir Institute of Technology
Izmir, Turkey (July 4, 2012)

23. "Micro and nano-particle trapping and manipulation with fluid flow"
Ihsan Dogramaci Bilkent University, UNAM – National Nanotechnology Research Center
Ankara, Turkey (June 27, 2012)

24. "Micro and nanoscale systems for biotechnology and medicine"
Department of Biophysics, Acibadem University
Istanbul, Turkey (June 26, 2012)

25. "Micro and nanoscale systems for biotechnology and medicine"
Department of Electrical Engineering, Istanbul Sehir University
Istanbul, Turkey (March 28, 2012)

26. "Confinement and manipulation of single molecules, particles or cells using fluid flow"
Department of Physics Colloquium, Kent State University
Kent, OH (December 8, 2011)

27. "Kinesin's twist around microtubules"
HHMI-Janelia Farm
Ashburn, VA (March 27, 2008)

28. "Kinesin's twist along non-13 protofilament microtubules"
Department of Physiology, University of Pennsylvania Medical School
Philadelphia, PA (March 13, 2008)

29. "Optical microcavities for chemical and biological sensing"
Biophotonics/Biophysics Colloquium, Center for Biophotonics Science & Technology

University of California, Davis, Davis, CA (April 14, 2006)

30. "Chemical and biological sensing through optical resonances in pendant droplets"
SPIE Optics East 2005, Nanosensing: Materials and Devices II
Boston, MA (October 23-26, 2005)

Contributed

1. Biomedical Engineering Society (BMES) Annual Meeting (poster presentation)
"A Microfluidic Tweezer for Simultaneous Confinement of a Pair of Cells and Particles"
Jarrett Boyd, Gram Hepner, Maxwell Ujhazy, Shawn Bliss, Melikhan Tanyeri
Seattle, WA (Oct 11-14, 2023)

2. 5th Carnegie Mellon Forum on Biomedical Engineering (virtual poster presentation)
"An Assay for Measuring Water Permeability of Mammalian Cells"
Raegan Gouker, Katherine Flannery, Melikhan Tanyeri
Carnegie Mellon University (September 22, 2023)

3. ConnectUR 2023 Annual Conference (oral presentation)
"A senior-level course in biomedical engineering to develop skills for comprehensive analysis
of primary scientific
literature and communication of science to the public"
Melikhan Tanyeri
Duquesne University (June 26-28, 2023)

4. 12th Annual UPMC Children's Hospital Research Symposium (poster presentation)
"Novel Bioreactor System to Evaluate Effect of 3D Cardiac Strain"
Haris Mansoor, Jil Patel, Ryan Slusser, Jackson Jewell, Melikhan Tanyeri, Anita Saraf
UPMC Children's Hospital of Pittsburgh (May 16, 2023)

5. 15th Undergraduate Research & Scholarship Symposium (poster presentation)
"High throughput GPCR affinity assay to screen for potential non-opioid pain medication"
Aidan O'Donnell, Sara Knox, Michelle Bohn, Melikhan Tanyeri
Duquesne University (April 19, 2023)

6. 15th Undergraduate Research & Scholarship Symposium (poster presentation)
"Dual hydrodynamic trap based on coupled stagnation point flows"
Gram Hepner, Maxwell Ujhazy, Shawn Bliss, Melikhan Tanyeri
Duquesne University (April 19, 2023)

7. 15th Undergraduate Research & Scholarship Symposium (oral presentation)

- “A multielectrode array (MEA) for electrophysiological measurements from neural spheroids”
Emily McCarty, Jacob McKinley, Mitchell Fox, Ibrahim Kimukin, Maysam Chamanzar, Chirag Patel, Melikhan Tanyeri
Duquesne University (April 19, 2023)
8. 15th Undergraduate Research & Scholarship Symposium (poster presentation)
“A Biomimetic Cardiac Tissue Model Towards Understanding Etiology of Congenital Heart Disease”
Ryan Slusser, Jackson Jewell, Haris Mansoor, Jil Patel, Anita Saraf, Melikhan Tanyeri
Duquesne University (April 19, 2023)
9. 15th Undergraduate Research & Scholarship Symposium (oral presentation)
“An Assay for Measuring Water Permeability of Mammalian Cells”
Raegan Gouker, Kate Flannery, Melikhan Tanyeri
Duquesne University (April 19, 2023)
10. 15th Undergraduate Research & Scholarship Symposium (oral presentation)
“Application of Supervised Machine Learning for Bacteria Analysis in Droplet Microfluidics”
Shawn Bliss, Melikhan Tanyeri
Duquesne University (April 19, 2023)
11. 10th Annual BioE Day (CMU & Pitt) (poster presentation)
“A multielectrode array (MEA) for electrophysiological measurements from neural spheroids”
Emily McCarty, Jacob McKinley, Mitchell Fox, Melikhan Tanyeri
University of Pittsburgh (April 6, 2023)
12. 10th Annual BioE Day (CMU & Pitt) (poster presentation)
“High throughput GPCR affinity assay to screen for potential non-opioid pain medication”
Aidan O'Donnell, Sara Knox, Michelle Bohn, Asef Faruk, Jane Cavanaugh, Kevin Tidgewell, Melikhan Tanyeri
University of Pittsburgh (April 6, 2023)
13. Optica Biophotonics Congress 2023: Optics in the Life Sciences (poster presentation)
“Feasibility Study of Photogrammetry-based 3D Dental Imaging”
Bin Yang, Jennifer Schinke, Amir Rastegar, Melikhan Tanyeri, and John A. Viator
Vancouver, Canada (Apr 24- 27, 2023)

