

Dr. Arvind Chandrasekaran Ph.D., P.Eng.

Assistant Professor (Bioengineering), North Carolina A&T State University

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<http://www.biomelab.org>

1. PROFESSIONAL RESEARCH EXPERIENCE

Assistant Professor: September 2018 – Present

Department of Chemical, Biological, and Bio Engineering, North Carolina A&T State University, Greensboro, NC, USA
Principal Investigator, Bioinspired Microengineering (BIOME) Laboratory

Research Interests: Neutrophils Engineering and Neutrophil Extracellular Traps (NETs), Biomimetics, Organ-on-Chip Engineering, 3D Tissue Engineering, Biomaterials, Acoustofluidics

Supervised MS thesis works:

Dylan Rutledge, 2020, “Investigation of Neutrophil response to BKVirus using Microengineered Kidney-on-Chips” MS - Bioengineering (Primary advisor)

Vikram Surendran, 2020, “Tumor-Immune Microenvironment (TIME)-on-Chip: A Novel Hybrid-integrated Device Mimics Three-dimensional Neutrophil-Tumor Dynamics and Neutrophil Extracellular Traps (NETs) Formation” MS - Bioengineering (Primary advisor)

Swetha Manoharan, 2019, “Feasibility of Integrating Microfluidics into Point-of-Care Biodiagnostics” MS - Bioengineering (Primary advisor)

Oreoluwa Alonge, 2019, “Contact Printed Assisted High Throughput Fabrication of Miniaturized Chitosan Scaffolds” MS - Bioengineering (Co-advisor)

Current Collaborators:

Dr. William Polacheck, Dr. David Hill (University of North Carolina, Chapel Hill)

Dr. Bethany Kerr, Dr. Fei Xing (Cancer Biology, Wake Forest School of Medicine)

Dr. Shannon Stott (Massachusetts General Hospital)

Current Support: 1SC2GM136523 “Decoupling the mechanobiology of Neutrophil Extracellular Traps in Tumor Metastasis” NIH - Support of *Competitive Research* **Total funding:** \$412,748 (7/2020 – 04/2023)

Post-doctoral Research Associate: April 2016 – August 2018

Department of Chemical Engineering, **McGill University**, Montreal, Canada

Research: Biomimetics and High precision Tissue Engineering: Cellular and tissue mechanobiology regenerative medicine, Air-Liquid Interface (ALI) drug screening platform (Collaborator: Traffick therapeutics Inc., Montreal) : Development of biocompatible Organs-on-Chips/cell culture using non-conventional manufacturing and 3D printing. : Neutrophils bioengineering (Collaborators: Dr. Jonathan Spicer, Dr. Peter Siegel - McGill University Health Center) : Designing personalized lung cancer therapeutics : Neutrophil Extracellular Traps (NETs) mechanics and NETs mechanobiology

Staff Research Associate: August 2014 – March 2016

Department of Burns & Trauma, **Massachusetts General Hospital - Harvard Medical School**, Boston, USA,

: Biophysical and molecular characterization of immune cell interactions during inflammation.

: Development of neutrophil chemotaxis platforms for high throughput post-traumatic sepsis therapeutics/drug discovery

: Hydrogel based Acousto-microfluidics: Size independent cell sorting, and isolation of extracellular microvesicles

Research and Development Engineer: January 2011 – June 2014

Alberta Centre for Advanced Micro-Nanotech Products (ACAMP), Calgary, Canada,

- **Principal Design Engineer** and multiphysics Finite Element Modeling Expert (ANSYS) at ACAMP, Calgary: for micro to macro scale product development through design, modeling, packaging, testing and validation. -Integrated micro-nanosystems on Low Temperature Co-fired Ceramics (LTCC), Thermoplastic microfluidics, Microstructural analysis and characterization of Electron-beam welded alloys.

