Vineeth 'Vinny' Chandran Suja

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EDUCATION AND EXPERIENCE

Harvard University	Postdoc in Bioengineering (Advisor: **Prof. Samir Mitragotri)**	Jan, 2021 - *present*
Stanford University	PhD in Chemical Engineering (Advisor: **Prof. Gerry Fuller)**	Dec, 2020
Ecole Polytechnique, Paris	Masters in Mechanics (Advisors: **Prof. Abdul Barakat** and **David Quéré)**	Aug, 2015

ACADEMIC APPOINTMENTS

Guest Editor, American Institute of Physics - Physics of Fluids	Sep 2022 – *present*
Research fellow, Massachusetts General Hospital	Jan 2022 – *present*
Guest Editor, Journal of Visual Experiments	Dec 2021 – Dec 2022
Guest Editor, Coatings	Nov 2021 – Aug 2022
Research fellow, Wyss Institute for Biologically Inspired Engineering	Jan 2021 – *present*

AWARDS AND HONORS

- Rising Star in Soft and Biological Matter 2023
- International Congress of Rheology Gallery Contest Award 2020
- Scientific Curiosity Award (World Young Scientist Summit, Wenzhou, China) 2019
- Centennial TA award (Highest Honor for TA's at Stanford University) 2019
- Outstanding Teaching Assistant (Department of Chemical Engineering) 2018
- NorCal STLE Research Scholarship 2016
- Université Paris-Saclay Outgoing Student Mobility Scholarship 2015
- Charpak Scholar, Embassy of France in India 2014
- Junior Research Fellow, Council for Industrial and Scientific Research-India 2013

INVITED ARTICLES

1. Fuller, G. G. & **Chandran Suja, V.** (2020). The Froth Thickens. *Invited Viewpoint,* ***American Physical Society*** doi:v13/162
2. **Chandran Suja, V.** & Fuller, G. G. (2023). From improving eyesight to disease theranostics: The impact of ocular fluid mechanics research. *Invited Editorial,* ***Physics of Fluids*** doi:10.1063/5.0168773

PUBLICATIONS

3. **Chandran Suja V.**, Kar, A., Cates, W., Remmert, S. M., Savage, P. D. & Fuller, G. G. (2018). Evaporation-induced foam stabilization in lubricating oils. ***Proceedings of the National Academy of Sciences***, 115(31), 7919-7924.
    - *Trade Journal Coverage:* Highlighted in Tribology and Lubrication Technology Magazine Dec 2018 (Author Dr. Neil Canter)
    - *Major Press Coverage:* Stanford News, Phys.org, and 2 others.
4. **Chandran Suja, V.** & Barakat, A. I. (2018). A Mathematical Model for the Sounds Produced by Knuckle Cracking. ***Scientific reports***, 8(1), 4600.
    - Nature Scientific Reports Top 10 paper (2018)

- *International Awards:* World Young Scientist Summit - Scientific Curiosity Award (Night of Science Pineapple Science Award)
- *Major Press Coverage:* ScienceAlert, BBC, Times, New York Times, NPR and 50+ others.