14. Biomedical Engineering Society (BMES) Annual Meeting (poster presentation)
“Application of Supervised Machine Learning for Bacteria Analysis in Droplet Microfluidics”
Shawn Bliss, Melikhan Tanyeri
San Antonio, TX (Oct 12-15, 2022)

15. Biomedical Engineering Society (BMES) Annual Meeting (poster presentation)
“PsychLight: a Genetically Encoded Fluorescent Sensor for Drug Discovery”
Caroline Daggett, Asef Faruk, Jane Cavanaugh, Kevin Tidgewell, Melikhan Tanyeri
San Antonio, TX (Oct 12-15, 2022)

16. Biomedical Engineering Society (BMES) Annual Meeting (poster presentation)
“A Microfluidic Viscometer based on Micropillar Deflection and Machine Learning”
Adil Mustafa, Daniyal Haider, Arnab Barua, Melikhan Tanyeri, Ahmet Erten, Ozlem Yalcin
San Antonio, TX (Oct 12-15, 2022)

17. 24th Summer Undergraduate Research Symposium (poster presentation)
“Microfluidic Trapping of Particles with Coupled Stagnation Flows”
Gram Hepner, Melikhan Tanyeri
Duquesne University (July 29, 2022)

18. 24th Summer Undergraduate Research Symposium (poster presentation)
“PsychLight, a genetically encoded fluorescent sensor for drug discovery”
Caroline Daggett, Asef Faruk, Jane Cavanaugh, Kevin Tidgewell, Melikhan Tanyeri
Duquesne University (July 29, 2022)

19. 24th Summer Undergraduate Research Symposium (poster presentation)
“Application of Supervised Machine Learning for Bacteria Analysis in Droplet Microfluidics”
Shawn Bliss, Melikhan Tanyeri
Duquesne University (July 29, 2022)

20. 48th Northeast Bioengineering Conference (NEBEC 2022) (poster presentation)
“A Microfluidic Assay for Single Cell Bacterial Adhesion Studies Under Shear Stress”
Amanda Trusiak, Anelise McGee, Karli Sutton, Rachel Fernandez, Selvin Hernandez, Melikhan Tanyeri
Duquesne University (April 23-24, 2022)

21. 14th Undergraduate Research & Scholarship Symposium (poster presentation)
“Simultaneous multi-particle trapping using multiple coupled stagnation flows”
Gram Hepner, Maxwell Ujhazy, Melikhan Tanyeri
Duquesne University (April 18-22, 2022)
22. 14th Undergraduate Research & Scholarship Symposium (poster presentation)
“Project MADMEN: Adapting the ALIEN Martian Mission Framework for Terrestrial Based Validation”
Benjamin Kazimer, Madelyn Hoying, Alexander Evans, Burton Carbino IV, Karli Sutton, Rebecca McCallin, Garret Craig, Anelise McGee, Melikhan Tanyeri
Duquesne University (April 18-22, 2022)
23. National Conference on Undergraduate Research (NCUR) 2022
“Microfluidic-Photoacoustic Flow Cytometry for Diagnosis of Acute Lymphocytic Leukemia”
Shawn Bliss, Melikhan Tanyeri
Virtual, (April 4-8, 2022)
24. 9th Annual BioE Day (CMU & Pitt) (poster presentation)
“A Microfluidic Assay for Single Cell Bacterial Adhesion Studies Under Shear Stress”
Amanda Trusiak, Anelise McGee, Karli Sutton, Rachel Fernandez, Selvin Hernandez, Melikhan Tanyeri
University of Pittsburgh (March 31, 2022)
25. 2022 Virtual (8th Annual) Graduate Research Symposium (poster presentation)
“A Microfluidic Assay for Single Cell Bacterial Adhesion Studies Under Shear Stress”
Amanda Trusiak, Anelise McGee, Karli Sutton, Rachel Fernandez, Selvin Hernandez, Melikhan Tanyeri
Duquesne University (March 14-18, 2022)
26. Biomedical Engineering Society (BMES) Annual Meeting (oral)
“A Microfluidic Viscometer towards Real-time, Continuous Measurement of Blood Viscosity”
Melikhan Tanyeri, Adil Mustafa, Ahmet Erten, Ozlem Yalcin
Orlando, FL (Oct 6-9, 2021)