- **Product Development:** Die/wafer level Microelectromechanical systems Packaging, Optoelectronic packaging, failure analysis, non-destructive testing and characterization of MEMS and Inertial measurement units

- **Project Manager:** Successfully delivered 3 medical devices (*two* Microfluidics and *one* Optomechanics based) to clients

- **Business Development Support:** identified funding opportunities for MEMS based start-up companies, assisted in IP creation

Professional Affiliations:

Professional Engineer (P.Eng), Alberta Professional Engineering and Geoscientists Association (APEGA) (License #141312)

Member: Biomedical Engineering Society (BMES)

Member: American Association for Advancements in Science (AAAS)

2. EDUCATION

Doctor of Philosophy (Ph.D.), 2006 – 2011

Mechanical Engineering, Concordia University, Montreal, Canada. {GPA: 4.0}

Thesis: *Cavitation-assisted and Enhanced Valveless Micropumping integrated Optical Detection based Micro-Total Analysis Systems (μ TAS): Design, Modeling, Fabrication and Testing*

Thesis Advisor: Dr. Muthukumaran Packirisamy

Research areas: Microfluidics, Microreactors, Micropumps, Cavitation, MicroElectroMechanical Systems, Lab-on-a-Chip, Integrated Optics, Chemical sensing.

Specialization Courses: Engineering Analysis, Nanotechnology, Advanced Dynamics

Master of Applied Science (M.A.Sc.), 2003 – '06

Mechanical Engineering Concordia University, Montreal, Canada {GPA: 3.5}

Thesis: *SOI waveguide based optical microsystems for biophotonic enzymatic detection*

Thesis Advisor: Dr. Muthukumaran Packirisamy

Research areas: Optical Microsystems, Microfluidics, Analytical Modeling

Specialization Courses: Theory of Vibrations and applications, Aeroelasticity, Micromechatronic Systems, Optical Microsystems

Bachelor of Engineering (B.E.), 1999 – 2003

Mechanical Engineering, University of Madras, India, {GPA:8/10 *First Class with Distinction*}

Senior design project: "Development of an improved semi-automatic clutch system for Mitsubishi Lancer diesel cars"

3. TEACHING EXPERIENCE

3.1 LECTURER/INSTRUCTOR

North Carolina A&T State University

Fall semester

BMEN480: Senior Bioengineering Capstone Design I (2021 – Present)

BMEN481: Senior Bioengineering Capstone Design II (2021 – Present)

BMEN713: Biotechnology Entrepreneurship (2019-Present)

BMEN 252: Bio-Energy Interactions Laboratory – Fall (2019-Present)

Spring Semester

BMEN481: Senior Bioengineering Capstone Design II (2022 – Present)

BMEN485/785: Introduction to BioMEMS and Microfluidics (2019-Present)

BMEN225: Biophysics Design Laboratory (2020-Present)

BMEN325: Bioengineering Laboratory (Biosignaling module) (2019 - present)

BMEN310: Introduction to Biomaterials – Spring 2019

3.2 LECTURER

MECH 424/ENGR 6371: Micromechatronic Systems & Applications (4 credits) Concordia University (Winter 2018)

BIEN 290: Bioengineering Measurements (4 credits): McGill University (Fall 2017)

3.3 GRADUATE TEACHING ASSISTANT

Tutor (Concordia University): Microsystems Technologies (2007 – '10), Theory of Machines (2007-2008), Manufacturing processes (2007), Aeroelasticity (2009), Optical Microsystems (2010)

Lab instructor (Concordia University): Instrumentation and measurement systems (2004), Microsystems Technologies (2007-'10), Manufacturing processes (2008)

4. PROFESSIONAL DEVELOPMENT

4.1 TECHNICAL ADVISORY

I. Faculty Advisor – Biomedical Engineering Society (BMES) Student Chapter, NC A&T (2020 – Present)

II. Guest Editor – Frontiers in Nanotechnology – Special Issue: Application of Microfluidics in Biomedical Nanotechnology

III. Thesis examiner

: Shaunafrica White PhD (2022), Mechanical Engineering, North Carolina A&T State University, USA

: Sada Boyd PhD (2020), BioScience, North Carolina A&T State University, USA

: Qassim Dirar, PhD (2020), Nanoengineering, North Carolina A&T State University, USA

: Marquis Harper, MS (2020), Animal Sciences, North Carolina A&T State University, USA

: Kalene Johnson MS (2019) Bioengineering, North Carolina A&T State University, USA

: Oreoluwa Alonge, MS (2019), Bioengineering, North Carolina A&T State University, USA

Miscellaneous

: Jaya Christian, PhD (2017) , Mechanical Engineering, Visvesvaraya Technological University (VTU), India

: Anandha Babu, PhD (2015), Mechanical Engineering, Vellore Institute of Technology (VIT), India.