5. **Chandran Suja, V.**, Sentmanat, J., Scales, C., Hoffman, G. & Fuller, G. G. (2020). Hyperspectral imaging for dynamic thin film inteferometry. ***Scientific reports***, 10(1), 11378.
    - *Industrial/Clinical Translation:* Patented instrument (see patents section) reported in the paper acquired by Vision Care division of Johnson & Johnson for $90,000 and undergoing in house clinical trials. The same instrument was also acquired by the Head, Surgical and Vision care research division of Alcon for a sum exceeding $250K for end-user ophthalmic product development.
6. **Chandran Suja, V.**, Kar, A. & Fuller, G. G. (2020). Foam stability in filtered lubricants containing antifoams. ***Journal of Colloid and Interface Science***, 567, 1-9.
    - *Trade Journal Coverage:* Highlighted in Tribology and Lubrication Technology Magazine May 2020 (Author Dr. Neil Canter)
7. **Chandran Suja, V.**, Hadidi,A., Kannan, A., Chadwick, B.G.L. & Fuller, G. G. (2021). Axisymmetry breaking, chaos, and symmetry recovery in bubble film thickness profiles due to evaporation-induced Marangoni flows. ***Physics of Fluids***, 33(1), 012112
    - Featured article in Physics of Fluids
8. **Chandran Suja, V.**, M. Rodriguez-Hakim, J. Tajuelo & Fuller, G. G. (2020) Single bubble and drop techniques for characterizing foam and emulsion stability. ***Adv. Colloids & Interface Science*** doi:10.1016/j.cis.2020.102295
    - *Trade Journal Coverage:* Highlighted in Tribology and Lubrication Technology Magazine Feb 2021 (Author Dr. Neil Canter)
9. Brower*, D., Calhoun, S*., **Chandran Suja, V.**, Kim, G., Wang, N., Radzyminski, M. McCully, A., Fuller, G. G, Kusumaatmaja, H., & Fordyce, P. M. (2022) Systematic characterization of effect of flow rates and buffer compositions on double emulsion droplet volumes and stability ***Lab on a Chip*** doi:10.1039/D2LC00229A * Equal contribution
    - Featured in themed collection - Lab on a Chip HOT Articles 2022
10. Huang, Y., **Chandran Suja, V.**, L Amirthalingam, & Fuller, G. G. (2022) Influence of Salt on the Formation and Separation of Droplet Interface Bilayers (2022) *Physics of Fluids*
    - Featured article in Physics of Fluids
11. **Chandran Suja, V.***, Verma, A.*, Mossige, E. J. L., Cui, K., Xia, V., Zhang, Y., Sinha, D., Joslin, S. & Fuller, G.G. (2022) Dewetting Characteristics of Contact Lenses coated with Wetting agents. ***Journal of Colloid and Interface Science*** 614, 24-32. * Equal contribution
12. **Chandran Suja, V.**, Frostad, J. M. & Fuller, G. G. (2016). Impact of Compressibility on the Control of Bubble-Pressure Tensiometers. ***Langmuir***, 32(46), 12031-12038.
13. **Chandran Suja, V.***, Kannan, A.*, Kubicka, B., Hadidi, A. & Fuller, G. G. (2020). Bubble coalescence at wormlike micellar solution-air interfaces. ***Langmuir*** doi:10.1021/acs.langmuir.0c01861 * Equal contribution
14. Mossige, E.J.*, **Chandran Suja, V.***, Wheeler, S. F. & Fuller, G. G. (2020). Evaporation driven Rayleigh-Taylor Instability in Aqueous Polymer Solutions. ***Phil. Trans. R. Soc. A***, 378: 20190533 * Equal contribution
15. Mossige, E.J*, **Chandran Suja, V.***, Walls, D.* &Fuller, G. G. (2021), Dynamics of Freely Suspended Drops Translating through Miscible Environments ***Physics of Fluids*** * Equal contribution
16. Huang, Y.*, **Chandran Suja, V.***, Tajuelo, J. & Fuller, G. G. (2021). Surface Energy and Separation Mechanics of Droplet Interface Phospholipid Bilayers . ***J. R. Soc. Interface*** 18: 20200860 * Equal contribution

17. Vamsi Krishna, C.*, **Chandran Suja, V.***, Watton, P.N., Arakeri, J.H. & Gundiah, N. (2020). Shear Stress Rosettes Capture the Complex Flow Physics in Diseased Arteries. ***Journal of Biomechanics***, 104(7), 109721. * Equal contribution

18. Calhoun, S.G.K.C.*, **Chandran Suja, V.***, & Fuller, G. G. (2021) Foaming and antifoaming in non-aqueous liquids. ***Current Opinion in Colloids & Interface Science*** * Equal contribution

19. **Chandran Suja, V.** (2022). Challenges in Mitigating Lubricant Foaming. ***Lubricants***, 10(6), 108.

20. Tammaro, D., **Chandran Suja, V.***, Kannan, A.*, Gala, L.D., Maio, D.E., Fuller, G. G., & Mafffettone, P.L. (2021). Flowering in bursting bubbles with viscoelastic interfaces ***Proceedings of the National Academy of Sciences***, 118(30), e2105058118. * Equal contribution

21. Kamkar, M., Bazazi, P., Kannan, A., **Chandran Suja, V.**, Hejazi, S.H. & Fuller, G.G. (2020). Polymetric-Nanofluids Stabilized Emulsions: Interfacial versus Bulk Rheology. ***Journal of Colloid and Interface Science*** 576, 252-263.

22. Kannan, A., Shieh, I., Negulescu, P., **Chandran Suja, V.** & Fuller, G. G. (2021) Adsorption and aggregation of monoclonal antibodies at silicone oil-water interfaces. ***Molecular Pharmaceutics***

23. Suresh Babu,A., **Chandran Suja, V.** & Vinay Reddy, C. (2014). Three dimensional trajectory optimization of a homing parafoil. ***IFAC Proceedings***, 47(1), 847-854.