27. 23rd Summer Undergraduate Research Symposium (poster)
"Microfluidic-Photoacoustic Flow Cytometry for Diagnosis of Acute Lymphocytic Leukemia"
Presenter: Shawn Bliss
Duquesne University (July 30, 2021)
28. 23rd Summer Undergraduate Research Symposium (poster)
"High Throughput Sensitive Microfluidic Assay for the Measurement of Fluorescently Labeled 5-HT_{2C} Binding Kinetics to GPCRs"
Presenter: Gleymi Hernandez
Duquesne University (July 30, 2021)
29. 23rd Summer Undergraduate Research Symposium (poster)
"Rapid Quantification of Bacteria Using Droplet Microfluidics"
Presenter: Matthew Nestler
Duquesne University (July 30, 2021)
30. 13th Virtual Undergraduate Research & Scholarship Symposium (oral, virtual)
"Project ALIEN"
Rebecca McCallin (DU Infinity and Beyond)
Duquesne University (April 12-16, 2021)
31. 13th Virtual Undergraduate Research & Scholarship Symposium (poster)
"A High Throughput Microfluidic Plaque Assay for Rapid Screening of Potentially Therapeutic Phages"
Alexander Evans, Melikhan Tanyeri
Duquesne University (April 12-16, 2021)
32. 2021 Virtual (7th Annual) Graduate Research Symposium (poster)
"Development of a Microfluidic Viscoelastic Hemostatic Assay"
Shay Kent, Melikhan Tanyeri
Duquesne University (March 8-12, 2021)
33. American Institute of Chemical Engineers Annual Meeting (oral)
"Dual Hydrodynamic Trap"
San Francisco, CA (November 15-20, 2020)

34. Virtual EMBL Conference: Microfluidics: Designing the Next Wave of Biological Inquiry (poster)

“Dual particle trapping using a microfluidic trap”

Presenter: Jarrett Boyd

Virtual/Heidelberg, Germany (July 13-15, 2020)

35. 12th Undergraduate Research & Scholarship Symposium (poster)

“A Microfluidic Device for Analysis of Newtonian Fluid Droplet Length Against Viscosity”

Jessica Towns, Sakina Goawala, Melikhan Tanyeri

Duquesne University (April 21, 2020)

36. 12th Undergraduate Research & Scholarship Symposium (paper competition)

“A Microfluidic Platform for High-Throughput Screening of Aquaporin Performance”

Adriana Del Pino Herrera, Jordan Hoydick, Rachel Rauh, Elyssa El-hajj, Madison Burchfield, Merve Ertas Uslu,

Melikhan Tanyeri

3rd Place, Outstanding Paper, Office of Research

Duquesne University (April 21, 2020)

37. 12th Undergraduate Research & Scholarship Symposium (paper competition)

“Hydrodynamic multiparticle trapping”

Jarrett Boyd, Melikhan Tanyeri

Duquesne University (April 21, 2020)

38. 2nd International Conference on Microbiome Engineering (oral)

“High-throughput isolation and automated sorting of diverse microbiomes reduce biases of traditional cultivation strategies”

Presenter: William J. Watterson

Boston, MA, (December 2-4, 2019)

39. 2nd Carnegie Mellon Forum on Biomedical Engineering (poster)

“Dual particle trapping using a microfluidic trap”

Jarrett Boyd, Melikhan Tanyeri

Carnegie Mellon University (September 20, 2019)

40. 22nd Summer Undergraduate Research Symposium (poster)
"Development of a Two-Color TIRFM Setup for Single Molecule Imaging and Comparison of Two Immobilization Methods"
Presenters: Grace Ingram, Karli Sutton
Duquesne University, Pittsburgh, PA (July 26, 2019)
41. 22nd Summer Undergraduate Research Symposium (poster)
"A Microfluidic Device for Real-Time Viscosity Measurement of Aqueous Newtonian Fluids"
Presenter: Alexander Evans
Duquesne University, Pittsburgh, PA (July 26, 2019)
42. 22nd Summer Undergraduate Research Symposium (poster)
"Hydrodynamic multiparticle trapping"
Presenter: Jarrett Boyd
Duquesne University, Pittsburgh, PA (July 26, 2019)
43. 22nd Summer Undergraduate Research Symposium (poster)
"A Microfluidic Platform for High-Throughput Screening of Aquaporin Performance"
Presenter: Adriana Del Pino Herrera
Duquesne University, Pittsburgh, PA (July 26, 2019)
44. 11th Undergraduate Research & Scholarship Symposium (poster)
"Hydrodynamic multiparticle trapping"
Presenter: Jarrett Boyd
Duquesne University, Pittsburgh, PA (April 3, 2019)
45. Advanced Biomedical Strategies for Defense Applications Symposium (oral)
"Microfluidic Viscoelastic Hemostatic Assay"
Duquesne University, Pittsburgh, PA (March 13, 2019)
46. American Institute of Chemical Engineers Annual Meeting (oral)
"Enhanced Dissolution of Liquid Microdroplets Under Planar Extensional Flow"
Pittsburgh, PA (October 28 - November 2, 2018)