IV. Journal Paper reviewer: Lab-on-a-Chip, Micromachines, Nature Scientific Report, Sensor Review, Int. J Nanomedicine, J Micromechanics and Microengineering, J. Nanophotonics, Sensors

4.2. MENTORING

4.2.1 North Carolina A&T State University (2018 – present)

MS students: Swetha Manoharan, Oreoluwa Alonge, Vikram Surendran, Dylan Rutledge, Simrit Safarulla, Myles Ross

BS Students: Ramair Colman, Thomas Chiulli, Kelyah Spurgeon

PhD students: Shilpi Bhatia, Koran Harris (Wake-Forest School of Medicine)

4.2.2 McGill University (2016 – 2018)

B.Eng students: Yimai Chen, Nikita Kalashnikov, Rachel Mot

Graduate Students: Sanya Siddiqui, Raymond Tran, Zhenwei Ma, Carley Ort (PhD), Claire Wang (M.Sc)

4.2.3 Massachusetts General Hospital (2014 – '16)

Trained Post-doctoral researchers and technicians on Microfabrication

Research fellows: Dr. Eduardo Reategui, Dr. Felix Ellett, Dr. Samuel Au, Dr. Sybren Maas, Dr. Noa Cohen (North Eastern University), Lynna Chen (MIT)

Research technicians: Mcolisi Dlamini, Aimal Khankhel, Julianne Jorgensen, Kendall Williams, Stefan Herrera

4.2.4 Alberta Center for Advanced Micro-Nanotechnology Products (ACAMP) (2011 – '14)

Mentored Junior engineers and technicians:

Aditi Ganji, Yong Hyun Yun(E-beam welding), Sean Ewart (Mechanical design), William Cully, Viet Hoang (Microfluidics)

4.2.5 Concordia University Trained graduate students in their research tools and microfabrication

2016-2018: Jay Adhvaryu (M.Eng), Kiran Chavanke (M.Eng), Duraichelvan Raju (PhD)

2007 – 2010: Hamid Sadabadi (PhD), Amir Sanati Nezhad (PhD), Carlos Gustavo (PhD), Shakhawat Hussain (MAsc)

4.3 ENGAGEMENT WITH SCIENTIFIC COMMUNITY

4.3.1 Affiliations and Collaborations

Adjunct Professor: Centre for Bio Materials, Cellular and Molecular Theranostics (CBCMT)

Vellore Institute of Technology, Vellore, Tamil Nadu, India

Research proposals - Principal Investigator

NC TraCS: “Identifying Targetable Mechanobiological Regulations of DNA and non-DNA Components in Mucoadhesion and Clearance of Neutrophil Extracellular Traps (NETs) in Mucus” Co-PI: Dr. David Hill (UNC Chapel Hill)

UNC-IIPG: “Racially distinct mechanisms of Neutrophil Extracellular Traps mediated Endothelial Dysfunction Under sepsis” Co-PIs: Dr. William Polacheck (UNC Chapel Hill, Dr. Marc Cook, NC A&T State University) – Ranked 1 among the internal applications

NC TraCS: Investigating the role of Neutrophil Extracellular Traps In BKV Nephropathy Co-PIs: Dr. Emily Chang (UNC Chapel Hill, Dr. Liesl-Jeffers Francis (NC A&T State University)

Research Proposals as co-investigator

KERN Foundation: “Research For All: Broadening Access to Research for Undergraduate Engineering Students”, 2021
NSF: “MRI: Acquisition of an X-ray Diffractometer (XRD) for Multidisciplinary Materials Research and Education”, 2020

