

**Assistant Professor**

Department of Biomedical Engineering  
School of Science and Engineering  
Duquesne University

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**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 Biomedical 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)  
University of California, Davis, Department of Physics

**RESEARCH INTERESTS**

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

**HONORS & 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
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
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  $\pi$ -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, Carbin 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: 18<sup>th</sup> 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) 10<sup>th</sup> 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) 15<sup>th</sup> International Conference on Miniaturized Systems for Chemistry and Life Sciences.

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 13<sup>th</sup> 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**

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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 & EXTERNAL FUNDING**

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### **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 using Microfluidic Methods  
Budget: 96,000 TL (~ US\$32,200), Period: May 2014 – Apr 2016

**TEACHING****Undergraduate and Graduate Teaching***Duquesne University (2018-Present)*

BMED 451/551 Biomedical Microdevices I  
 BMED 452/552 Biomedical Microdevices II  
 BMED 110 Introduction to Programming for Engineers  
 BMED 310 Biomedical Signals and Systems  
 BMED 490/590 Research in Biomedical Engineering

*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**

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**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”  
2<sup>nd</sup> 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: 16<sup>th</sup> 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. 5<sup>th</sup> 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. 12<sup>th</sup> 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. 15<sup>th</sup> 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. 15<sup>th</sup> 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. 15<sup>th</sup> 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. 15<sup>th</sup> 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. 15<sup>th</sup> 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. 15<sup>th</sup> 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. 10<sup>th</sup> 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. 10<sup>th</sup> 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. 24<sup>th</sup> Summer Undergraduate Research Symposium (poster presentation)  
“Microfluidic Trapping of Particles with Coupled Stagnation Flows”  
Gram Hepner, Melikhan Tanyeri  
Duquesne University (July 29, 2022)
18. 24<sup>th</sup> 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. 24<sup>th</sup> 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. 48<sup>th</sup> 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. 14<sup>th</sup> 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. 14<sup>th</sup> 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. 9<sup>th</sup> 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 (8<sup>th</sup> 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. 23<sup>rd</sup> Summer Undergraduate Research Symposium (poster)  
“Microfluidic-Photoacoustic Flow Cytometry for Diagnosis of Acute Lymphocytic Leukemia”  
Presenter: Shawn Bliss  
Duquesne University (July 30, 2021)
28. 23<sup>rd</sup> Summer Undergraduate Research Symposium (poster)  
“High Throughput Sensitive Microfluidic Assay for the Measurement of Fluorescently Labeled 5-HTc Binding Kinetics to GPCRs”  
Presenter: Gleymi Hernandez

- Duquesne University (July 30, 2021)
29. 23<sup>rd</sup> Summer Undergraduate Research Symposium (poster)  
“Rapid Quantification of Bacteria Using Droplet Microfluidics”  
Presenter: Matthew Nestler  
Duquesne University (July 30, 2021)
  30. 13<sup>th</sup> Virtual Undergraduate Research & Scholarship Symposium (oral, virtual)  
“Project ALIEN”  
Rebecca McCallin (DU Infinity and Beyond)  
Duquesne University (April 12-16, 2021)
  31. 13<sup>th</sup> 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 (7<sup>th</sup> 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. 12<sup>th</sup> 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. 12<sup>th</sup> 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. 12<sup>th</sup> Undergraduate Research & Scholarship Symposium (paper competition)  
“Hydrodynamic multiparticle trapping”  
Jarrett Boyd, Melikhan Tanyeri  
Duquesne University (April 21, 2020)
  38. 2<sup>nd</sup> 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. 2<sup>nd</sup> 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. 22<sup>nd</sup> 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. 22<sup>nd</sup> 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. 22<sup>nd</sup> Summer Undergraduate Research Symposium (poster)  
“Hydrodynamic multiparticle trapping”  
Presenter: Jarrett Boyd  
Duquesne University, Pittsburgh, PA (July 26, 2019)
43. 22<sup>nd</sup> 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. 11<sup>th</sup> 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. 21<sup>th</sup> 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  $\mu$ 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, 10<sup>th</sup> 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: 15<sup>th</sup> 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 55<sup>th</sup> 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. 8<sup>th</sup> 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 54<sup>th</sup> 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. 6<sup>th</sup> 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 52<sup>th</sup> 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 50<sup>th</sup> Annual Meeting (oral)  
“Biological sensing through optical resonances in pendant droplets”  
Salt Lake City, UT (February 18-22, 2006)
76. Biophysical Society 49<sup>th</sup> 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 48<sup>th</sup> 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 & MENTORING**

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### **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”.
  - 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, Mikhil Ranka and Natawan Sittipolkul) on experimental projects and authored two journal publications. Mikhil 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**

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### **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](http://www.i-sek.org))  
Leader, In Vitro Diagnostics (IVD) Working Group (2015-2016)

Scientific Committee, 3<sup>rd</sup> 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, 2<sup>nd</sup> 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 Tunaboylu
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

Mentored two female high school students (Ozel Istanbul Science High School) on a project for a national science competition. Visited several high schools in Istanbul (Habire Yahsi Anatolian High School, Gelenbevi Anatolian High School) and gave introductory presentations on the field of electrical engineering to stimulate student interest in STEM (Science, technology, engineering and math) education.

**COLLABORATORS**

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**Duquesne University**

Prof. John A. Viator  
Asst. Prof. Paul Miller  
Asst. Prof. Leda Klouda

**University of Warwick**

Prof. Till Bretschneider  
Asst. Prof. Michael Smutny

**MD Anderson Cancer Center**

Asst. Prof. Chirag Patel

**Carnegie Mellon University**

Prof. Maysam Chamanzar

**University of Pittsburgh**

Asst. Prof. Anita Saraf

**University of Kentucky**

Assoc. Prof. Kevin Tidgewell

**University of Chicago**

Prof. Eugene Chang

**University of California, Santa Barbara**

Asst. Prof. Arnab Mukherjee