47. Carnegie Mellon Forum on Biomedical Engineering (poster)
"Hydrodynamic multiparticle trapping"
Presenter: Jarrett Boyd
Carnegie Mellon University, Pittsburgh, PA (September 21, 2018)
48. 21th Summer Undergraduate Research Symposium (poster)
"Hydrodynamic multiparticle trapping"
Presenter: Jarrett Boyd
Duquesne University, Pittsburgh, PA (July 27, 2018)
49. Chicago Area Maternal and Infant Microbiome Symposium (MIMOS) (poster)
"High-throughput microfluidic tools for studying the gut microbiome"
Presenter: Bill Watterson
University of Chicago, Chicago, IL (June 20, 2018)
50. 2017 COMSOL Conference (poster)
"Numerical Modelling of High Aspect Ratio μ Pillars at Different Viscosities and Flow Rates"
Presenter: Adil Mustafa
Boston, MA (October 4-6, 2017)
51. ICM 2016: International Conference on Microfluidics (oral)
"Effect of Surfactant Concentration on Dissolution of Hydrodynamically Trapped Sparingly Soluble Oil Micro Droplets"
Presenter: Adil Mustafa
Paris, France (October 24-25, 2016)
52. UK-Turkey Researcher Links Workshop on Electrochemical Nucleic Acid-Based Biosensors/Microfluidic Devices for Healthcare Applications (oral)
"Micro and nanosystems for biotechnology and health applications"
University of Bath, Bath UK (September 5-8, 2016)
53. World Congress on Biosensors 2016 (poster)
"Flow-Induced Dissolution of Oil Microdroplets under Planar Extensional Flow"
Gothenburg, Sweden (May 25-27, 2016)

54. COST MP1205 (Advances in Optofluidics: Integration of Optical Control and Photonics with Microfluidics) General Meeting and Conference (poster)
"Computational Studies on flow-induced dissolution of hydrodynamically trapped oil microdroplets"
Istanbul, Turkey (April 11-13, 2016)
55. Gordon Research Conference on Physics and Chemistry of Microfluidics (poster)
"Flow-Induced Dissolution in Hydrodynamically Trapped Oil Microdroplets"
Mount Snow, West Dover, VT (May 31 - June 5, 2015)
56. COST MP1205 (Advances in Optofluidics: Integration of Optical Control and Photonics with Microfluidics) General Meeting and Conference (oral)
"Flow-Induced Dissolution and Dye Lasing in Hydrodynamically Trapped Oil Microdroplets"
Porto, Portugal (May 7-8, 2015)
57. NanoTR10, 10th Nanoscience and Nanotechnology Conference (oral)
"Confinement and manipulation of single nanoparticles in free solution using a hydrodynamic trap"
Istanbul, Turkey (June 17-21, 2014)
58. SPIE Photonics West 2014, Microfluidics, BioMEMS, and Medical Microsystems XII (oral)
"Confinement of single macromolecules in free solution using a hydrodynamic trap"
San Jose, CA (February 2-6, 2014)
59. American Institute of Chemical Engineers Annual Meeting (poster)
"Micro and nanosystems for biotechnology and health applications"
Minneapolis, MN (October 16-21, 2011)
60. American Institute of Chemical Engineers Annual Meeting (oral)
"2-D manipulation of individual nanoparticles using fluid flow in a microfluidic device"
Minneapolis, MN (October 16-21, 2011)
61. American Institute of Chemical Engineers Annual Meeting (oral)
"Multiplexed detection of viral nucleic acids in a combinatorial microfluidic screening chip"

Minneapolis, MN (October 16-21, 2011)

62. MicroTAS 2011: 15th International Conference on Miniaturized Systems for Chemistry and Life Sciences (oral)

“2-D micromanipulation of single nanoparticles in free solution using a microfluidic trap”

Seattle, WA (October 2-6, 2011)

63. Gordon Research Conference on Physics and Chemistry of Microfluidics (poster)

“A microfluidic-based hydrodynamic trap: design and implementation”

Waterville Valley, NH (June 26 - July 1, 2011)

64. Biophysical Society 55th Annual Meeting (poster)

“Hydrodynamic trap for single cells and micro- and nanoparticles”

Baltimore, MD (March 5-9, 2011)