4.3.2 Workshops/Courses

2019: *Introduction to BioMEMS and Microfluidics*, VelTech University, India: 3-day certification course (33 students)
2017: *Engineering graphics for chemical engineers*, McGill University, Canada (Fall 2017): 10 week certification course on introductory engineering design using AutoCAD and Solidworks (30 students)
2015: “*Clinical Microfluidics*” One day hands-on Workshop on BioMEMS, organized at Tufts University, Medford, MA, June 2015, on polymer microfluidics: application towards inertial microfluidics, and Circulating tumor cells capture
- Attended by scientists from research institutes in Boston (MIT, Brigham and Women’s hospital and Wyss Institute)
- Conducted a hands-on session on fabrication of Polymer microfluidics and running clinical assays.
2013: “*Finite Element Modeling with ANSYS Multiphysics*” 2-day seminar series organized at ACAMP, Calgary and Edmonton - Attended by members from 20 industries in different sectors (manufacturing, oil and gas, optics, and sensors)
2012: “*Electron Beam welding for Microelectronic Packaging*” 1-day seminar organized at ACAMP, Calgary
- Demonstrated the capabilities of Electron-Beam welding, along with research findings. This workshop attracted a lot of clients from the oil and gas industry, downhole tools and petroleum engineering, for using E-beam welding facility
2011 – 2013: Part of the organizing committee of *WAVE* - bi-annual international corporate conference in Micro-Nanotechnology: Coordination and organization of eminent keynote speaker itineraries
2007 – 2010: *Scientific Activities Director - Canadian Institute for Photonics Innovation -Student Board (CIPI-S)*
- Organizing Scientific events: Conducted workshops on R-Soft (March 2008) and MATLAB/CATIA (November 2008)
- Evaluated posters/ adjudged student awards at the CIPI Annual General conference at Banff (2008), Quebec (2009)

4.3.3 Tutorials

2020: Created online module tutorial for COMSOL Simulations
<https://www.youtube.com/watch?v=WdBxJeT38o> – Diffusion Module
<https://www.youtube.com/watch?v=vGA4KPIg8WY> – Electrothermal Module
2017: Tutorials using Lightboard (pedagogical tool)
<https://www.youtube.com/watch?v=mS3Xuo9TpiA>
2013: Developed a part of the course material on wire bonding and die attachment for *MCRO2400 Microelectronics Packaging and Testing*, Northern Alberta Institute of Technology (NAIT)

4.4 RESEARCH SUPPORT AND LAB MANAGEMENT

2014 – ’16: *BioMEMS Resource Center (BMRC), Massachusetts General Hospital, USA*

- Identified project specifications, time lines, operational requirements, implemented protocols, managed all procurements and other project needs.
- Ensure adherence to all research regulatory and safety requirements for studies involving human and animals
- Business/Budget Manager for the BMRC Microfluidics Core at Massachusetts General Hospital.
- Trained on tissue-culture and Phlebotomy

Acknowledgements:

: Ellett, F. et al., 2017. Neutrophil Interactions Stimulate Evasive Hyphal Branching by *Aspergillus fumigatus*. *PLoS pathogens*, 13(1), p.e1006154

: Ellett F. et al., 2019, “Microfluidic arenas for war games between neutrophils and microbes”, *Lab-on-a-Chip*, 19, pp. 1205-1216.

2008 – ’09: *Concordia Silicon Microfab (ConSiM)*, Montreal, Canada*

- Actively involved in the installation and maintenance of class 100/1000 cleanroom facilities and Optical BioMEMS laboratory
- Development of microfabrication processes, Hands –on training and installation of Plasmalab80+ICP65 DRIE, Scrubber, Direct Write Lithography
- Drafting of standard operating protocols, implementation of workplace hazard management protocols, and quality control.

*http://cjournal.concordia.ca/archives/20081106/nanotech_lab_opens_doors.php

4.5 ENGINEER-IN-TRAINING

2011 – '13: Alberta Center for Advanced Micro-Nanotechnology Products (ACAMP), Calgary, Canada

- Implementing process and quality control in plastic and ceramic microfabrication.
- Procurement of equipment and negotiations with Vendors:
- Developing new product lines and applications with existing infrastructure
- Trained on Specialized Tools: Electron-beam welding, 3-axis rate table system, Die/Wafer level MEMS packaging and reliability testing tools.