24. Tsao, A.C., Parker, M.J., Lovich, M.A., **Chandran Suja, V.**, Deng, H., Houle, T., & Peterfruend, R.A.(2022) Initiation of an Emulsion Microinfusion: Flow Direction Influences Delivery Onset Rate. *Accepted* ***European Journal of Pharmaceutical Sciences***

25. Huang, Y.*, Fuller, G. G. & **Chandran Suja, V.*** (2022) Physicochemical characteristics of Droplet Interface Bilayers ***Adv. Colloids & Interface Science*** 304, 102666 * Equal contribution, ***Senior Author***

26. Zhao, Z., Kim, J., **Chandran Suja, V.**, N Kapate & Mitragotri, S. Red Blood Cell Anchoring Enables Targeted Transduction and Re-Administration of AAV-Mediated Gene Therapy. (2022) ***Advanced Science***

27. Chopade, P., Chopade, N., Zhao, Z., Mitragotri, S., Liao R.*, & **Chandran Suja, V.*** Alzheimer's and Parkinson's Disease Therapies in the Clinic (2022) ***Bio-engineering and Translation Medicine*** * Equal contribution, ***Senior Author***

28. K. Adebowale*, R. Liao*, **V. Chandran Suja** et al, Materials for Cell Surface Engineering (2023). ***Advanced Materials*** doi:10.1002/adma.202210059. * Equal contribution

29. N Kapate, M. Dunne, N. Kumbhojkar, S. Prakash, L. Wang, A Graveline, K. S. Park, **V. Chandran Suja**, J. Goyal, J. R. Clegg, S. Mitragotri. A Backpack-based Myeloid Cell Therapy for Multiple sclerosis (2023). ***Proceedings of the National Academy of Sciences***. 120(17), e2221535120.

30. S. Prakash, N. Kumbhojkar, A. Lu, N. Kapate, **V. Chandran Suja**, K. S. Park, L. Wang, S. Mitragotri. Polymer Micropatches as Natural Killer Cell Engagers for Tumor Therapy. (2023) ***ACS Nano*** doi:10.1021/acsnano.3c03980.

31. **Chandran Suja, V.***, Qi, Q* et al, A biomimetic chip to assess subcutaneous bioavailability of monoclonal antibodies in humans. (2023) ***Proceedings of the National Academy of Sciences Nexus*** *In Press* * Equal contribution

32. L. Wang, Y. Gao, **V. Chandran Suja** et al, Macrophage hitchhiking Gadolinium micropatches: A living contrast agent for diagnosis of traumatic brain injury. (2023) ***Science Translational Medicine*** *Accepted*

33. Y. Huang*, **V. Chandran Suja***,#, M. Yang, A. V. Malkovskiy, A. Tandon, A. Colom, J. Qin & G. G. Fuller #. (2023). An investigation of mechanical stresses on droplet interface bilayers using fluorescence lifetime imaging microscopy. ***Journal of Colloid and Interface Science*** *Accepted* * Equal contribution, # Co-senior author

In progress:

34. Knudsen, A., Arney, E. A., Butterfield, R. D., Sims, N. M., **Chandran Suja, V.**, Peterfreund, R. A, How does pump-driven continuous delivery of a lipid emulsion compare to delivery of a saline solution? A laboratory study. *Submitted*
35. N. Kumbhojkar, **V. Chandran Suja** et al, Cyto-Adhesive Micro-Platforms for Neutrophil-Based Immunotherapy. *Under revision*
36. N. Kapate, R. Liao, **V. Chandran Suja** et al, Backpack-mediated anti-inflammatory macrophage cell therapy for the treatment of traumatic brain injury. *Submitted*
37. N. Kapate, **V. Chandran Suja** et al, Polymer Backpack-loaded Tissue Infiltrating Monocytes for Treating Cancer *Submitted*
38. S. G. K. Calhoun*, **Chandran Suja, V.***, et al, Antifoams in diesel fuels: thin liquid film dynamics and antifoam mechanisms. *Submitted* * Equal contribution

INVITED TALKS

1. Platform and methods for spatiotemporally resolved measurements of dynamic tear film thickness, **Alcon, Texas**, Feb 14, 2023.
2. Mechanistic insights into foam/emulsion stability through single bubble/drop experiments, **Lubrizol Corporation, Ohio**, June 5, 2019.
3. Bubbles on Capillaries: (i) The bubble shape hysteresis (ii) Single bubble coalescence experiments for developing foam resistant lubricants, **U.C Berkeley Fluids Seminar**, May 8, 2017.
4. Mechanistic Insights into Foaming in Lubricants using Dynamic Fluid-Film Interferometry, **STLE NorCal Meeting**, June 21, 2017.