65. American Institute of Chemical Engineers Annual Meeting (oral)

“Hydrodynamic trap for single cells and micro- and nanoparticles”

Salt Lake City, UT (November 7-12, 2010)

66. 8th Annual Biophysics and Computational Biology Symposium (oral)

“Hydrodynamic trap for single micro and nanoscale particles and cells”

Beckman Institute, Urbana, IL (May 18, 2010)

67. Bioengineering @ Illinois Day, Micro and Nanotechnology Laboratory (poster)

“Hydrodynamic trap for single cells and biomolecules”

Urbana, IL (April 9, 2010)

68. Biophysical Society 54th Annual Meeting (poster)

“Hydrodynamic trap for single cells and particles”

San Francisco, CA (February 20-24, 2010)

69. American Physical Society March Meeting (oral)

“Hydrodynamic trap for single cells and particles”

Portland, OR (March 15-19, 2010)

70. Microfluidics: Electrokinetic and Interfacial Phenomena, Institute for Mathematics and Its Applications (IMA) Annual

Workshop (poster)

“Hydrodynamic trap for single cells, particles and molecules”

Minneapolis, MN (December 7-11, 2009)

71. American Institute of Chemical Engineers Annual Meeting (oral)

“Hydrodynamic trap for single cells and particles”

Nashville, TN (November 8-13, 2009)

72. 6th Annual Biophysics and Computational Biology Symposium, Beckman Institute (oral)

“Measuring the distance of cargo from the microtubule for kinesin”

Urbana, IL (June 6, 2008)

73. Biophysical Society 52th Annual Meeting (poster)

“Measuring the distance of cargo from the microtubule for kinesin”

Long Beach, CA (February 2-6, 2008)

74. SPIE Photonics West 2007, Microfluidics, BioMEMS, and Medical Microsystems V (oral)

“Lasing droplets in a microfluidic T-junction device with integrated optics”

San Jose, CA (January 22-23, 2007)

75. Biophysical Society 50th Annual Meeting (oral)

“Biological sensing through optical resonances in pendant droplets”

Salt Lake City, UT (February 18-22, 2006)

76. Biophysical Society 49th Annual Meeting (poster)

“Chemical and biological sensing through optical resonances in microcavities”

Long Beach, CA (February 12-16, 2005)

77. SPIE Photonics West 2005, International Symposium on Biomedical Optics (BiOS) (oral)

“Chemical and biological sensing through optical resonances in microcavities”

San Jose, CA (January 22-27, 2005)

78. Biophysical Society 48th Annual Meeting (oral)

“Detecting single cells using optical resonances in microdroplets”

Baltimore, MD (February 14-18, 2004)

79. SPIE BioMEMS and Nanotechnology (oral)

“Microdroplets applied in microchannels for integrated high sensitivity biosensors”

Perth, Australia (December 9–12, 2003)

Advising and Mentoring

Advising

Duquesne University (2018-Present)

MS

1. Amanda Trusiak, MS (2022)

“A Microfluidic Assay for Single Cell Bacterial Adhesion Studies”

Duquesne University, Department of Engineering

Thesis committee chair: Asst. Prof. Melikhan Tanyeri, Duquesne University

2. Shay Kent, MS (2021)

“A viscoelastic hemostatic assay based on droplet microfluidics”

Thesis committee chair: Asst. Prof. Melikhan Tanyeri, Duquesne University

3. Yulder (Daniel) Angarita, MS (2020)

“Bacteria Analysis by using a Supervised Machine Learning Algorithm based on Droplet Microfluidics”

Thesis committee chair: Asst. Prof. Melikhan Tanyeri, Duquesne University

Istanbul Sehir University (2013-2016)

MS

1. Aysenur Eser, MS (2018)

“Development of a point-of-care device for coagulation time and erythrocyte sedimentation rate measurements”

Thesis committee chair: Dr. Ozlem Yalcin, Koc University

2. Afia Asif, MS (2017)

“Fabrication of multiplex and hierarchical micro/nanopatterns using self-assembly of block-copolymers and microfluidic molding”

Thesis committee chair: Asst. Prof. Melikhan Tanyeri, Istanbul Sehir University

3. Muhammed Salman Khan, MS (2017)

“Development of a portable thromboelastometry device for evaluating the coagulation pathway”

Thesis committee chair: Asst. Prof. Melikhan Tanyeri, Istanbul Sehir University

4. Rawana Yagan, MS (2017)

“Paper-based microfluidic electrochemical biosensor for detection of miRNA biomarkers towards early diagnosis of lung cancer”

Thesis committee chair: Asst. Prof. Melikhan Tanyeri, Istanbul Sehir University

5. Faruk Ahmeti, MS (2017)

“Microring resonators and its applications for biosensors and nanophotonics”

Thesis committee chair: Asst. Prof. Melikhan Tanyeri, Istanbul Sehir University

6. Oguz Kayillioglu, MS (2017)

“Dissolution of Hydrodynamically Trapped Liquid Microdroplets in Extensional Flow”