4.6 COMPUTER SKILLS

Computational Softwares: ANSYS (Workbench and APDL), COMSOL, FLUENT, MATLAB, CFX, R-Soft (BeamPROP and FullWAVE), ZEMAX, LabVIEW

Design Softwares: Solidworks, AutoCAD, CATIA, MEMSPro, Cadence , on Windows and Mac platforms.

4.7 PROFESSIONAL CERTIFICATIONS

2018: *University Teaching*

2013: *Understanding Project Management*

2008: *Advanced COMSOL Multiphysics Modeling*

2007: *Advanced CATIA*

5. INTELLECTUAL PROPERTY

1. Muthukumaran Packirisamy, **Arvind Chandrasekaran** U.S. Patent No. 8,883,080 : “*Vis/IR compatible Nano-Enhanced Evanesence-integrated Technique (NEET) based Microphotonic device and sample analysis system*”
2. **Arvind Chandrasekaran**, Vikram Surendran “*On-demand assembleable heterogeneous cell-culture platform, and method of manufacturing thereof*” (Invention disclosure submitted to the office of research, NC A&T State University, October 2020)

6. HONORS AND AWARDS

Faculty awards:

2021 - Regional NSF I-corps program (UNC Greensboro) (\$3000)

2020 - NC TraCS - Junior Faculty award for research materials, NC A&T State University (\$5000)

2019 - Summer Research seed funding award, NC A&T State University (\$5000) - Declined

2018 - College of Engineering, NC A&T State University \$108,000 (09/2018 – 05/2020)

2016 – NSERC Engage award: Co-Investigator (\$25000)

Mentee awards:

2021 – Winner, CoE Research Symposium Poster competition, NC A&T (Simrit Safarulla, MS BMEN)

2020 – Winner, CoE Research Symposium Poster competition, NC A&T (Dylan Rutledge, MS BMEN)

Graduate awards:

2011–'12: Natural Sciences and Engineering Research Council (NSERC) Industrial R&D Fellowship (IRDF) -Declined

2011: Nominated for the prestigious Governor General’s Gold Medal award

2010: Recipient of *Canadian Institute of Photonic Innovations* Travel award

2009-‘10: Recipient of Doctoral thesis completion award, Concordia University

2009-‘10: Recipient of Campaign for Concordia graduate fellowship

2009-‘10: Recipient of Faculty of ENCS graduate award, Concordia University.

2009: Highly commended award, *Emerald Literati Network*

2008-‘09: Recipient of Hydro-Quebec Fellowship

2008-‘09: Recipient of Bourses d’études Hydro-Quebec, Concordia University

2008-‘09: Recipient of J.W. McConnell Graduate Fellowship

2007-‘08: Recipient of Armand. C. Archambault Fellowship, Concordia University

2006: Runner-up, Microsystems design award, *Canadian Microsystems Corporation*

7. SCHOLARLY PRESENTATIONS

7.1 SUPERVISED JOURNAL PUBLICATIONS

1. S. Safarulla, A. Madan, F. Xing, A. Chandrasekaran, 2022, "CXCR2 mediates Distinct Neutrophils Behavior in Brain Metastatic Breast Cancer", *Cancers*, (Submitted Dec. 2021) (Impact Factor: 6.9)
2. V. Surendran, D. Rutledge, R. Colmon, A. Chandrasekaran, 2020 "A Novel Tumor Immune Microenvironment-on-Chip mimics Ovarian Cancer-neutrophil Dynamics and In-vivo-like response to Neutrophil Extracellular Traps (NETs)", *Biofabrication* 13(3), p.035029. (Impact Factor: 9)
3. V. Surendran, T. Chiulli, S. Manoharan, S. Knisley, M. Packirisamy, A. Chandrasekaran, 2019, "Acoustofluidic Micromixing Enabled Hybrid Integrated Colorimetric Sensing, for Rapid Point-of-Care Detection of Salivary Potassium" *Biosensors*, 9(2), p.73 (Impact Factor: 5.5)