PATENTS

1. **Chandran Suja, V.** & Fuller, G. G. Platform and methods for the use of hyperspectral imaging for dynamic thin film measurements. Filed Feb 2021 with application No: US 2021/0264582 A1, Granted: Feb 2023 (US11580631B2)
2. **Chandran Suja, V.** & Fuller, G. G. Fully Miscible Antifoam Formulations. Published Dec 2022 with International Patent No: WO2022251469A1

SELECTED CONFERENCES AND POSTERS

- 2023 - *ACS Colloid & Surface Science Symposium, 97rd Annual Meeting*, Rayleigh, North Carolina, USA
- 2021 - *Society of Tribology and Lubrication Engineers Annual Meeting*, Orlando, Florida, USA
- 2021 - *Society of Rheology, 92nd Annual Meeting*, Bangor, Maine, USA
- 2021 - *American Institute of Chemical Engineers Annual Meeting*, Boston, Massachusetts, USA
- 2021 - *American Physical Society, Division of Fluid Dynamics, 74th Annual Meeting*, Phoenix, Arizona, USA
- 2020 - *International Congress of Rheology*, Rio de Janerio, Brazil
- 2020 - *Society of Tribology and Lubrication Engineers Frontiers Conference*, Virtual Event
- 2020 - *American Institute of Chemical Engineers Annual Meeting*, Virtual Event
- 2020 - *American Physical Society, Division of Fluid Dynamics, 73rd Annual Meeting*, Virtual Event
- 2019 - *American Physical Society, Far West Section*, Stanford, California, USA
- 2019 - *American Institute of Chemical Engineers Annual Meeting*, Orlando, Florida, USA
- 2019 - *American Physical Society, Division of Fluid Dynamics, 72nd Annual Meeting*, Seattle, Washington, USA
- 2019 - *ACS Colloid & Surface Science Symposium, 93rd Annual Meeting*, Atlanta, Georgia, USA

- 2018 - *American Physical Society, Division of Fluid Dynamics, 71st Annual Meeting*, Atlanta, Georgia, USA
- 2018 - *ACS Colloid & Surface Science Symposium, 92nd Annual Meeting*, State College, Pennsylvania, USA
- 2018 - *e-Wear Conference, 2nd Annual Meeting*, Stanford, California, USA
- 2017 - *American Physical Society, Division of Fluid Dynamics, 70th Annual Meeting*, Denver, Colorado, USA
- 2017 - *Society of Rheology, 88th Annual Meeting*, Tampa, Florida, USA
- 2016 - *American Institute of Chemical Engineers Annual Meeting*, San Francisco, California, USA

STUDENT ADVISING

Individually supervised students over quarter-long and year-long research internships. Developed customized projects and provided mentorship to ensure strong understanding of concepts as well as successful completion of rigorous scholarly work.
* *indicates co-authorship in peer-reviewed papers and conferences*

Graduate Students

1. John Belanger, Stanford — Jul, 2019 – *present*
2. Yogi Huang, Stanford — Mar, 2020 – Jan, 2023
3. Suzanne Calhoun, Stanford — May, 2020 – June, 2023
4. Severin Bahman, ETH Zurich (currently at Zurich Insurance Company Ltd) — Aug, 2017 – Nov, 2017
5. Meiirbek Islamov*, Columbia University (currently PhD at U. Pittsburgh) — Jul, 2018 – Sep, 2018