Koc University, Department of Physics

Thesis committee chair: Prof. Alper Kiraz, Koc University

Mentorship (research)

Duquesne University (2018-Present): Currently working with 15 undergraduate students (Raegan Gouker, Katherine Flannery,

Maxwell Ujhazy, Gram Hepner, Jacob McKinley, Nicole White, Aidan O'Donnell, Sara Know, Cassie Sikes, Ryan Slusser,

Jackson Jewell, Lucas Mitchell, Chandler Last, Lydia Kutzer, Maksim Shcherbatyuk) on six different research projects. Gram

Hepner, Maxwell Ujhazy (Summer 2023), Gram Hepner and Shawn Bliss (Summer 2022), Matthew Nestler and Shawn Bliss

(Summer 2021), Jarrett Boyd, Karli Sutton, Alexander Evans, Grace Ingram, and Adriana Del Pino Herrera (Summer 2019),

and Jarrett Boyd (Summer 2018) was selected to the Undergraduate Research Program (URP) of Duquesne University.

Serving as faculty mentor for Duquesne students in the following competitions:

- Duquesne student group “DU Infinity and Beyond” got accepted into the Mars Desert Research Station (MDRS) Spring

2024 Field Season with the mission titled “Project MADMEN: Martian Analysis and Detection of Microbial ENvironments”.

- o Awarded a competitive mini-grant from NASA Pennsylvania Space Grant Consortium (PSGC) to pursue

“Project MADMEN” at MDRS (Budget: for \$4,999), June 2023

- Duquesne student group (Celia Gambacorta, Sakina Goawala, Abigail Heberton, Emily Meier, and Rachel Wentz)

qualified as semifinalists in Duquesne University's 2022 New Venture Challenge with their project titled "InnovatIVe",

focusing on a novel device for the prevention of IV dislodgement.

- Duquesne student group "DU Infinity and Beyond" competing with the project titled "Project REMUS - FP

Resource Extraction from Martian Underground Systems - for Fuel Production" under the theme "Mars Water-based

ISRU Architecture" in NASA's 2022 Revolutionary Aerospace Systems Concepts – Academic Linkage (RASC-AL)

Competition.

- NASA RASC-AL: "DU Infinity and Beyond" competing with the project titled "FORTRESS (Fast Opening Residence

for Test, Reconnaissance, and Extravehicular Surface Science) in "Theme Area 1: Durable Low-Mass Lunar Surface

Habitat" in NASA's 2021 Revolutionary Aerospace Systems Concepts – Academic Linkage (RASC-AL) Competition.

- NASA SUITS: "DU Infinity and Beyond" competing with the project titled "Project AARDVARK" in the NASA

Spacesuit User Interface Technologies for Students (SUITS) Artemis Challenge 2020

- NASA RASC-AL: "DU Infinity and Beyond" competing with the project titled "Project ALIEN" in "Theme Area 3:

Short Surface Stay Mars Mission" in NASA's 2020 Revolutionary Aerospace Systems Concepts – Academic Linkage

(RASC-AL) Competition.

Istanbul Sehir University (2013-2016): Worked with 11 undergraduate students (Tarik Enes Aras, Ismail Tigrek, Baha Topcuoglu, Niyazi Saylik, Dogukan Kotan, Melik Daye, Mustafa Bal, Yunus Albayrak, Asad Boolani, Ahmed Shaif, and Baha Ulug). Two undergraduate students (Ahmet Yasin Celik and Burak Altun) have been accepted to the MS program in Biomedical Engineering at Bogazici University for Fall 2016.

University of Illinois at Urbana-Champaign (2008-2013): Mentored and closely worked with a MS student (Anish Shenoy) in a computational/theoretical project and authored a journal publication. Mentored and closely worked with three undergraduate students (Matthew Fischer, Mikhail Ranka and Natawan Sittipolkul) on experimental projects and authored two journal publications. Mikhail Ranka has been accepted to the PhD program in Chemical Engineering at MIT for Fall 2011. Natawan Sittipolkul has been accepted to the MS program in Petroleum Engineering at Texas A&M for Fall 2011.