7.2 CONFERENCE PRESENTATIONS (Peer reviewed)

1. Safarulla S., Surendran V., Chandrasekaran A., "Pro-angiogenic Endothelial Behavior, and In-vitro Drug Testing on a Novel Tumor-Vasculature-On-Chip" *BioMedical Engineering Society (BMES)*, Orlando, Florida, USA, Oct. 6-9th, 2021.
2. Safarulla S., Chandrasekaran A., "CXCR2 Mediates Distinct Neutrophil Behavior in Brain Metastatic Breast Tumors" *BioMedical Engineering Society (BMES)*, Orlando, Florida, USA, Oct. 6-9th, 2021.
3. Surendran V., Safarulla S., Chandrasekaran A., "Neutrophil Extracellular Traps Facilitate Collective Invasion of Pre-Metastatic Ovarian Cancer", *BioMedical Engineering Society (BMES)*, Orlando, Florida, USA, Oct. 6-9th, 2021.
4. Surendran V., Safarulla S., Chandrasekaran A., "In-vitro Demonstration of tumor extravasation on a hybrid 3D Metastasis-on-a-Chip Drug Screening Platform, *MicroTAS 2021*, Palm Springs, CA, USA Oct. 11 – 14th, 2021.
5. Safarulla S., Ross M., Surendran V., Chandrasekaran A., "A Novel, Hybrid Integrated 3D Tumor-on-Chip platform for versatile, high-throughput scalable applications" *MicroTAS 2021*, Palm Springs, CA, USA Oct. 11 – 14th, 2021.
6. Rutledge D., Chandrasekaran A., 2020, "Investigation of Neutrophil response to BK Virus using Microfluidic Devices" *BMES Annual Conference* (Virtual) Oct. 2020
7. Bhatia, S., Surendran V., Chandrasekaran A., "Neutrophil Extracellular Traps (NETs) Regulate Tumor-associated Endothelial Dysfunction" *BMES Annual Conference* (Virtual) Oct. 2020
8. Rutledge, D., Colmon R., and Chandrasekaran A., "Three-dimensional Bioprinting of Vascular Models Made Easy" *BMES-Advanced Biomanufacturing Conference* (Cancelled due to COVID-19)
9. Surendran V., Spurgeon K., Chandrasekaran A., "A Versatile Tumor-Endothelial co-culture Platform for In-vitro Tumor migration and Invasion assays" *BMES-Advanced Biomanufacturing Conference* (Cancelled due to COVID-19)
10. O. Alonge, N. Bhattarai, A. Chandrasekaran, 2019, "Micro-contact Printing assisted fabrication of miniaturized Chitosan scaffolds for high throughout bone metastasis-an-chip assays", *34th Southern Biomedical Engineering Conference*, Mississippi, USA.

7.3 INVITED TALKS

- 2022: "Bioinspired Microengineering: Advancing the frontiers of fundamental cell biology" University of Kentucky, Louisville (Scheduled Feb. '22)
- 2021: "Engineering a sophisticated petri dish...", Department of Biomedical Engineering, Colorado State University, Virtual (Aug. '21)
- 2018: "Applying Tissue Engineering principles to study Neutrophil Extracellular Traps" Dr. Hansang Cho research group, UNC Charlotte (Nov. '21)

8. LIST OF PUBLICATIONS

8.1 JOURNAL PAPERS

1. **A. Chandrasekaran**, S. Kouthouridis, W. Lee, N. Lin, Z. Ma, M. Turner, J. Hanrahan, C. Moraes, "Magnetic Microboats for Stiffness Tunable, Floating Air-Liquid Interface Platforms", *Lab-on-a-Chip*, 19(17), pp.2786-2798
2. S. Siddiqui, **A. Chandrasekaran**, N. Lin, N. Tufenkji, C. Moraes, 2019, "Microfluidic Shear Assay to Distinguish between Bacterial Adhesion and Attachment Strength on Stiffness-Tunable Silicone Substrates", *Langmuir*, 35(26) pp 8840 – 8849
3. **A. Chandrasekaran**, N. Kalashnikov, R. Reyes, C. Wang, J. Spicer, C. Moraes, 2017, "Thermal scribing to prototype plastic based microfluidic device, applied to study the formation of neutrophil extracellular traps" *Lab-on-a-chip*, 17(11), pp. 2003-2012