Undergraduate Students

1. Dania Villafuerte Gonzalez*, Harvard — Sept, 2022 – April, 2023
   Advisor for Honor's Thesis "Cellular backpack mechanics under flow"
2. Paola Carrillo Gonzalez, Harvard — Jul, 2021 – April, 2022
   Advisor for Honor's Thesis "A model system to evaluate macrophage migration in vitro"
3. Ignacio Blanco Jesus, Stanford — Jul, 2019 – Jun, 2020
   Advisor for Honor's Thesis "Dessication and dissolution instabilities of polymeric drops"
4. Archana Verma*, Stanford (currently PhD at UIUC) — Jul, 2019 – Apr, 2020
5. Dionne Thomas, Stanford — Jun, 2019 – Aug, 2019
6. Ao Chen, Zhejiang University (currently PhD at U. Wisconsin-Madison) — Jun, 2019 – Aug, 2019
7. Benjamin Chadwick*, Stanford — Jan, 2018 – Jun, 2018
8. Brian Edward Ly*, Stanford — Jan, 2018 – Jun, 2018
9. Finn Banks, Johns Hopkins — Jul, 2017 – Aug, 2017
10. Johnny Sentmanat*, Texas A&M (currently PhD at Georgia Tech) — Jun, 2018 – Aug, 2018

High School Students

1. Pooja Chopade*, USA — Summer 2021
2. Neha Chopade*, USA — Summer 2021
3. Avni Gokarn, USA — Summer 2021
4. Indeera Pujar, USA — Summer 2021
5. Arnuv Tandon, USA (currently undergrad at Stanford University) — Spring, Summer 2020
6. Bruce Zhang, China — Summer 2020
7. Ben Rubinstien, USA — Summer, Fall 2019
8. Aaron Lipp, USA — Summer 2019
9. Joshua Kim, USA — Summer 2019
10. Manas Tiwari, India (currently undergrad at U. Wisconsin-Madison) — Summer 2019
11. Alex Hadidi*, USA (currently undergrad at UCLA) — Summer 2018
12. Zachary Ernst*, USA — Summer 2018
13. Bruce Kubicka*, USA (currently undergrad at Cornell) — Summer 2017, 2016
14. Andrei Bielay, Canada — Summer 2017
15. Cole Gillespie, USA — Summer 2016
16. Mathilde Lettinga, Germany — Summer 2016

TEACHING EXPERIENCE

Teaching Assistant ChemEng 120A:Fluid Mechanics — Winter 2018, Winter 2019
- Delivered guest lectures, developed home works and midterm exams.
- Started the 'Fluid Mechanics Video Lecture', which is currently in its third iteration.

Teaching Assistant Rheology Short Course in Beijing — Summer 2019
- Invited to TA the short course on Rheology offered by Prof. Gerald Fuller at the Stanford Center at Peking University.
- Helped instruct a diverse international student cohort and provided guidance for their course presentations.

Mentor TA ChemE Department, Stanford — 2019 - 2020
- Trained new TA's through holding orientation sessions and one on one discussions.

SERVICE AND OUTREACH

Journal Editor
- Journal of Visualized Experiments (Special Issue - Biointerfaces), Coatings (Special issue - Fluid Interfaces in Colloidal Systems: Aerosols, Foams, and Emulsions), Physics of Fluids.

Journal Reviewer
- Soft Matter, Langmuir, Journal of Colloids and Interface Science, Physical Review journals, Bioengineering & Translational Medicine, Physics of Fluids, Polymers, ACS Applied Materials, Materials, Royal Society Interface, Advances in Colloids and Interface Science

Topical Expert (Interfacial Science) Viewpoint Writer in APS Physics Magazine
- Provide expert commentary on latest scientific publications in interfacial science

Co-Founder, Medicine Engineering and Drug Innovation Stars (MEDIStars) program 2023
- Summer program by Harvard School of Engineering and Applied Sciences for introducing high schoolers to drug development and clinical trial process.

Co-Founder and Leader, CCS Mentoring 2019
- Initiative by the Catholic Community at Stanford (CCS) primarily aimed at connecting mentees with mentors who can provide a 'big brother/sister', academic, spiritual and business guidance.

Student Member, Chemical Engineering Faculty Search 2018, 2019

- Evaluated the research, mentoring and teaching philosophies of prospective faculty candidates.

Judge, Stanford Research Conference 2017, 2018

- Evaluated undergraduate research from around the country for scientific content, students' thought processes and critical thinking.

Judge, AICHE Undergraduate Research Conference 2019

- Evaluated undergraduate research from around the country for scientific content, students' thought processes and critical thinking.

REFERENCES

1. Prof. Gerald Fuller (ggf@stanford.edu)
2. Prof. Samir Mitragotri (mitragotri@seas.harvard.edu)
3. Prof. Abdul Barakat (barakat@ladhyx.polytechnique.fr)
4. Prof. Eric Shaqfeh (esgs@stannford.edu)
5. Prof. Jian Qin (jianq@stanford.edu)