Professional Activities

Memberships

2021-Present Member of BMES

2005-Present Member of the SPIE

2010-Present Member of the American Institute of Chemical Engineers

2016-Present Member of the IEEE

2003-Present Member of the Biophysical Society

1999-Present Member of the American Physical Society

Editorial

Editorial Board Member, November 2018 – June 2022

Journal of Annals of Bioengineering

Ocimum Scientific Publishers, Victoria, Australia

Guest Editor, August 2021

"Biomicrofluidic Systems for Diagnostics and Clinical Applications"

Applied Sciences, MDPI, Basel, Switzerland

Reviewer Board Member, December 2019 – present

Applied Sciences, MDPI, Basel, Switzerland

Reviewer Board Member, September 2019 – present

Micromachines, MDPI, Basel, Switzerland

Program Committee

Session Co-Chair

BMES (Biomedical Engineering Society) 2022 Meeting

Micro/Nano Tools for Precision Medicine

San Antonio, TX October 12-15, 2022

Session Co-Chair

BMES (Biomedical Engineering Society) 2022 Meeting

Advanced Technologies for Infectious Disease

San Antonio, TX October 12-15, 2022

Session Co-Chair, 2020 AIChE Annual Meeting

Area 01J: Particulate and Multiphase Flows: Emulsions and Droplets

San Francisco, CA (November 15-20, 2020)

Istanbul Health Industry Cluster (www.i-sek.org)

Leader, In Vitro Diagnostics (IVD) Working Group (2015-2016)

Scientific Committee, 3rd International Congress on Biosensors

Ankara, Turkey (October 5-7, 2016)

COST MP1205 (Advances in Optofluidics: Integration of Optical Control and Photonics with Microfluidics) General Meeting and Conference

Istanbul, Turkey (April 11-13, 2016)

Scientific Committee, 2nd International Congress on Biosensors

Izmir, Turkey (June 10-12, 2015)

Workshop on Current Trends in Biophotonics and BioMEMS

Istanbul Sehir University, Istanbul, Turkey (August 12, 2014)

Nanosensing: Materials, Devices and Systems III (SA115)

SPIE Optics East 2007, Boston, MA (September 9-12, 2007)

Peer Review

Journal Article Review: Small, Lab on a Chip, Nanoscale, Scientific Reports, Sensors and Actuators B, Biomicrofluidics,

Applied Physics Letters, Analytical Chemistry, Analytica Chimica Acta, Analyst, Chemical Communications, Biophysical

Journal, Biomedical Microdevices, Micromachines (MDPI), Sensors (MDPI), Biosensors (MDPI), Biotechnology Progress,

Review of Scientific Instruments, Journal of the Optical Society of America B, Experiments in Fluids, Analytical Methods,

RSC Advances, Applied Sciences (MDPI), Diagnostics (MDPI), Materials (MDPI), Microorganisms (MDPI), Inventions

(MDPI), Gels (MDPI), IEEE Transactions on Biomedical Engineering.

Conference abstract review: BMES 2022 (13 abstracts) and BMES 2023 (19 abstracts)

Book review: Chapters 2 through 4 of "Circuits, Signals and Systems for Bioengineers: A MATLAB-Based Introduction", 4th

Edition by John Semmlow

Grant Proposal Review

- 2022 U.S. Air Force Research Lab Summer Faculty Fellowship Program Panel Member
- 2019, 2020, 2021, 2022 National Defense Science and Engineering Graduate (NDSEG) Fellowship Program, Subject

Matter Expert Panelist

- 2021 Petroleum Research Fund, American Chemical Society, External Reviewer
- City University of New York (CUNY) Physics & Engineering panel for PSC CUNY Cycle 50 Research & Award

Program

- University of Wisconsin, Milwaukee, Office of Research, Internal Grant Program, Research Growth Initiative.
- Panelist and external reviewer for several Turkish Research Grant Agency (TUBITAK) programs including 1001, 3501, 1003, 3001, 1509 and 1511.

Entrepreneurship

Scientific Advisor, BiomeSense Inc, April 2018 – April 2019

“Digital CFU”, 2019-2020 I-Corps Program, University of Chicago Polsky Center for Entrepreneurship and Innovation

Departmental/University Committees

Duquesne University (2018-Present)

- Member, Duquesne Core Curriculum Revision Steering Committee, Duquesne University, 2018-2022
- Member, Faculty Senate, Faculty Workload Committee, 2022-2023
- Member, Rangos School of Health Sciences, Workload Committee, 2020-2022

Istanbul Sehir University (2013-2016):

- Chair, College of Engineering and Natural Sciences Graduate Seminar Committee, Istanbul Sehir University, 2014-2016
- Chair, Electrical and Computer Engineering PhD Program Committee, Istanbul Sehir University, 2015-2016
- Executive committee member, Institute of Natural Sciences (academic unit granting graduate degrees in Istanbul Sehir University, 2015-2016)
- Member, Graduate Admission Committee, Istanbul Sehir University, 2013-2016

Academic and Community Service

- DUQ Undergraduate Research and Scholarship Symposium (URSS), served as judge for choosing the winner of “Duquesne Award for Excellence in Biomedical Engineering” (Apr 3, 2019)
- McGowan Institute Retreat, served as judge for poster session evaluating 6 poster presentation on medical devices and tissue engineering (March 11-12, 2019)
- Pennsylvania Junior Academy of Science, Region 7 finals, served as judge to choose the Duquesne BME award, and present it during the award ceremony (Feb 2, 2019 and Feb 1, 2020)