4. **A. Chandrasekaran**, F. Ellett, J. Jorgensen, D. Irimia, 2017, "Temporal gradients limit the accumulation of neutrophils towards sources of chemoattractant" *Nature: Microsystems and Nanoengineering* 3, p.16067.
5. **A. Chandrasekaran**, M. Abduljawad, C. Moraes, 2016, "Have microfluidics delivered for drug discovery?", *Expert opinion in drug discovery*, 11(8), pp.745-748.
6. **A. Chandrasekaran** and M. Packirisamy, 2015, "Improved Efficiency of Microdiffuser Through Geometry Tuning for Valveless Micropumps" *ASME Journal of Fluids Engineering***, 138(3), 031101:12
**Adjudged key scientific article contributing to scientific and engineering research excellence, by *Advances in Engineering*
7. **A. Chandrasekaran** and M. Packirisamy, 2015, "A study of cavitating and non-cavitating performances of a valveless micropump through dynamic measurement of chamber pressure", *J Micromechanics and Microengineering*, 25(3), 035006.
8. **A. Chandrasekaran** and M. Packirisamy, 2012, "Experimental Investigation of Cavitation behavior in Valveless Micropumps" *J Micromechanics and Microengineering*, 22(12), 125019
9. **A. Chandrasekaran**, A. Soni, and M. Packirisamy, 2012, "An improvised Finite Difference technique for modeling microphotonic rib waveguide systems", *F.E Jnl of App. Mathematics*, 70(1), pp. 1-19.
10. **A. Chandrasekaran** and M. Packirisamy, 2011, "Geometrical tuning of microdiffuser/nozzle for valveless micropumps" *J Micromechanics Microengineering*, 21(4), 045035
11. **A. Chandrasekaran**, G. Rinaldi and M. Packirisamy, 2010, "Label-free detection of enzymatic interaction through dynamic behaviour of microstructures" *Adv. Engg. Sci. App. Maths*, 2(1-2), pp. 1-7
12. **A. Chandrasekaran** and M. Packirisamy, 2010, "Integrated Microfluidic Biophotonic Chip for laser induced fluorescence detection" *Biomedical Microdevices* 12(5), pp. 923-933
13. A. Azzam, **A. Chandrasekaran**, M. Packirisamy, R. Bhat and I. Stiharu, "Bioaffinity limitations for anisotropically etched silicon microfluidics" *Intnl J of Abrasive Technologies*, 3(2), pp.122-132
14. **A. Chandrasekaran** and M. Packirisamy, 2009, "Experimental Investigation of Evanesence based Infrared biodetection technique for Micro-Total Analysis Systems (μ TAS)" *J Biomedical Optics*, 14 (5), pp. 054050-054050-11.
15. **A. Chandrasekaran**, S. Pakkirisami, A. Acharya, M. Packirisamy, and D. Maxwell, 2008, "Bioresistive identification of Heat Shock Proteins" *Biomicrofluidics*, 2(3), pp 034102:1-10
16. **A. Chandrasekaran** and M. Packirisamy, 2008, "Enhanced bio-molecular interactions through re-circulating microflows", *J Nanobiotechnology*, 2(2) pp 39-46
17. **A. Chandrasekaran** and M. Packirisamy, 2008, "Enhanced fluorescence based bio-detection through selective integration of reflectors in microfluidic Lab-On-a-Chip" *Sensor review*, 28(1), pp 33-38. **(Highly commended paper, Emerald Literati Network)**
18. **A. Chandrasekaran**, A. Acharya, J. L. You, K. Y. Soo and M. Packirisamy, 2007, "Hybrid integrated Silicon microfluidic platform for fluorescence based biodetection" *Sensors*, 7, pp 1901-1915
19. **A. Chandrasekaran** and M. Packirisamy, 2006, "Absorption characterization of enzymatic reaction using optical microfluidics based intermittent flow microreactor system", *J. Nanobiotechnology*, 153, n 6, pp. 137-143.
20. **A. Chandrasekaran** and M. Packirisamy, 2007, "Wafer dicing strategic planning technique for clustered BioMEMS devices" *Int. J Product Development*, 4, n (3-4), pp. 296 – 309.
21. **A. Chandrasekaran**, M. Packirisamy, I. Stiharu, and A. Delage, 2006, "A hybrid micromachining technique suitable for roughness reduction in optical MEMS devices", *Int. J Manufacturing Technology and Management*, 9, n 1-2, pp 144-159.

8.2 CONFERENCE PRESENTATIONS

1. S. Mallette et al., 2019, "Targeting CXCR2-mediated neutrophil recruitment to lung cancer" *American Association of Cancer Research annual meeting*, Atlanta, GA.
2. A. Chandrasekaran, R. Reyes, Y. Chen, A. Ghagre, A. Ehrlicher, J. Spicer, C. Moraes "Mechanical Stiffening of Extracellular Matrix due to the Accumulation of Neutrophil Extracellular Traps (NETs)", *Biomedical Engineering Society (BMES) 2018*, Atlanta, GA
3. C. Wang, R. Reyes, A. Chandrasekaran, et al. , "Drivers of Neutrophil Recruitment to Primary Non-Small Cell Lung Cancer" *American Association of Cancer Research annual meeting*, 2018
4. S. Siddiqui, A. Chandrasekaran, N. Tufenkji, C. Moraes, "Studying the effect of surface properties on bacterial adhesion using a high throughput flow device", *91st ACS Colloid and Surface Science Symposium*, NY, USA, 2017.

5. H. Sadabadi, A. Chandrasekaran, R. Wuthrich and M. Packirisamy, "Simulation and dynamic characterization of a 3-layer Piezoactuated valveless micropump system", *Proceedings of CSME 2010 Intl Mechanical Engineering Congress, Vancouver, Canada*
6. A. Chandrasekaran, M. Packirisamy, "A Novel Integrated Biophotonic platform for Micro-Total Analysis Systems", *Photonics North 2010, Niagara, Canada*.
7. A. Chandrasekaran, M. Packirisamy, "Piezo-Actuated Valveless Micropumps for Micro-Total Analysis Systems" *7th International Symposium on Fluid-Structure Interactions and Flow-Induced Vibration & Noise, Montreal, Canada*.
8. A. Chandrasekaran and M. Packirisamy, "Integrated Micro-total analysis system for biophotonic enzymatic detections" *Photonics West, San Francisco, CA, 2010. Vol. 7555-49*.
9. A. Chandrasekaran and M. Packirisamy, "Integrated biophotonic Micro-total analysis systems for flow cytometry and particle detection" *Photonics North, Quebec City, 2009, Proceedings of SPIE, 7386, pp.738603-738611*
10. G. Rinaldi, A. Chandrasekaran, and M. Packirisamy, "Label free detection of enzymatic interaction through dynamic behavior of microstructures", *Intl. Conf. on MEMS, IITM, India, 2009*.
11. A. Chandrasekaran, M. Packirisamy, "Opto-microfluidic Lab-on-a-Chip for biodetection", *Intl. Conf. on MEMS, IITM, India, 2009*.
12. A. Chandrasekaran and M. Packirisamy, "Integrated Optical Microfluidic Lab-on-a-chip" *Photonics North, 2008*.
13. A. Chandrasekaran, A. Nobahar, and M. Packirisamy, "Finite Element Modeling of intermittent flow molecular sorting system for optical microfluidics based bioassay", *Photonics North, Ottawa, Proc. of SPIE, vol. 6796*.
14. A. Chandrasekaran and M. Packirisamy, "Modeling of SOI based Photonic crystals for far IR applications" *IEEE International Symposium on Industrial Electronics (ISIE 2006), Montreal, 4, pp 3387– 3390*.
15. A. Chandrasekaran, M. Packirisamy, "MOEMS based integrated microfluidic fiber-optic waveguides for Biophotonic applications" *Photonics North, Toronto, Canada, Proc. of SPIE, 5969, pp 178 – 186*.

8.3 MISCELLANEOUS TECHNICAL PRESENTATIONS

16. Rossi, O. and Chandrasekaran, A., 2018. Microreactors: 'micro' managing our macro energy demands. *International Journal of Energy Sector Management*, 13(3) pp. 590 - 596.
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