- Served as a judge for poster session at the BioE Day 2018 organized by University of Pittsburgh (April 5, 2018)
- Served as a faculty advisor to help establish Istanbul Sehir University IEEE Student Branch in 2016.
- Served on internal and external (other universities) MS/PhD thesis/dissertation committees

Thesis Committee

MS

1. Jennifer Schinke, MS (2023)

“Analyzing Pseudomonas Aeruginosa with Bacteriophage Tags using Photoacoustic Flow Cytometry”

Duquesne University, Department of Engineering

Thesis committee chair: Prof. John A. Viator

2. Tori Kocsis, MS (2022)

“Labeling Melanoma Cells with Black Microspheres for Improved Sensitivity in Detection via Photoacoustic Flow Cytometry”

Duquesne University, Department of Engineering

Thesis committee chair: Prof. John A. Viator

3. Jacob Salvatore, MS (2021)

“Diagnosis of Melanoma Disease State from Patient Blood Samples Using Photoacoustic Flow Cytometry”

Duquesne University, Department of Engineering

Thesis committee chair: Prof. John A. Viator

4. Tanja Cupac, MS (2020)

“Multiphysics Computational Model of Fluid Flow and Mass Transport in Aneurysm”

Duquesne University, Department of Engineering

Thesis committee chair: Asst. Prof. Rana Zakerzadeh

5. Sevde Ucpinar, MS (2016)

“Fabrication of Microfluidic Devices for Yeast Culturing”

Bogazici University, Department of Chemical Engineering

Thesis committee chair: Prof. Kutlu Ulgen

6. Muge Atis, MS (2016)

"Tracking and Segregation of Calcium Oscillations in Single Cells"

Koc University, Biomedical Science and Engineering Master's Program

Thesis committee chair: Asst. Prof. Halil Bayraktar

7. Yavuz Genc, MS (2015)

"Simulation of Continuous Polystyrene Particle Manipulation with Dielectrophoresis using COMSOL"

Istanbul Technical University, Nanoscience and Nanoengineering Master's Program

Thesis committee chair: Prof. Levent Trabzon

8. Mehdi Hamid Vishkasougheh, MS (2014)

"Characterization of a Li-ion Battery Based Stand-alone a-Si Photovoltaic System"

Istanbul Sehir University, Department of Industrial and Systems Engineering

Thesis committee chair: Asst. Prof. Bahadir Tunaboynu

9. Esin Coskuner, MS (2013)

"Focusing Particles in Microchannels and its Applications in Microfluidic Systems"

Istanbul Technical University, Department of Mechanical Engineering

Thesis committee chair: Prof. Levent Trabzon

PhD

1. Fatih Bozkurt, PhD (2020)

"Development of a polymer-based microfluidic sensor for rapid detection of food allergens and toxins"

Yildiz Technical University, Food Science and Engineering

Thesis committee chair: Prof. M Tahsin Yilmaz

2. Ozge Fidan Can, PhD (2020)

"Nanofiber-Based Biosensing Devices for Pathogens"

Yildiz Technical University, Chemical and Metallurgical Engineering

Thesis committee chair: Assoc. Prof. Zeki Durak

3. Berk Camli, PhD (2019)

"Split Ring Resonators for Sensing Applications"

Bogazici University, Department of Electrical and Electronics Engineering

Thesis committee chair: Prof. Arda Yalcinkaya

4. Semra Zuhul Birol, PhD (2018)

"Investigation on the Effects of Mechanical Forces on Endothelial and Monocytic Cell Behavior by using Microfluidic Systems"

Istanbul Technical University, Nanoscience and Nanoengineering Doctoral Program

Thesis committee chair: Prof. Levent Trabzon

5. Muhammad Irfan, PhD (2017)

"Direct Numerical Simulation of Evaporation and Burning of a Droplet using Front Tracking Method"

Koc University, Department of Mechanical Engineering

Thesis committee chair: Prof. Metin Muradoglu

6. Gulsen Kosoglu, PhD (2017)

"3-D Optical Profilometry using Lloyd's Mirror Technique"

Bogazici University, Department of Physics

Thesis committee chair: Prof. Mehmet Naci Inci

7. Mehdi Aas, PhD (2015)

"Potential of Microdroplet Lasers for Optofluidic Biosensing Applications"

Koc University, Department of Physics

Thesis committee chair: Prof. Alper Kiraz

Guided and mentored two female high school students from Ozel Istanbul Science High School in a project for a national science competition. Conducted visits to multiple high schools in Istanbul, including Habire Yahsi Anatolian High School and Gelenbevi Anatolian High School, where I delivered introductory presentations on electrical engineering. The aim was to foster and stimulate student interest in STEM (Science, Technology, Engineering, and Math) education.